1. Purpose of and Need for the Proposed Action

1.1 Background

The U.S. Coast Guard (USCG) is a military, multimission, and maritime agency. USCG statutory responsibilities include ensuring marine safety and security, preserving maritime mobility, protecting the marine environment, enforcing U.S. laws and international treaties, and performing search and rescue. The USCG supports the U.S. Department of Homeland Security (DHS) overarching goal of mobilizing and organizing our nation to secure the homeland from terrorist attacks, natural disasters, and other emergencies. In performing its duties, the USCG has established five strategic goals: maritime safety, protection of natural resources, maritime security, maritime mobility, and national defense. The USCG operates in all maritime regions, including approximately 95,000 miles of U.S. coastlines, inland waterways, and harbors; more than 3.36 million square miles of exclusive economic zone (EEZ) and U.S. territorial seas; and international waters and other maritime regions of importance to the United States.

This Programmatic Environmental Impact Statement (PEIS) provides an assessment of the potential environmental impacts associated with the proposed implementation of the Nationwide Automatic Identification System (NAIS) project by the USCG. NAIS project implementation might involve installing receivers, transmitters, transceivers, repeaters, and other equipment on towers or other structures at selected sites along 95,000 miles of coastline and inland waterways, as well as selected remote platforms such as satellites and offshore oil and gas platforms and data buoys.

The Maritime Transportation Security Act (MTSA) of 2002[1] establishes carriage requirements for Automatic Identification System (AIS) equipment on certain vessels and gives the USCG rulemaking authority to implement the requirements in MTSA[2]. The MTSA also requires the Secretary of Homeland Security to "…implement a system to collect, integrate, and analyze information concerning vessels operating on or bound for waters subject to the jurisdiction of the United States, including information related to crew, passengers, cargo, and intermodal shipments."[3] The USCG has determined that implementation of the proposed NAIS project would support the system requirements that are outlined in MTSA. The proposed implementation of the NAIS project is a DHS Level I investment and USCG major systems acquisition and would be expected to be fully implemented and operational by 2014.

The proposed implementation of the NAIS project would provide the USCG with the capability to receive and distribute information from shipboard AIS equipment to enhance Maritime Domain Awareness (MDA). The project would provide detection and identification of vessels carrying AIS equipment approaching or operating in the maritime domain where little or no vessel tracking currently exists.

AIS is an international standard (International Telecommunications Union Recommendation [ITU-R] M.1371-1, *Technical Characteristics for a Universal Shipborne Automatic Identification System Using Time Division Multiple Access in the Maritime Mobile Band),* adopted by the International Maritime Organization (IMO), for ship-to-ship, ship-to-shore, and shore-to-ship communication of information. Such information includes vessel

- Identity
- Position

[1] Public Law (P.L.) 107-295 (November 2002)

[2] The USCG final rule implementing AIS carriage requirements for certain vessels was published in the *Federal Register* on October 22, 2003. See 68 Fed. Reg. 60559.

[3] 46 United States Code (U.S.C.) Section 70113(a)

- Speed
- Course
- Destination
- Other data of critical interest for maritime safety and security.

The IMO is a specialized agency of the United Nations which is responsible for implementing measures to improve the safety and security of international shipping and to prevent marine pollution from ships. AIS equipment is currently required domestically and internationally aboard major commercial vessels[4]. Starting in 2002, the IMO began a phased program requiring certain vessels on international voyages to carry AIS equipment. By December 31, 2004, thousands of vessels that call on U.S. ports were required to carry AIS equipment[5]. **Appendix A** contains international standards and domestic (USCG) regulations for AIS carriage, current as of the date of this document.

1.2 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to establish a nationwide network of receivers and transmitters to capture, display, and analyze AIS-generated information. The Proposed Action would satisfy the USCG's need to enhance homeland security while carrying out its mission to ensure marine safety and security, preserve maritime mobility, protect the marine environment, enforce U.S. laws and international treaties, and perform search and rescue (SAR) operations.

At present, there are few USCG facilities available to consistently track vessels approaching or operating near or within the U.S. Maritime Domain. Consistent vessel tracking capability exists only in discrete areas where the USCG has established Vessel Traffic Services (VTSs). Until recently, this tracking was accomplished using primarily radar and vessel radio reports, relying on voice communications to associate a vessel identity with its radar image. Additional information on the vessel (such as cargo, course, and speed) was gathered by voice reports, which was time-consuming to the vessel and shoreside operators. Since the establishment of AIS carriage requirements in 2004, VTSs[6] were provided capability to receive and transmit AIS signals. The experience with AIS gained at these VTS areas has indicated the usefulness of AIS and future NAIS capability, such as reliable vessel tracking and automated information management.

Vessel location information is obtained through USCG vessel and aircraft patrols and by other means, such as self-reporting by ships. This approach only provides "snapshot" surveillance, even in near-coastal areas. The need for consistent and persistent surveillance capability is crucial to MDA. MDA is the effective understanding of anything associated with the global marine environment that could impact the security, safety, economy, or environment of the United States. The goal of MDA is to provide situational awareness for decisionmakers at all levels using a host of systems, sensors, and processes. Collection, integration, and analysis of information concerning vessels operating on or bound for waters subject to the jurisdiction of the United States, through resources such as NAIS, enhances MDA.

[4] "SOLAS" class—generally ships more than 300 gross tons on an international voyage and cargo ships more than 500 gross tons and passenger ships carrying more than 12 passengers.

[5] 33 Code of Federal Regulations (CFR) 164.46 and SOLAS V Regulation 19.2.4.

[6] There are only10 VTSs with consistent capability to track and monitor vessels approaching or operating near or within the U.S. Maritime Domain. These VTSs are established in the areas of: Prince William Sound (Valdez, AK); Puget Sound (Seattle, WA); San Francisco, CA; Los Angeles-Long Beach, CA; Houston-Galveston, TX; Port Arthur, TX; Berwick Bay (Morgan City, LA); Lower Mississippi River (New Orleans and the Ports of Southern Louisiana); New York, NY' and Saint Marys River (Sault Ste. Marie, MI).

Continually updated information on vessel position and destination, course and speed, vessel identification, and other AIS-provided data is needed on a nationwide basis to help assess the potential threats posed by a vessel and to protect vessels from potential harm. This information needs to be correlated with other sensors and databases to help identify anomalies, sort out innocent vessels from suspicious ones, and give timely, accurate information to decisionmakers.

The need for the Proposed Action arises from several sources, discussed in the following subsections.

1.2.1 International Treaty

The United States is a member of the IMO. IMO administers the Safety of Life at Sea Convention (SOLAS), an international treaty. In December 2000, Chapter V of the SOLAS Convention was amended to require AIS, capable of providing information about the ship to other ships and to coastal authorities automatically, to be fitted aboard all ships of 300 gross tonnage and upwards engaged on international voyages, cargo ships of 500 gross tonnage and upwards not engaged on international voyages, and passenger ships irrespective of size built on or after July 1, 2002.

As a member of the IMO, the United States, through the USCG, works closely with the international community in AIS standards development and implementation. The IMO has adopted performance standards for AIS. The standards provide that AIS should improve the safety of navigation by assisting in the efficient navigation of ships, protection of the environment, and operation of VTS. These objectives are met by satisfying functional requirements in a ship-to-ship mode for collision avoidance, as a means for littoral states to obtain information about a ship and its cargo, and as a VTS tool (e.g., shore-to-ship traffic management). Moreover, AIS should be capable of providing information automatically from a ship and with the required accuracy and frequency to other ships and competent authorities to facilitate accurate tracking.

1.2.2 Maritime Transportation Security Act of 2002

Section 70113 of the MTSA of 2002 directs the Secretary of DHS to "… implement a system to collect, integrate, and analyze information concerning vessels operating on or bound for waters subject to the jurisdiction of the United States, including information related to crew, passengers, cargo, and intermodal shipments." Further, Section 70114 of the MTSA requires that certain vessels "while operating on the navigable waters of the United States, shall be equipped with and operate an automatic identification system under regulations prescribed by the Secretary." The USCG has determined that this Congressional directive would be largely satisfied through AIS requirements and the NAIS project.

1.2.3 Other Congressional Actions

In Senate Report 108-86, which accompanied the DHS Appropriations Bill for 2004, Congress funded the AIS initiative and identified specific capabilities that should be part of the system. Moreover, signaling its interest in timely performance, Congress required submission of a report detailing how and when the AIS would be implemented nationwide.

> Automatic Identification System.—Included in the Committee recommendation is $40,000,000 for the Automatic Identification System [AIS]. International regulations require that by December 31, 2004, all vessels greater than 300 gross tons and engaged on international voyages be equipped with and operate an AIS. Additionally, the Maritime Transportation Security Act accelerates the international rules to require all passenger ships and tankers to carry AIS equipment by July 1, 2003. It also requires all domestic commercial vessels greater than 65 feet, and towing vessels 26 feet or greater and 600 horsepower to have AIS equipment

> on board by the end of 2003. The AIS system transmits important safety and security information that can be used to prevent a transportation security incident, such as a vessel's identification, position, heading, ship length, beam type, draft, and hazardous cargo information. Since 1998, the Coast Guard has been installing a nationwide shore-based universal AIS coverage system to receive this information and track vessels throughout the coastal zone [referring to the Ports and Waterways Safety System]. The Committee directs the Coast Guard to submit a report to the Committee within 90 days of enactment of this Act detailing the acquisition and installation schedule of the shore-based universal AIS coverage system in ports nationwide, including associated costs to complete such a schedule.

1.2.4 Presidential Directive

The safety and economic security of the United States depends in large part upon the secure use of the world's oceans. Since the attacks of September 11, 2001, the Federal government has reviewed and strengthened all of its strategies to combat the evolving threat in the Global War on Terrorism. Various departments have carried out maritime security strategies which have provided an effective layer of security since 2001. In December 2004, the President directed the Secretaries of the Department of Defense (DOD) and DHS to lead the Federal effort to develop a comprehensive *National Strategy for Maritime Security*, to better integrate and synchronize the existing department-level strategies and ensure their effective and efficient implementation[7].

The *National Strategy for Maritime Security* aligns all Federal government maritime security programs and initiatives into a comprehensive and cohesive national effort involving appropriate Federal, state, local, and private sector entities. Eight supporting plans to the *National Strategy for Maritime Security* address the specific threats and challenges of the maritime environment. While the plans address different aspects of maritime security, they are mutually linked and reinforce each other.

Of particular relevance to the Proposed Action is the *National Plan to Achieve Maritime Domain Awareness* (MDA Plan). The MDA Plan is a cornerstone for successful execution of the security plans tasked in the National Strategy for Maritime Security. As stated in this plan, the basis for effective prevention measures is awareness and threat knowledge, along with credible deterrent and interdiction capabilities. Without effective understanding of maritime domain activities, gained through persistent awareness, vital opportunities for an early response can be lost. Awareness grants time and distance to detect, deter, interdict, and defeat adversaries. NAIS will provide the nation with the tools to conduct nationwide persistent surveillance of vessels operating in or bound for U.S. waters.

1.2.5 USCG Missions and NAIS Operational Requirements

The USCG is the lead Federal agency for maritime homeland security. One of the primary missions of the USCG is to protect the U.S. maritime domain and the U.S. marine transportation system. USCG traditional missions include

- Securing maritime borders against illegal drugs, illegal aliens, firearms, and weapons of mass destruction
- Ensuring that U.S. military assets can be rapidly supplied and deployed by keeping USCG units at a high state of readiness, and by keeping marine transportation open for the transit of assets and personnel from other branches of the armed forces

[7] National Security Presidential Directive NSPD-14/Homeland Security Presidential Directive HSPD-13, Subject: Maritime Security Policy, December 21, 2004.

- Protecting against illegal fishing and indiscriminate destruction of living marine resources
- Preventing and responding to oil and hazardous material spills—both accidental and intentional
- Coordinating efforts and intelligence with Federal, state, and local agencies.

Operating Requirements. NAIS would meet the following operating requirements:

- *Operating Environment*. AIS equipment would be installed on various platforms (e.g., buildings, towers, satellites, and offshore oil and gas platforms and data buoys) and function in expected adverse operating environments (e.g., high surf, temporary submersion, extreme weather conditions).
- *Geographic Area*. NAIS would be a contributor to MDA and therefore would be designed to provide coverage for waters subject to the jurisdiction of the United States and out to 2,000 nautical miles (NM) from the baseline[8].
- *Climatological Envelope*. The system would operate in the regional environmental conditions expected during a 50-year time period.
- *Operational Functions*. NAIS would receive and process information transmitted by AIS-equipped vessels and distribute this information to and among a variety of users. The system would have the ability to transmit standard AIS messages from specified shore stations to AIS-equipped vessels. NAIS would perform or support the following operational functions:
    1. Receipt and transmission of AIS information to detect, identify, monitor, and track AIS-equipped vessels and to communicate data to and from shoreside and shipboard AIS equipment.
    2. Network services to enable conveyance of data between shoreside AIS equipment, processing equipment, and command and control systems; and interoperability with such systems.
    3. Data management capabilities, including data processing, fusion with data from other marine and vessel databases, recording, retrieval, warehousing, and analysis.
    4. Interoperability and interface with a variety of command and control systems, including user interfaces for situation display, analysis, and control of the system.

Coverage Requirements. As a contributor to MDA, the proposed NAIS project would be designed to provide coverage for waters subject to the jurisdiction of the United States and out to 2,000 NM. NAIS coverage will include all coastal areas and the following rivers, lakes, and U.S. Territory waters:

- Columbia River from Astoria, Oregon, to Kennewick, Washington
- Sacramento River to Sacramento, California
- San Joaquin River to Stockton, California
- Mississippi River to Baton Rouge, Louisiana
- Western Rivers covered by the Inland Rivers Vessel Movement Center
- Intracoastal Waterway
- Hudson River to Albany, New York
- U.S. Waters of the Great Lakes (including connecting rivers: Detroit, St. Clair, St. Marys)

[8] The baseline is "the line from which maritime zones are measured. The normal baseline for measuring the territorial seas (TS), contiguous zone (CZ), exclusive economic zone (EEZ) and continental shelf is the low-water line along the coast" (NOAA 2005).

- U.S. Waters of the St. Lawrence River
- Guam
- Puerto Rico
- The U.S. Virgin Islands.

Table 1-1 presents the coverage requirements and corresponding receive/transmit messaging requirements of the proposed NAIS project. **Figure 1-1** shows U.S. maritime areas of interest and coverage requirements.

Table 1-1. NAIS Coverage Requirements [1]

Geographic Area	Receive Coverage [2]	Transmit Coverage [3]
Ports or other specified areas	Threshold: 1 minute Objective: 15 seconds	Threshold: 98% Objective: 99%
Inland Navigable Waters and Coastal Waters out to 24 NM	Threshold: 5 minutes Objective: 1 minute	Threshold: 90% Objective: 95%
24 – 50 NM	Threshold: 2 hours Objective: 5 minutes	Threshold: 0 Objective: 66%
50 – 300 NM	Threshold: 2 hours Objective: 1 hour	Threshold: 0 Objective: 33%
300 – 2,000 NM	Threshold: 4 hours Objective: 1 hour	Threshold: 0 Objective: 25%

[1] For Class A vessels carrying "Type 1" AIS mobile equipment (higher-powered AIS equipment).

[2] The required rate of receiving AIS position reports from AIS-equipped vessels.

[3] The probability that a message transmitted from a Nationwide AIS transmitter would be successfully received.

Concept of Operations. The primary purpose of NAIS would be to receive AIS data transmitted from AIS-equipped vessels for the purpose of tracking their movements. The data collected would be disseminated to other systems in support of navigation safety, maritime security, maritime safety, and other missions. A secondary purpose of NAIS would be to employ the additional AIS functionality available through transmission capability. **Figure 1-2** presents a notional depiction of how AIS works and AIS broadcast report contents.

NAIS operational requirements would be achieved when the system is capable of short-range receive-and-transmit and long-range receive coverage. Short-range coverage would be achieved by installing AIS receivers, transmitters, and transceivers on land. Long-range coverage would be achieved through installing AIS equipment on remote platforms such as satellites, offshore oil and gas platforms, and data buoys. The system would be tied together through land-based infrastructure allowing for data networking, data processing and analysis, data storage, and system administration. The system design would consider the likelihood of all potential failures, inherent or causative, natural or man-made, including sabotage and vandalism. NAIS installations would be designed to withstand, and operate in, severe weather and environmental conditions in their respective geographic areas of operation.

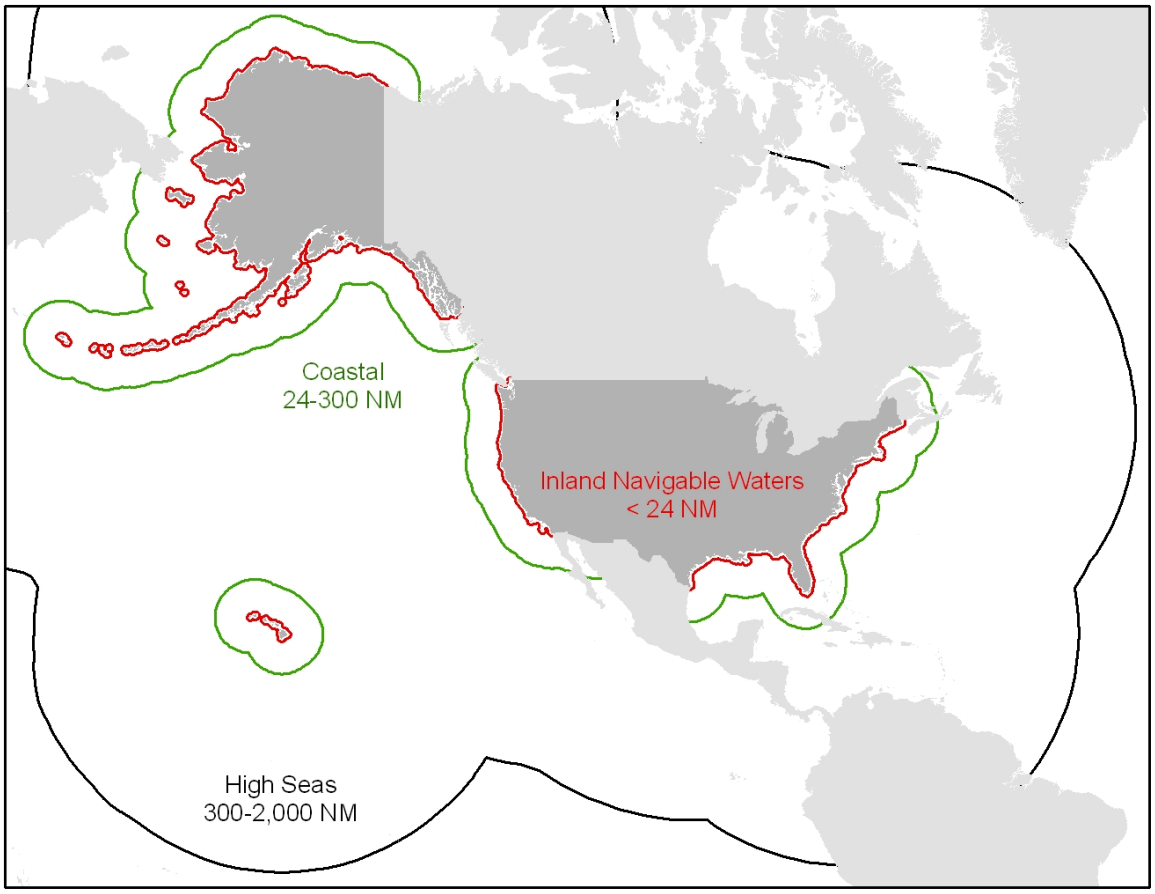


Figure 1-1. U.S. Maritime Areas of Interest and NAIS Coverage Requirements

NAIS data and functionality would be used by USCG, DHS, DOD, and other government agencies' communications, surveillance, and data processing systems in support of their missions; therefore, NAIS would be capable of exporting data and exchanging information in a standard format without interference to the various systems' operations. NAIS data would also be available to state and local government port partners in support of security and safety operations. This information would be invaluable to agencies, such as Customs and Border Protection (CBP), Immigration and Customs Enforcement (ICE), and the Transportation Security Administration (TSA), because it would provide real-time location data on all major cargo and other commercial vessels in the maritime domain.

The primary means of distributing AIS data would be via the sensitive but unclassified common operational picture (COP). The (maritime) COP is a display of relevant maritime information shared by more than one command or organization. The COP provides a shared display of friendly, enemy/suspect, and neutral vessel tracks on a chart, with applicable geographically referenced overlays and data enhancements to facilitate collaborative planning and strategic decisionmaking. However, many external information systems would rely on raw AIS data, so a means of processing and distributing AIS data to meet this need would be required.

In general, the services provided by the proposed NAIS project would be new to USCG operations, although some functions already being performed manually or by other systems would be expanded or

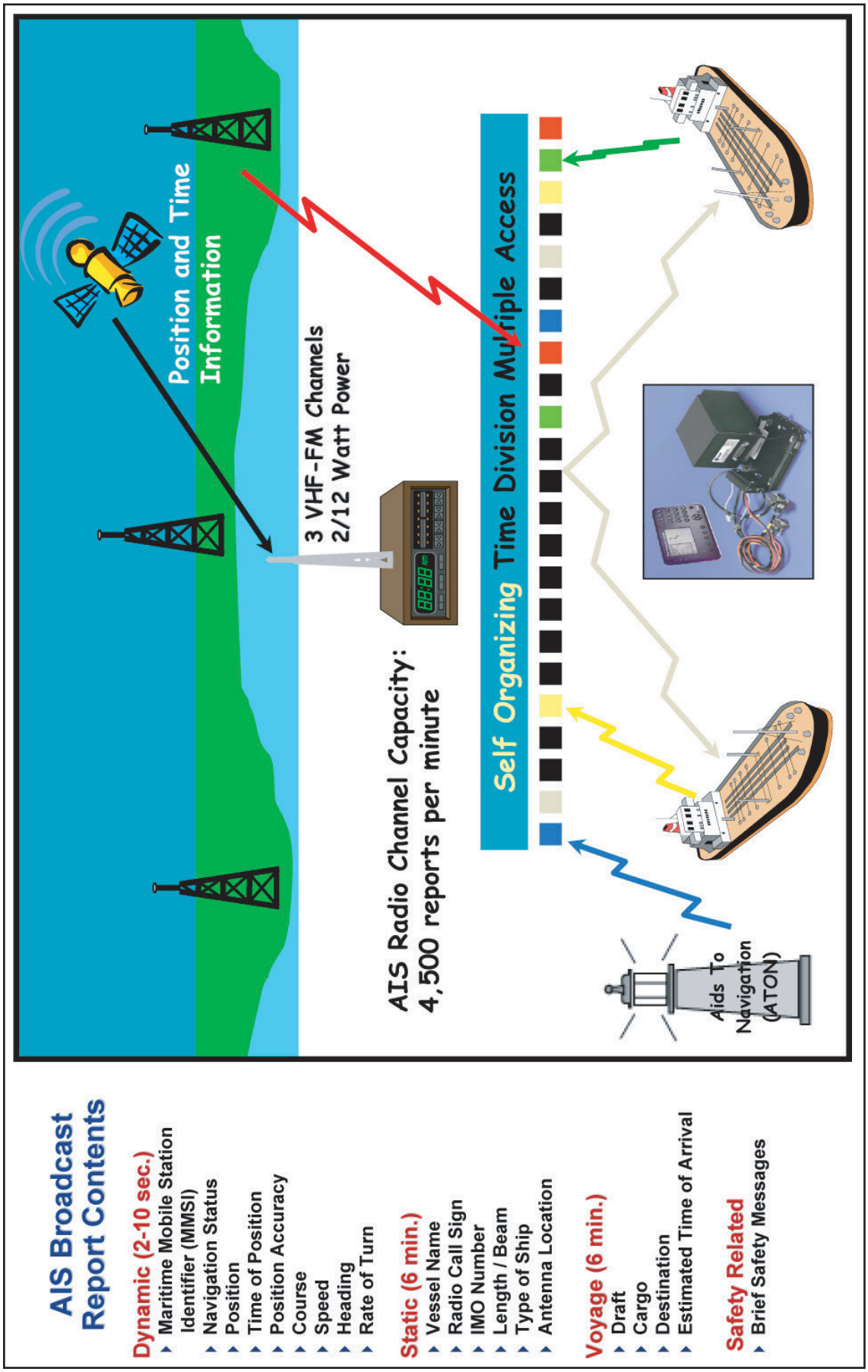


Figure 1-2. How AIS Works and What It Does

automated. Several specific operational concepts are described below to illustrate how NAIS would support USCG and allied agency missions.

- *Sector Command Center Operations*. Sector Commanders would employ the capabilities provided by NAIS to build MDA and conduct Sector operations across the spectrum of USCG missions in their area of responsibility. Sector command centers would receive a direct feed of AIS data and would control AIS functionality (e.g., transmission of text messages, polling) in their area of responsibility.
- *Maritime Safety and Mobility*. NAIS would be used to enhance maritime safety and mobility in support of domestic icebreaking, aids to navigation (AtoN), bridge administration, and vessel traffic management; and by ensuring and managing the proper operation of AIS and the integrity of the AIS very high frequency (VHF) data link (VDL). The SOLAS Convention, Chapter V, Regulation 19 requires AIS to automatically exchange navigational information between ships and competent authorities to, among other things, monitor and track ships and their cargo and enhance maritime safety. AIS would increase situational awareness and assist in optimizing vessel traffic flow by identifying vessels and their status and intentions.
- *Navigation Safety and Mobility.* NAIS would assist in navigation safety by providing vessel tracking and simplifying the exchange of navigation data and additional other pertinent information to assist in reducing the risk of collisions, allisions, and groundings. It would also enhance efficient ship-to-ship exchange of navigation information in areas prone to poor voice communications or "radar shadow" areas by use of AIS repeaters. NAIS would also enhance mobility and voyage planning by providing urgent navigation warnings, AtoN status, and other pertinent navigation information (e.g., waterway closures, critical chart corrections). NAIS would support mobility and facilitate domestic icebreaking operations by providing a universal communication link that provides near real-time ship's operation status (e.g., position, speed, heading, course, draft).
- *AtoN.* NAIS would support AtoN missions through the use of AtoN status messages to automatically provide the AtoN operational status or by providing "virtual AtoN" messages. AIS data would assist in identifying current commercial shipping routes to improve placements of AtoN and improve Waterways Analysis and Management System assessments and other such studies. The AtoN mission would also benefit substantially from the increase in marine information flow from the USCG to AIS-equipped mariners.
- *Vessel Traffic Management.* NAIS would support vessel traffic management by extending VTS coverage areas, thereby providing some vessel traffic management capabilities to Sector Command Centers. It would also support the monitoring of compliance with existing vessel traffic management regulations, such as vessel routing schemes, regulated navigation areas, mandatory ship reporting systems, safety and security zones, transits of high-value assets, management of marine events and regattas, and other such requirements. NAIS would require the long-term retention of AIS data to support strategic vessel traffic management and AtoN activities through provision of historical vessel transit data for use in Port Access Route Studies, Waterways Analysis and Management System assessments, and other such studies or analyses.
- *SAR Operations.* The data that would be collected by the proposed NAIS project could be used for SAR operations. During a vessel in distress event, it is often necessary to coordinate a response with private vessels that are in the vicinity of the incident. With the use of AIS data, SAR coordinators could more easily identify, communicate, plan, and work with other responding vessels to facilitate a SAR response. AIS-equipped vessels in distress in an area of AIS coverage would be easier to locate and identify through the capabilities provided by the proposed NAIS project. The proposed NAIS project support for SAR operations would be provided through interoperability with command and control systems used for SAR.

- *Maritime Incident Investigation.* NAIS data would be used to assist in the investigation of maritime incidents (such as collisions, grounding, criminal acts, and environmental accidents) by providing a detailed record of events. This could include previous transits over a period of years of the vessel or vessels involved in the incident. In the case of such investigation, it would be a routine function for any authorized personnel to query the NAIS database to analyze archived vessel data. The data would be accessed from and analyzed on a variety of systems and software; therefore a standard format for the archived data would be required. Although not solely related to investigation of maritime incidents, historical AIS data would be subject to Freedom of Information Act (FOIA) requests and the NAIS system would be able to support responses to such requests in accordance with FOIA requirements.
- *Maritime Security.* AIS information would be used for all maritime security purposes including enforcement of security zones, protection of critical assets and infrastructure, and other risk-reduction measures. NAIS capability would be used to monitor the normal movement of AIS-equipped vessel traffic to better identify anomalies and to monitor the location and movement of vessels of particular interest, including those which could present a threat as well as high-value vessels that might be threatened. The capability provided would support coordination of enforcement efforts.
- *Support to Other Agencies.* NAIS information would be shared in support of the missions of other Federal, state, and local agencies. This sharing would support such activities as customs clearance and local law enforcement. The primary method for sharing AIS data with other agencies would be via the sensitive but unclassified COP. Some external entities could require access to basic AIS data. NAIS would include a means to disseminate AIS data in support of other agencies' missions in a standard format and with basic processing capabilities.

1.2.6 Summary

Table 1-2 summarizes the functional capability that each authority requires. As indicated, only by implementing all functional areas listed do the requirements of all authorities get satisfactorily met.

Table 1-2. Satisfaction of Needs by NAIS Operational Function

Functional Requirement	IMO	MTSA	Other Congressional Actions	Presidential Directive	USCG Mission Requirements
Receipt and Transmission of AIS Information	●	●	●	●	●
Network Service	●	●	●	●	●
Data Management		●		●	●
Interoperability	●	●		●	●

1.3 Scope of this PEIS

This PEIS examines the direct, indirect, and cumulative environmental impacts associated with the proposed implementation of the NAIS project. This document has been prepared to comply with the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ)

regulations for implementing NEPA, and DHS and USCG policy[9]. Information on the formulation of alternatives is presented in **Section 2.2**. Alternative systems for the collection, integration, and analysis of information are discussed. Implementation alternatives, alternatives for the installation of equipment, and the No Action Alternative are also discussed.

The proposed implementation of the NAIS project involves decisions on how to implement and meet operational requirements for nationwide coverage, full-AIS functionality, and interoperability in order to enhance USCG missions and meet the requirements of MTSA. In developing and implementing the proposed NAIS project, the USCG would balance the needs of maritime commerce, national security, maritime safety, and environmental protection. The decision will take into account maritime operational and environmental considerations, public input during the PEIS process, and the results of PEIS analysis.

1.4 National Environmental Policy Act

1.4.1 Background

NEPA is a Federal statute requiring the identification and analysis of potential environmental impacts of proposed Federal actions before those actions are taken. For each proposed major Federal action significantly affecting the quality of the human environment, NEPA requires the Federal agency to issue a "detailed statement" on the environmental impacts prior to deciding whether and how to implement a proposed action. The USCG has determined that implementation of the NAIS project is a proposed Federal action requiring preparation of a PEIS. This PEIS fulfills USCG requirements under NEPA to consider potential impacts of the action and assists in the proposed NAIS project implementation decisionmaking process.

The intent of NEPA is to protect, restore, or enhance the environment through well-informed Federal decisions. NEPA requirements help ensure that environmental information is made available to the public during the decisionmaking process and prior to implementing proposed actions. The premise of NEPA is that the quality of Federal decisions will be enhanced when proponents provide information to the public and involve the public in the planning process.

The CEQ was established under NEPA to implement and oversee Federal policy in this process. CEQ regulations mandate that all Federal agencies use a systematic interdisciplinary approach to environmental planning and the evaluation of potential environmental impacts of proposed actions. Whenever Federal agencies propose major actions, such as the one addressed in the PEIS, CEQ's procedural regulations direct the Federal agency to prepare an Environmental Impact Statement (EIS).

1.4.2 Programmatic EIS Process

A programmatic environmental document, such as this PEIS, is prepared when an agency is proposing to carry out a broad action, program, or policy. The USCG has determined that implementation of the proposed NAIS project is a broad action with national effects. Consistent with CEQ regulations[10], the USCG prepared this PEIS at the program development stage. The purpose of this PEIS is to provide general environmental information on the Proposed Action and alternatives to USCG decisionmakers, expert agencies, and the interested and affected public, and to determine and disclose the significance of

[9] NEPA, P.L. 91-190, 42 U.S.C. 4321–4347, as amended; CEQ Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, 40 CFR Parts 1500–1508; DHS Management Directive 5100.1, *Environmental Program Planning* (MD 5100.1); and Commandant Instruction (COMDTINST) M16475.1D, *National Environmental Policy Act Implementing Procedures and Policy for Considering Environmental Impacts*.

[10] 40 CFR 1502.4(b)

the environmental impacts associated with the proposed implementation of the NAIS project. The programmatic or systemwide approach creates a comprehensive, global analytical framework that supports subsequent analyses of specific actions at site-specific locations within the overall system. Programmatic analysis can save resources by providing NEPA coverage for the entire program, allowing subsequent NEPA analyses to be more narrowly focused on specific activities at specific locations. Site-specific impact assessment of the NAIS is not practicable at the program development level because specific site alternatives are unknown at this time.

1.4.3 Tiering and Follow-on Environmental Documents

Tiering refers to the process of addressing a broad, general program, policy, or proposal in an initial EIS, and analyzing in a subsequent document a narrower site-specific proposal related to the initial program. The concept of tiering was promulgated in the CEQ regulations. This PEIS will enable the USCG to tier additional site-specific environmental analysis under NEPA as the USCG proceeds with the identification of options for installation of towers, equipment, or related NAIS infrastructure (see **Figure 1-3**). The USCG would continue to involve the public in those later site-specific actions that will flow out of this PEIS and that are connected to the overall NAIS project. This PEIS is a first-tier environmental review; subsequent tiered environmental analysis and documentation (such as a Categorical Exclusion [CE] or Environmental Assessment [EA]) might be prepared for future individual actions to address potential site-specific impacts.

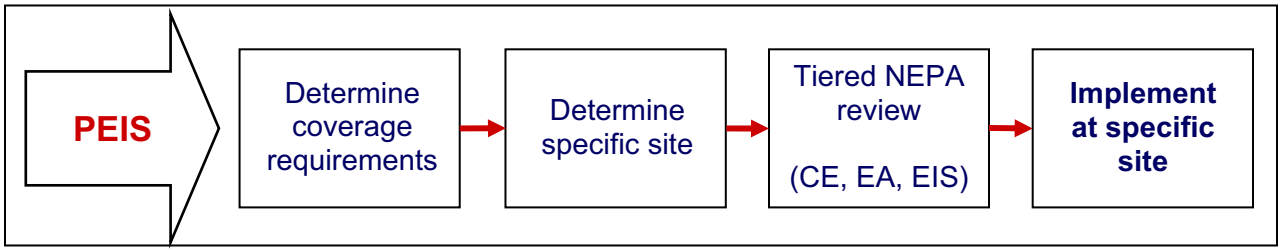


Figure 1-3. PEIS and Follow-on NEPA Documentation Flow Diagram

1.5 Public Involvement Process

The USCG invites public participation in the NEPA process. Public participation opportunities are guided by CEQ regulations and policies of the USCG. A flowchart illustrating the public involvement process for this PEIS is shown on the next page. Consideration of the interests of potential stakeholders promotes open communication and enables better decisionmaking. All agencies, organizations, and individuals having an interest in the Proposed Action are urged to participate in the decisionmaking process. A Notice of Intent (NOI) to prepare a PEIS was published in the *Federal Register* on November 23, 2005. The publication of the NOI initiated a 30-day public scoping period. The USCG also mailed an "Interested Party" letter to at least 230 potentially interested parties, including Federal, state, and local agencies, elected officials, stakeholders, and individuals. The letters included a copy of the NOI.

An informational open house and public meeting concerning the Proposed Action and development of this PEIS was held at the USCG Headquarters Building in Washington, D.C., on December 22, 2005. Comments received at the meeting were taken into consideration in development of this PEIS.

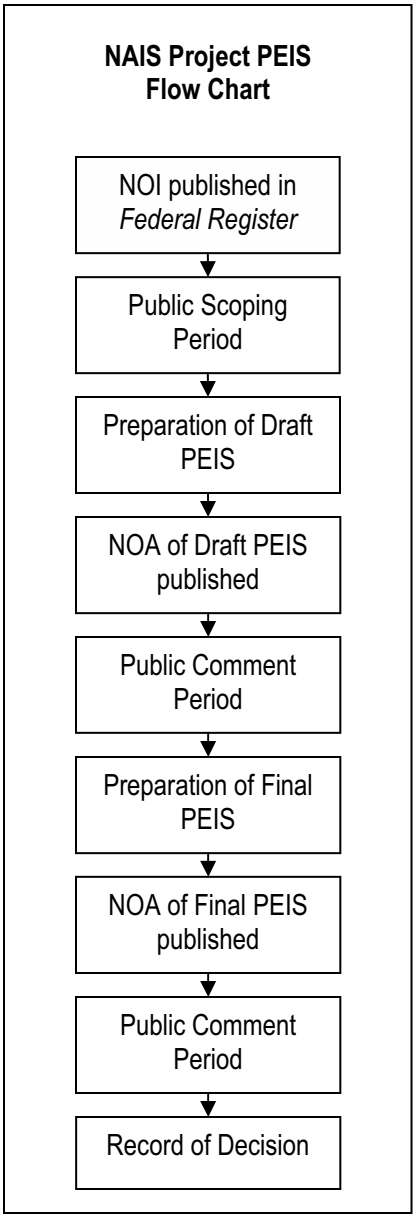
In total, 16 comments were received as a result of the public scoping process; 15 were received from various Federal and state agencies and 1 was received from a stakeholder association. Agency comments mainly fell into one of three categories: (1) coastal zone management coordination, (2) concerns over

potential effects on historic or cultural resources, and (3) and concerns over the potential impacts on migratory birds from construction of shore-based radio frequency (RF) sites (towers). One verbal comment was received at the public scoping meeting on December 22, 2005, from the Passenger Vessel Association. The comment, which is recorded in the official transcript of the public scoping meeting, raises this stakeholder group's concerns about AIS carriage requirements and rulemaking and their potential economic impact on the group's members.

Concerns regarding AIS carriage requirements and rulemakings are not within the scope of this programmatic PEIS. However, similar concerns might be directed to the AIS rulemaking docket. The three categories of comments discussed above are addressed in the respective impact topic categories in **Sections 3 and 4** of this PEIS.

A Notice of Availability (NOA) of the Draft PEIS was published in the *Federal Register* on June 30, 2006. The USCG made the Draft PEIS available to the public for a 45-day comment period and held a public meeting on the Draft PEIS on August 9, 2006. All comments received were taken into consideration in development of this Final PEIS (see **Appendix B**). Upon completion, the USCG will make the Final PEIS available to the public for 30 days. At the conclusion of the 30-day period, the USCG will issue a Record of Decision (ROD), which will be published in the *Federal Register*.

Documents related to the Proposed Action are available in a public docket accessible at <*http://dms.dot.gov*> under docket number USCG-2005-22837. Documents can also be viewed at the Document Management Facility, U.S. Department of Transportation, Room PL-401, 400 Seventh Street SW, Washington, D.C., between 9 a.m. and 5 p.m. Monday through Friday, except Federal holidays. Throughout the PEIS process, the public can obtain information on the status of the Proposed Action and the PEIS through the NAIS Project Support Team at 202-475-3329 or via email to *nais@comdt.uscg.mil*, and via the World Wide Web at *http://www.uscg.mil/hq/g-a/Ais/*.



A copy of the NOI, Interested Party letter, and mailing list are provided in **Appendix B**.

1.6 Other Applicable Environmental Laws, Regulations, and Executive Orders

A decision on whether to proceed with the Proposed Action will take into consideration the requirements of numerous environmental laws, implementing regulations, and Executive Orders (EOs). These authorities establish standards and provide guidance on environmental and natural resources management and planning. The laws, regulations, and EOs that apply to the project are applicable in various sections throughout this PEIS when relevant to particular environmental resources and conditions. These authorities are described in **Appendix C** and their full text is available on the U.S. Government's Official Web Portal at <*http://www.firstgov.gov/*>.

1.7 Organization of the PEIS

The principal sections of this PEIS are as follows:

Section 1: Purpose of and Need for the Proposed Action. This section briefly identifies the purpose and need for the Proposed Action, defines the project scope, discusses NEPA and the public involvement process, and identifies the organization of the document.

Section 2: Proposed Action and Alternatives. This section describes the Proposed Action and the alternatives considered, identifies the preferred alternative, and presents a comparison of the environmental effects of the alternatives.

Section 3: Affected Environment. This section describes the environmental settings in the areas in which the Proposed Action and alternatives would occur.

Section 4: Environmental Consequences. This section identifies the potential environmental impacts of the Proposed Action and alternatives on each resource area.

Section 5: Cumulative and Other Impacts. This section discusses the potential cumulative impacts that could result from the impacts of the Proposed Action and alternatives when combined with past, other present, and reasonably foreseeable future actions.

Sections 6 and 7. These sections provide a list of preparers and references used in preparing this document.

Appendices. **Appendix A** includes AIS carriage requirements. **Appendix B** contains material related to the public involvement efforts for this PEIS, including scoping materials and public comments on the Draft PEIS. **Appendix C** includes a list of those regulations, laws, and EOs that might reasonably be expected to apply to the Proposed Action. **Appendix D** includes a glossary of terms applicable to the Proposed Action. **Appendix E** includes air quality emissions calculations.

2. Proposed Action and Alternatives

2.1 Introduction

In compliance with the MTSA, emerging homeland security requirements, the need to improve vessel traffic management and navigational safety, and the goals to improve maritime safety, security, and mobility, the USCG is proposing to implement the NAIS project in support of MDA. The information provided by the NAIS project would support most of the nation's maritime interests, from the safety of vessels and ports through collision avoidance, to the safety of the nation through detection, management, and classification of vessels out to 2,000 NM.

This section identifies the alternatives considered by the USCG to achieve the purpose of and need for the Proposed Action. There are alternative systems for the collection, integration, and analysis of information; implementation alternative (i.e., the platforms upon which NAIS equipment would be installed or carried); and alternatives for installation of shore-based RF sites (i.e., use of existing facilities, construction of new facilities, or reliance on a combination of these two approaches).

2.2 Alternatives

2.2.1 No Action Alternative

The No Action Alternative is the continuation of existing conditions without implementation of the Proposed Action. Under the No Action Alternative, the USCG would not implement the NAIS project. The No Action Alternative would not meet the requirements of MTSA, would not improve MDA, and would not meet Congressional or Presidential direction. Although the No Action Alternative would not meet the Purpose and Need, analysis of the No Action Alternative is a requirement of CEQ's regulations for implementing NEPA and serves as a benchmark against which proposed Federal actions can be evaluated.

Under the No Action Alternative the USCG would not develop or implement the NAIS project and would not expand beyond current VTS and capability to collect, integrate, and analyze information concerning vessels operating on or bound for waters subject to the jurisdiction of the United States. The USCG would continue to have some AIS capability only in select VTS ports. Under this alternative, without access to the substantial amount of easily collected information available through implementation of the Proposed Action, the USCG cannot achieve MDA. Potential benefits to USCG missions, particularly maritime security, marine safety, maritime mobility, and SAR, would not be realized under this alternative.

2.2.2 Non AIS-Based System Alternatives

Traditionally, vessel tracking at the USCG VTS has been accomplished by a vessel-movement reporting system, which relies upon the user to provide identity and position information via onerous and burdensome voice reporting at predesignated points. The information provided is then corroborated by VTS personnel using their own eyes, cameras, or radar. The USCG has sought ways to increase the reliability, frequency, and accuracy of these reports to better accomplish their vessel traffic management and safety duties.

From the advent of digital electronic communication protocols in the 1990s emerged an alternative to voice reporting. Digital Selective Calling (DSC), used worldwide in the early 1990s (at VTS Valdez since 1994), demonstrated the potential for digital communication and highlighted the need for a more

robust, agile, continuous, and autonomous, digital communication system that would be interoperable worldwide; from this arose the universal AIS that is known today. Since 2002, USCG VTS have availed themselves of this new technology to do their job and, likewise, mariners have been spared the burden of voice reporting within the VTS. The value of AIS, as demonstrated through VTS use of this technology, coupled with a mandate for more mariners to use AIS, demands the development and implementation of the NAIS project to support MDA.

A system of vessel identification based on manual call-in would involve, as described above, the physical effort of the vessel's operator or crew to originate a voice report or initiate a data transmission. Such a system was considered but eliminated from detailed analysis in this PEIS. Manual call-in procedures could encompass reporting of a wide variety of information, some of which could be tailored to specific circumstances that might exist at the time of the call (e.g., current weather conditions or sea state). However, manual call-in can be prone to human error through reporting of inaccurate or inconsistent information. The frequency of reporting in a manual call-in system can be severely reduced due to other operational demands on the operator or crew.

An example of another non-AIS-based reporting system considered but eliminated from detailed analysis in this PEIS is the Vessel Monitoring System (VMS). VMS is a system employed by the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) to monitor and enforce compliance with NMFS requirements. VMS relies upon satellite communications to monitor the movements of and collect data from fishing vessels meeting specific criteria, such as vessels participating in a specific fishery. Information such as vessel name, catch data, and location are collected and logged by NMFS and used for fisheries enforcement activities. Information transmitted by the VMS can be reviewed to determine if a vessel is allowed to fish in and how long it can stay in a particular location. VMS does not enable ship-to-ship or shore-to-ship information flow, though recent developments have enabled some two-way communications. Unlike AIS, which would be a nonproprietary system, VMS is tied to proprietary software or communications services.

Another example of a non-AIS-based reporting system considered but eliminated from detailed analysis in this PEIS is the Global Maritime Distress and Safety System (GMDSS). GMDSS is an internationally agreed set of safety procedures, types of equipment, and global communication system (provided through a system of interlinked satellites) enabling vessels in distress to transmit distress signals to nearby coast stations and vessels. GMDSS provides a positioning system combined with emergency communications. Personnel aboard a suitably equipped vessel can push a button on the vessel's console and its position and other data are automatically transmitted and displayed on equipment in emergency centers, making it easier to locate and rescue the vessel.

The USCG has found the VMS and GMDSS systems to be of limited use because the data they can collect are of insufficient detail to serve USCG needs. The USCG has determined that non-AIS-based systems, such as those discussed above, have common limitations including limited messaging capabilities, insufficient report rates, limits of one-way communications, they are closed systems, they are not autonomous, and additional communication costs limit their effectiveness. These factors render the non-AIS-based systems insufficient for meeting the USCG's operational requirements and purpose and need for the Proposed Action. In addition to VMS, GMDSS, and manual call-in, other examples of system alternatives considered by the USCG include various technologies for vessel tracking such as radar systems, acoustic systems, manual visual systems, and electronic emissions tracking systems. However, none of these systems can consistently identify and track vessels and are not feasible for meeting the purpose of and need for the Proposed Action. Accordingly, the USCG has eliminated all systems but the AIS-based NAIS from further consideration in this PEIS.

2.2.3 Proposed Action

2.2.3.1 NAIS

AIS is an international standard for ship-to-ship, ship-to-shore, and shore-to-ship communication of information, including vessel identity, position, speed, course, destination, and other data of critical interest for navigational safety and maritime security. AIS equipment is required domestically and internationally aboard most commercial vessels. AIS shipboard equipment consists of a transceiver that continually transmits and receives vessel navigational information (e.g., position, course, speed) over very high frequency-frequency modulation (VHF-FM) maritime frequencies. AIS is an "open system" which allows vessels operating in proximity to each other to automatically share AIS-related information and create a virtual network. Shore stations can also join these virtual networks, and can receive shipboard AIS signals, perform network and frequency management, and send additional broadcast or individual informational messages to AIS-equipped vessels.

2.2.3.2 NAIS Implementation Alternatives

The technical and operational requirements for NAIS require the system to be operational in both inland navigable waters and the open ocean out to 2,000 NM offshore. No single implementation alternative could meet the technical and operational requirements of this large and geographically variable area. As a result, the USCG determined that a combination of implementation alternatives would be needed to meet the technical and operational requirements. This section discusses the practicable and reasonable implementation alternatives that can be employed to achieve full NAIS project coverage and other technical requirements. In addition, implementation alternatives that were identified and evaluated for use as part of implementing NAIS, but were found to be impractical or technically infeasible, are also discussed.

NAIS Short-Range Coverage – Shore-Based RF Sites

Shore-based RF sites were the only alternative found by the USCG to be viable for achieving short-range NAIS coverage. Short-range NAIS coverage includes inland navigable waters as defined in **Section 1.2.5**, and out to 50 NM. Shore-based RF sites would consist of AIS equipment mounted on towers, buildings, bridges, or other structures. The USCG has not determined the precise locations, numbers, or designs of the shore-based RF sites. For the purpose of this PEIS, the USCG assumed that AIS equipment would need to be installed in approximately 450 locations to meet the technical and operational requirements of NAIS.

Although some shore-based RF sites could be located on existing buildings, bridges, and other structures, it is expected that the majority would be on tower structures. A typical RF tower for the NAIS would be approximately 150 to 200 feet tall. The maximum footprint for a typical NAIS RF tower would be approximately 80 feet by 80 feet. Typical equipment at a tower site would include the tower structure, a small building within the footprint to house electronic equipment, and a small generator. The building would be climate-controlled to protect AIS-related electronic equipment from the elements. Shore-based RF sites would require electric utility service and communications lines for routing AIS signals and data.

Should the Proposed Action be implemented, the USCG would conduct site-specific environmental analysis concomitant with project implementation, once specific sites become known. The following means for establishing shore-based antenna sites (e.g., towers) would be evaluated in future site-specific NEPA documentation that is tiered from this PEIS: use of existing or currently proposed government sites, lease of commercial sites, and construction of new sites.

NAIS Long-Range Coverage – Satellites

For long-range coverage, satellite services could possibly be leased from commercial satellite providers or the government. The USCG is currently assessing technology development to support this capability. The analysis of this alternative assumes that the initial technology development would yield a deployable solution. The satellite system is envisioned to consist of a number of low earth orbit (LEO) satellites to provide the needed long-range maritime tracking of vessels (i.e., coverage requirement to receive AIS signals with a minimum 4-hour reporting rate out to 2,000 NM offshore). Satellites cannot be used for 100 percent of NAIS coverage requirements (i.e., both short- and long-range) because they are limited in their capability to distinguish AIS signals in nearshore, high vessel traffic environments. As such, satellite usage for nearshore coverage would be unreliable and would not meet the purpose and need of the Proposed Action.

NAIS Long-Range Coverage – Offshore Platforms and Data Buoys

NAIS long-range coverage could be provided, in part, by using existing offshore platform and data buoy capabilities to provide additional coverage availability. The USCG is currently evaluating the effectiveness of deploying USCG-owned AIS base stations and AIS receivers on various offshore Gulf of Mexico oil and gas platforms and NOAA data buoys. There are four existing AIS-capable offshore platforms under evaluation by the USCG, with one more prototype planned for installation in Fiscal Year 2006.

Potential offshore platforms of interest include existing active U.S. Department of the Interior (DOI) Minerals Management Service (MMS)-regulated oil and gas infrastructures in the Gulf of Mexico, Pacific, and Alaska regions. Installing AIS base-station hardware on space leased on these offshore oil and gas platforms could help ensure required reliability is achieved in those specific areas where vessel traffic is denser with higher messaging activity.

Vessel messages and reports received by an offshore platform or buoy would be transmitted to the NAIS network backbone by commercial methods (i.e., non-AIS satellite data transport). Because DOI MMS-regulated offshore platforms exist only in a few regions, redundant coverage in the Atlantic Coast region would be provided by the use of data buoys. In addition, to provide redundant support where offshore platform coverage might not be available, AIS receiver hardware would be installed on various data buoys throughout the remaining coverage areas of interest.

This alternative would require using approximately 30 existing offshore platforms and 70 existing data buoys to implement the NAIS long-range coverage requirements. The actual number and location of offshore platforms and data buoys needed to meet coverage requirements would be determined based on availability and effectiveness during final system design and configuration.

Alternatives Considered but Dismissed

In addition to the various implementation alternatives described above, the NAIS project considered other options for providing long-range coverage. These alternatives were evaluated based on a screening process that considered reliability and continuity of coverage, feasibility, and cost. The following alternatives, described below, did not meet the screening criteria and were eliminated from further consideration at this time as a coverage mechanism to implement the Proposed Action.

- *Unmanned Aerial Vehicles (UAV).* A UAV is a small unmanned aircraft configured for a specific purpose. UAV services would be leased to meet long-range coverage requirements. Vessel messages and reports received by the UAVs would be transmitted to the NAIS network backbone

using a third-party or contractor-owned network. The network would transfer data from the UAV to the NAIS system when the UAV was close enough to a land-based receiver station to successfully transmit data. This implementation alternative would allow the USCG to use the UAVs that might be deployed by the USCG Deepwater Project. Northrop Grumman's Global Hawk Tier II+ High-Altitude Long-Endurance UAV was selected as a potential technology to meet this need because its capabilities, including endurance, would mean that fewer UAVs would be required to achieve NAIS requirements. Based on preliminary analysis, a fleet of 94 UAVs would be required to meet NAIS long-range technical and operational requirements. This coverage mechanism would require support from commercial satellites and obstacles could be faced in obtaining Federal Aviation Administration approval for flying UAVs in domestic airspace. This alternative was eliminated from further detailed study because of the high operational cost and because of the inability to use the UAVs during bad weather or under certain climatic conditions.

- *Aerostat.* An aerostat is a lighter-than-air craft, such as a balloon or airship. This coverage mechanism was found to have high initial cost estimates because comprehensive coverage does not exist around the United States and the USCG would need to develop its own fleet of aerostats for this method to be effective. In addition, aerostats operate at low altitude (as opposed to high-altitude UAVs) and thus can be affected by severe weather. Finally, the technology for these vessels has not been fully developed and would require significant investments of time and research funds to fully evaluate its applicability to NAIS. As a result, this coverage mechanism was eliminated from further detailed study in this PEIS.
- *Radiosonde.* A radiosonde is a small device used to measure conditions high in the atmosphere such as temperature, wind speed and direction, air pressure, and humidity while suspended from a weather balloon. The device has a radio transmitter and sends data back to ground recorders. This coverage mechanism was not evaluated because, similar to the aerostat, the implementation would be costly, radiosondes are affected by severe weather, and the technology has not been fully developed. Therefore, this coverage mechanism was eliminated from further detailed study in this PEIS.
- *Commercial Air Carriers.* This coverage mechanism was found to be undesireable because of high initial cost estimates and technical issues. To account for planes being switched to different flight routes, a commercial air carrier's entire fleet would need to be outfitted with AIS, even if only a small number of planes would be required to achieve continual coverage. In addition, flight routes are based on the shortest path between locations, not on providing equal coverage over the globe. Coverage gaps would occur in spots not included in the commercial air carrier's set of flight routes. Therefore, this coverage mechanism was eliminated from further detailed study in this PEIS.
- *Commercial Maritime and National Assets.* The use of commercial maritime vessels already carrying AIS mobile stations could provide additional storage and communication links through satellites to relay AIS data received by those vessels while operating in the open ocean. This coverage mechanism was eliminated from detailed evaluation because of high initial cost estimates and technical issues. To account for ships being switched to different shipping routes, a commercial maritime carrier's entire fleet would need to be outfitted with AIS, even if only a small number of ships would be required to achieve continual coverage. In addition, coverage gaps would occur in spots not included in the commercial maritime carrier's set of shipping routes. In addition, the NAIS project could not direct national assets to patrol specific areas only to receive AIS data. Therefore, this alternative was eliminated from further detailed study in this PEIS.

Evaluation and Selection of Implementation Alternatives

A combination of shore-based RF sites, satellites, and offshore platforms and data buoys would provide the necessary coverage to enable an NAIS to meet the purpose of and need for the Proposed Action. As discussed in the preceding sections, these locations would ensure comprehensive coverage of NAIS communications. Accordingly, this array of means to implement the AIS technology is evaluated in detail in this PEIS.

2.2.3.3 NAIS Siting Alternatives

The USCG would achieve the selected implementation alternative through use of a combination of shore-based RF sites, satellites, and offshore platforms and data buoys. The USCG would be faced with the choice of installing AIS equipment at new sites ("new build"); installing AIS equipment adjacent to existing communications equipment ("collocation"); or, programwide, using a combination of the collocation and new build sites for shore-based RF sites.

It is expected that implementation of the shore-based RF sites would consist of using some combination of collocations and new tower builds. Although it can be assumed that AIS equipment would be collocated at a minimum of 100 USCG sites, the specific ratio of collocations to new tower builds cannot be determined with any certainty at this time. Other tower-based communications programs being implemented by the USCG have experienced significant changes in the ratios of the originally proposed collocations to new tower builds because of the lack of availability of suitable sites in the required locations, lack of tower space at the height required to achieve coverage goals, and other technical issues. In some cases, the variation between proposed and actual implementation options has required the USCG to re-evaluate the potential effects of these other options in supplemental NEPA documentation that reflects the current implementation strategies.

For the proposed implementation of the NAIS project, the USCG has chosen to bound the programmatic environmental analysis of the shore-based RF sites by evaluating three potential NAIS siting alternatives: **All New Tower Builds**, **Combination of Collocations and New Tower Builds**, and **All Collocations**. The USCG recognizes that budgetary constraints likely will prevent the implementation of the NAIS project with all new tower builds. The USCG also recognizes, based on recent experience with other tower-based programs, that implementing shore-based RF sites using all collocations is also not likely to occur. The goal of the analysis presented in this PEIS is to evaluate the complete range of impacts that could occur using the three potential NAIS siting alternatives. This approach allows presentation of not only the highest and lowest level of impacts that would be expected, but also provides a mid-range of impacts that would likely be more representative of what would actually occur. By presenting the impact analysis in this way, if the implementation ratio (i.e., collocations vs. new tower builds) for the NAIS project moves away from that selected for the mid-range analysis, new programmatic NEPA documentation would not be required. This approach assumes that the overall impacts associated with the actual implementation ratio would fall within the range of the impacts identified in this PEIS.

All New Tower Builds

The USCG estimates that approximately 450 sites would be required to achieve complete short-range coverage of NAIS communications. Building 450 new sites to support all required NAIS equipment installations could allow the siting process to provide optimal coverage because exact locations of new towers could be adjusted to meet coverage requirements. This "all new tower build" siting alternative would necessarily lead to increased costs for land acquisition and construction and would likely involve more extensive environmental impacts. This alternative is evaluated in detail in this PEIS.

Combination of Collocations and New Tower Builds

Between the extremes of all new tower builds and all collocations is the alternative of using a combination of collocation and new builds. At any particular location, existing conditions (e.g., the availability of adequate infrastructure) would dictate use of a collocation or new build approach. For the purposes of analyzing this alternative, the USCG assumes that approximately 90 percent of the required shore-based RF sites would be collocated, or shared with towers and infrastructure that already exist. Therefore, of the required 450 total shore-based RF sites, this alternative assumes that approximately 400 would be collocated with existing towers and 50 would be new tower builds. This alternative is evaluated in detail in this PEIS.

The NAIS project would establish a priority system to give an order of preference for siting shore-based RF sites. First priority would be to collocate NAIS shore-based RF sites on existing towers or infrastructure to maximize the existing infrastructure and minimize cost and environmental impacts. Efforts are currently underway to evaluate the compatibility of NAIS project requirements with other existing tower programs, such as Rescue 21 and USCG's Ports and Waterways Safety System (PAWSS). If collocation on existing towers or structures is not possible in certain coverage areas, the USCG has established a process for selecting sites where new towers or similar infrastructure to support NAIS equipment could be constructed. The descending order of priority for selecting sites that fall into this category would be

1. USCG-owned and -operated sites
2. Other federally owned and operated sites
3. State-owned sites
4. Privately owned sites

All Collocations

The opposite of building 450 new shore-based RF sites would be to collocate them. The USCG is considering collocating all 450 proposed shore-based RF sites with other tower sites and equipment already in existence. Due to the potential of collocating all 450 proposed shore-based RF sites, this PEIS analyzes the "all collocation" siting alternative in detail.

2.2.4 Summary of Alternatives Analysis

Table 2-1 identifies the alternatives that were presented in **Sections 2.2.1 through 2.2.3**. Alternatives considered and rejected because they do not meet the system requirements are underlined. NAIS implementation alternatives that are not considered viable at this time are shown in italics. Alternatives that are analyzed in this PEIS are shown highlighted in boldface type. **Section 4.1** provides further details on the alternatives analyzed in this PEIS and the assumptions used for the analysis.

Table 2-1. Summary of Alternatives Analysis

<table>
<tr><td rowspan="11">No Action Alternative
(Section 2.2.1)</td><td rowspan="11">Non AIS-Based System Alternatives
(Section 2.2.2)</td><td colspan="2">Proposed Action
(Section 2.2.3)</td></tr>
<tr><td>NAIS Implementation Alternatives
(Section 2.2.3.2)</td><td>NAIS Siting Alternatives
(Section 2.2.3.3)</td></tr>
<tr><td>Unmanned aerial vehicles</td><td></td></tr>
<tr><td>Surveillance aircraft</td><td></td></tr>
<tr><td>Aerostat</td><td></td></tr>
<tr><td>Radiosonde</td><td></td></tr>
<tr><td>Commercial air carriers</td><td></td></tr>
<tr><td>Commercial maritime</td><td></td></tr>
<tr><td>Satellites</td><td></td></tr>
<tr><td>Offshore platforms and data buoys</td><td></td></tr>
<tr><td>Shore-based RF sites →</td><td>All new tower builds</td></tr>
<tr><td></td><td>Combination of collocations and new tower builds</td></tr>
<tr><td></td><td>All collocations</td></tr>
</table>

2.3 Identification of the Preferred Alternative

CEQ's implementing regulation 40 Code of Federal Regulations (CFR) 1502.14(c) instructs EIS preparers to "Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference." The USCG has identified the Proposed Action to implement the NAIS project using a combination of the following coverage mechanisms as the Preferred Alternative:

1. Establishing a combination of collocated and newly built shore-based RF sites for short-range AIS coverage.
2. Leasing commercial satellite services for long-range AIS coverage.
3. Installing AIS equipment on existing offshore oil and gas platforms and data buoys for supplemental long-range coverage.

Implementation of the Preferred Alternative, as described above, would fully meet the requirements described in **Section 1.2.5**. **Figure 2-1** presents a conceptual overview of the Proposed Action. Implementation of the Preferred Alternative would also provide the benefit of redundancy in heavy traffic shipping areas and would not be as subject to the effects of climate and weather conditions as are inherent with other potential alternatives, such as use of UAVs and surveillance aircraft. Finally, the Preferred Alternative could be implemented at a reasonable cost. Therefore, the proposed utilization of shore-based RF sites, satellites, and offshore platforms and data buoys would best position the USCG to implement the NAIS project in support of DHS MDA initiatives.

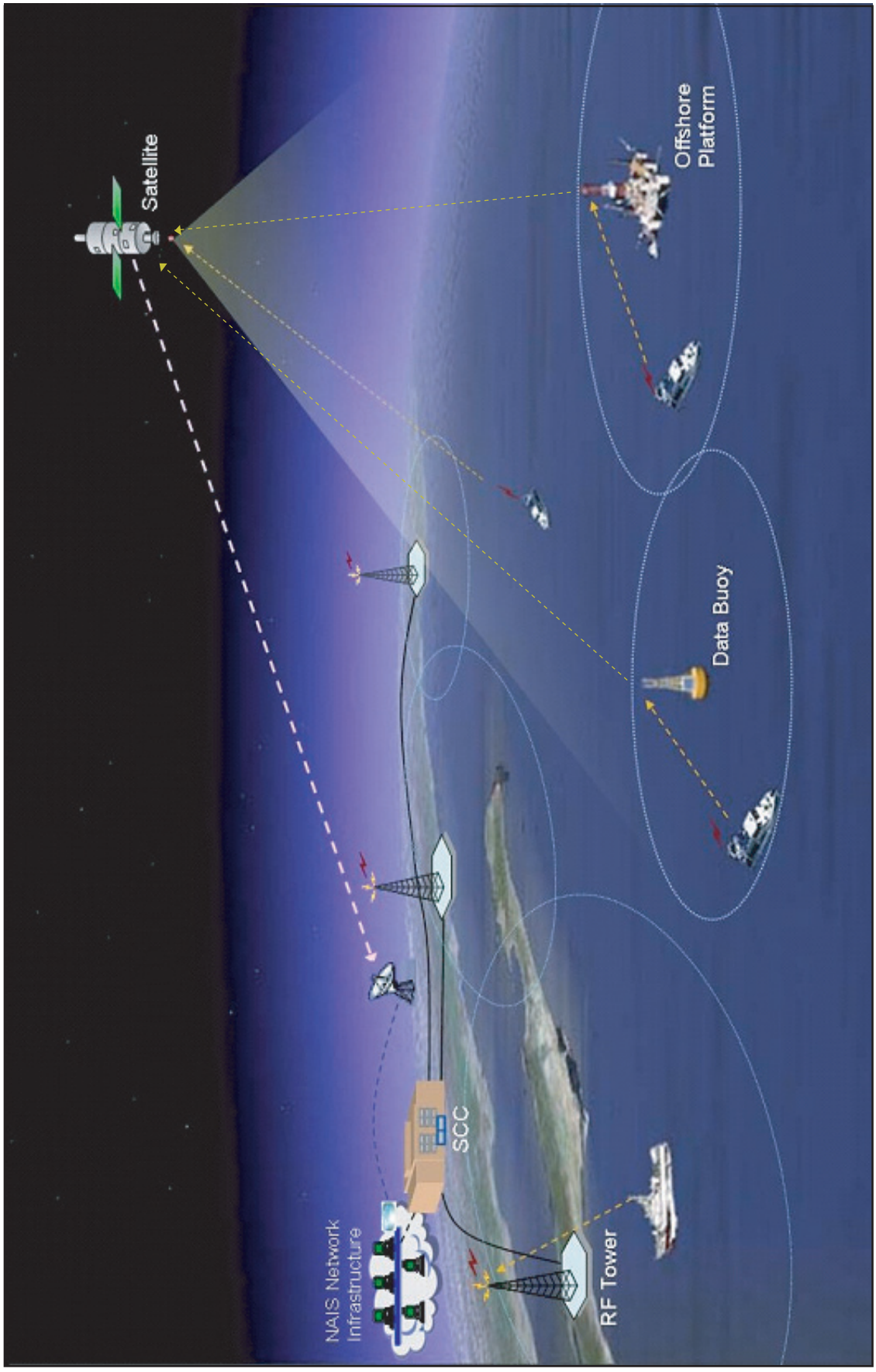


Figure 2-1. Conceptual Overview of the Proposed Action

2.4 Summary Comparison of Environmental Effects of Alternatives

Table 2-2 provides an overview of impacts anticipated under each of the alternatives considered, broken down by the resource area. **Section 4** evaluates the impacts. It can be assumed that potential short-term impacts would occur from construction and long-term impacts would occur from operations of a site. For each alternative (see **Section 4.1.2**), a set of assumptions was developed to describe possible requirements for installation of communication equipment; and NAIS tower, equipment building, and access road construction. The USCG would have some flexibility in the exact siting of NAIS towers and equipment and would seek to avoid impacts to the greatest extent possible. In addition, under each of the alternatives considered, locations selected as NAIS sites might already possess attributes that eliminate the need for a portion, or in some cases all, of the construction. In such a case, no impacts or negligible impacts would be expected at that particular location.

Table 2-2. Summary of Anticipated Environmental Impacts by Alternative

Resource Area	No Action	All New Tower Builds	Combination of Collocations and New Tower Builds	All Collocations
Noise	No impacts would be expected.	Short-term negligible adverse impacts would be expected.	Short-term negligible adverse impacts would be expected.	Short-term negligible adverse impacts would be expected.
Air Quality	No impacts would be expected.	Short-term and long-term negligible to minor adverse impacts would be expected.	Short-term and long-term negligible to minor adverse impacts would be expected.	Short-term and long-term negligible to minor adverse impacts would be expected.
Earth Resources	No impacts would be expected.	Short-term and long-term negligible to minor adverse impacts would be expected.	Short-term and long-term negligible to minor adverse impacts would be expected. Such impacts would occur at fewer sites than under the All New Tower Builds Alternative.	Negligible impacts would be expected
Water Resources	No impacts would be expected.	Short-term and long-term negligible to minor adverse impacts on surface water and groundwater resources would be expected.	Short-term and long-term negligible to minor adverse impacts on surface water and groundwater resources would be expected. Such impacts would occur at fewer sites than under the All New Tower Builds Alternative.	Short-term and long-term negligible to minor adverse impacts on surface water and groundwater resources would be expected.
Biological Resources	No impacts would be expected.	Short-term and long-term negligible to moderate adverse impacts would be expected.	Short-term and long-term negligible to moderate adverse impacts would be expected. Such impacts would occur at fewer sites than under the All New Tower Builds Alternative.	Short-term and long-term negligible to minor adverse impacts would be expected.

Table 2-2. Summary of Anticipated Environmental Impacts by Alternative (continued)

Resource Area	No Action	All New Tower Builds	Combination of Collocations and New Tower Builds	All Collocations
Cultural Resources	No impacts would be expected.	Short-term and long-term negligible to major adverse impacts would be expected depending on the proposed tower site proximity to archaeological resources, historic buildings or structures, or Traditional Cultural Properties.	Short-term and long-term negligible to major adverse impacts would be expected depending on the proposed tower site proximity to archaeological resources, historic buildings or structures, or Traditional Cultural Properties. Such impacts would occur at fewer sites than under the All New Tower Builds Alternative.	Long-term negligible to moderate adverse impacts would be expected.
Visual Resources	No impacts would be expected.	Short-term and long-term minor to moderate impacts would be expected.	Short-term and long-term minor to moderate impacts would be expected. Such impacts would occur at fewer sites than under the All New Tower Builds Alternative.	Long-term negligible to minor adverse impacts would be expected.
Land Use	No impacts would be expected.	Short-term and long-term negligible to minor adverse impacts would be expected.	Short-term and long-term negligible to minor adverse impacts would be expected. Such impacts would occur at fewer sites than under the All New Tower Builds Alternative.	No impacts would be expected.
Infrastructure	No impacts would be expected.	Short-term minor adverse impacts would be expected.	Short-term minor adverse impacts would be expected. Such impacts would occur at fewer sites than under the All New Tower Builds Alternative.	No impacts would be expected.
Hazardous Substances	No impacts would be expected.	No impacts would be expected.	No impacts would be expected.	No impacts would be expected.
Socioeconomics and Environmental Justice	No impacts would be expected.	Long-term negligible to minor adverse impacts would be expected.	Long-term negligible to minor adverse impacts would be expected. Such impacts would occur at fewer sites than under the All New Tower Builds Alternative.	No impacts would be expected.
Human Health and Safety	No impacts would be expected. However, the beneficial impacts of the Proposed Action would not be realized.	Short-term minor adverse impacts would expected. Long-term beneficial impacts would be expected.	Short-term minor adverse impacts would be expected. Such impacts would occur at fewer sites than under the All New Tower Builds Alternative. Long-term beneficial impacts would be expected.	Long-term beneficial impacts would be expected.

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