

**MISSILE DEFENSE AGENCY
GROUND-BASED MIDCOURSE DEFENSE
SEA-BASED X-BAND RADAR (SBX) PLACEMENT AND OPERATION
ENVIRONMENTAL ASSESSMENT**

AGENCY: Missile Defense Agency (MDA)

ACTION: Finding of No Significant Impact

BACKGROUND: MDA proposes to establish the necessary infrastructure to position, secure, and operate the Sea-Based X-Band Radar (SBX) at the Primary Support Base (PSB) at Adak Island, Alaska.

Within the Department of Defense (DoD), the MDA is responsible for developing, testing, and deploying the Ballistic Missile Defense System (BMDS). The BMDS is designed to intercept threat missiles during all phases of their flight: boost, midcourse, and terminal. The Ground-Based Midcourse Defense (GMD) is an element of the BMDS; the purpose of the GMD element is to intercept and destroy long-range missiles in the ballistic (midcourse) phase of flight before their reentry into the Earth's atmosphere. GMD system testing, SBX operations, and the establishment of a PSB at Adak were analyzed in the *Ground-Based Midcourse Defense (GMD) Extended Test Range Environmental Impact Statement (EIS)*. The subsequent Record of Decision for the GMD Extended Test Range EIS selected Adak as the location to establish a PSB for the SBX. Due to inherent capabilities of the X-band radar (XBR) system, the SBX may also be used for related missions such as space surveillance.

DESCRIPTION OF THE PROPOSED ACTION: The Proposed Action at or near Adak is to support, position/secure, and operate the SBX.

The Proposed Action would include the following activities:

- A. A means of positioning the SBX in the waters of Kuluk Bay near Adak:
 - Alternative 1—Permanent Mooring System (preferred alternative for positioning the SBX in Kuluk Bay)
 - Alternative 2—Loitering in Kuluk Bay
 - Alternative 3—Temporary Anchoring
- B. SBX operations while at Kuluk Bay
 - Daily SBX activities
 - Designation and enforcement of a security zone in U.S. territorial waters surrounding the SBX while moored, anchored, or loitering, which could

- include the installation and use of a floating security boom/fence around the SBX and/or operation of a security patrol boat
 - Use of onshore PSB assets and infrastructure to support SBX operations
 - Operation of one or more SBX support vessels
- C. SBX loitering and operations while in the Bering Sea or Sitkin Sound
- Daily SBX activities
 - Designation and enforcement of a security zone surrounding the SBX while in U.S. territorial waters
 - Use of onshore PSB assets and infrastructure to support SBX operations
 - Operation of one or two SBX support vessels

ALTERNATIVES TO THE PROPOSED ACTION

No-Action

The No-action Alternative was previously analyzed in the GMD Extended Test Range EIS which discussed the potential environmental impacts if the SBX were not built and there was not a need for a port facility in the Pacific Region to support the SBX. No environmental impacts were identified for the No-action Alternative.

Alternative Sites Not Carried Forward for Analysis

Construction and Use of a Pier

The construction and use of a pier was initially considered for docking the SBX at Adak. Existing piers at Adak are currently not suitable for SBX requirements. The construction of a pier would incur substantially higher costs when compared to the installation of a permanent mooring system. The construction of a pier would not meet schedule demands for the overall development/deployment of the BMDS. The use of a pier for docking the SBX at Adak would also involve an increased potential for hull damage to the SBX during docking/undocking procedures. Furthermore, a pier would provide less tolerance to adverse weather, especially high wind and wave conditions that are very prevalent in Adak.

Mooring in Finger Bay

Finger Bay is a relatively deep and protected fjord located south of the main port at Adak. Previous analysis in the GMD Extended Test Range EIS considered Finger Bay as a potential mooring location for the SBX. However, detailed investigation has found that Finger Bay is not large enough to moor the SBX securely.

Other Anchoring/Mooring Systems

Pile Clusters

A pile can be metal, reinforced concrete, or timber with various cross sections that is installed into the seabed by means of a piling hammer or vibrator. Driven pile clusters to create a mooring was not feasible because of the great water depth at the mooring site in Kuluk Bay.

Suction Pile Anchor

A suction pile anchor is a hollow steel pipe with a diameter that is much larger than that of a pile. The suction pile anchor is forced into the seabed by means of a pump connected to the top of the pipe, creating a pressure difference. The friction of the soil along the suction anchor and the lateral soil resistance generates the holding capacity of the suction anchor. The geophysical surveys performed in Kuluk Bay indicated that the seafloor consists mainly of a layer of dense sand that would be too hard for the proper installation of suction pile anchors. In addition, suction pile anchors were removed from consideration because of the marine industry's lack of experience in their use. Suction pile anchors are a new technology, and published data on long-term performance is lacking.

ENVIRONMENTAL EFFECTS

Methodology

Thirteen areas of environmental consideration were evaluated to provide a context for understanding the potential effects of the Proposed Action and to provide a basis for assessing the severity of potential impacts. These areas included air quality, airspace, biological resources, cultural resources, geology, hazardous materials and waste, health and safety, infrastructure and transportation, land use, noise, socioeconomics, water resources, and environmental justice. Because the Proposed Action is narrowly focused, many of the resource areas are not expected to be affected sufficiently to warrant further discussion in this section or are already adequately analyzed in previous documents, including the GMD Extended Test Range EIS.

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION

Only those activities for which a potential environmental concern was determined are described within each resource summary.

Air Quality

Alternative 1 of the Proposed Action would include the installation of multiple (8 to 12) drag-embedment anchors and mooring legs. Although minor short-term impacts typically associated with construction activities may occur, no exceedances of the national or state ambient air quality standards would be anticipated. Alternatives 2 and 3 would require no permanent mooring installation. Operational emissions onboard the SBX would be limited to the exhaust produced by generators and to maintenance activities. For Alternative 1, the SBX would be moored over 2.5 miles from any sensitive receptor in the built-up area at Adak and over 3 miles from the Maritime National Wildlife Refuge. The prevailing wind direction is from the southwest and out to the Bering Sea. With the combination of wind speed, distance from receptors, and the prevailing wind direction from the southwest, it is anticipated that dispersion of emissions would limit any impact to air quality from the operation of the SBX in Kuluk Bay. Based upon air quality modeling for Alternative 1, it is expected that emissions would not exceed National Ambient Air Quality Standards (NAAQS) or Alaska ambient air quality standards (AAQS) at Adak. For Alternatives 2 and 3, it is anticipated that NAAQS and AAQS levels would be exceeded for oxides of nitrogen. For all Kuluk Bay Alternatives, the SBX would be considered a mobile source; therefore, neither a Prevention of Significant Deterioration review nor a Title V permit would be required.

Airspace

Operation of the SBX radar has a potential for interference with commercial aircraft out to a distance of 11.8 miles, and with military aircraft out to a distance of 2.1 miles. Surveillance radar onboard the SBX would be utilized to identify any aircraft approaching the airspace region of influence. This would include aircraft operating along the high and low altitude air routes as well as aircraft on approach to Adak airport and other aircraft that may be flying in the vicinity of Adak. In the event an aircraft enters the region of influence during test operations, XBR RF emissions would be limited until the aircraft is clear. SBX test operations would be coordinated with the Federal Aviation Administration (Notice to Airmen) and the U.S. Coast Guard (Notice to Mariners), and would be scheduled if possible to occur during hours of minimal aircraft operations. A Memorandum of Agreement would establish the required scheduling and coordination process between the SBX operators and the Federal Aviation Administration.

Biological Resources

Alternative 1 of the Proposed Action would include positioning of the SBX in Kuluk Bay with a permanent mooring system. Installation of this system would include dragging an anchor assembly for each mooring leg along the seafloor in

order for it to be buried up to 15 feet deep in the seafloor subsurface. Removal of obstructions on the seafloor that would hamper mooring installation would implement technologies to minimize marine habitat disruption. In addition, Alternative 1 could also include the installation and use of a floating security boom/fence around the SBX. Initial disturbance of the seafloor and its inhabitants during installation of the security boom/fence anchoring system is anticipated to be minimal, and lateral dragging of the anchor lines would be limited once installed. Alternative 2 of the Proposed Action for positioning the SBX in Kuluk Bay would include the SBX operating its engines to maintain its position in the bay by using its own thrusters. This alternative could produce cavitations on the thruster blades when operating, potentially producing intensive air bubble implosions underwater as well as intermittent noise while the vessel is at the PSB, which could startle marine wildlife in the immediate area. Under Alternative 3 for positioning the SBX in Kuluk Bay, the SBX would deploy one of its two anchors upon each arrival at the PSB, and it would then weigh anchor upon each departure from the PSB. Use of this alternative would result in repeated disturbance to the seafloor and its inhabitants.

Operation of the SBX, under Alternative 1, 2, or 3, would include daily testing and calibration of the SBX radar system to monitor and improve radar performance. During these tests, the XBR would transmit a series of full-power radio frequency pulses for short time periods several times a day. The radar beam would normally be in motion, making it extremely unlikely that a bird would remain within the most intense area of the beam for any considerable length of time. The angular spread of the radar beam is small, which further reduces the probability of bird species remaining within this limited region of space, even if the beam were motionless. The SBX radar main beam would not be directed toward the ocean's surface. Since marine mammals would normally be found below the surface of the water, the radar beam would be safely above any surfacing mammals. The SBX vessel would incorporate marine pollution control devices such as keeping decks clear of debris, cleaning spills and residues, and engaging in spill and pollution prevention practices in compliance with the Uniform National Discharge Standards provisions of the Clean Water Act. The potential for impacts to marine mammals due to an accidental release of diesel fuel is considered low. The relatively slow speed of the SBX platform would greatly reduce the potential for collision with a free-swimming marine mammal. The noise level from the SBX vessel at water level would be approximately 43 A-weighted decibels, which would be similar to or less than noise from other vessels frequenting the area. Overall, no adverse impacts to marine mammals are anticipated. The amount of light coming from the platform would be minimized to the extent practicable to reduce the potential for bird strikes. An onboard procedure for responding to bird strikes would be developed and implemented based on U.S. Fish and Wildlife Service guidance. Wastewater would be discharged above water level when at

transit draft, and underwater when the vessel is at operational draft. Solid waste would be kept in covered containers until offloaded for onshore disposal. Installation and use of a floating security boom/fence around the SBX is not anticipated to restrict free movement of marine mammals in the area.

Cultural Resources

Although there are no previously identified cultural resources within the region of influence at the mooring site, a recent geophysical survey of Kuluk Bay resulted in the identification of World War II submarine netting as part the seafloor debris. The removal and/or disposal of submarine netting during the mooring installation would not impact the existing historical standing of the Adak National Historic Landmark and Cultural Landscape Historic District. Personnel would be informed of the sensitivity of cultural resources on Adak and the types of penalties that could be incurred if sites are damaged or destroyed. In addition, onshore PSB facilities would not be located in historic buildings, nor would they be near any historic resources. No impacts to cultural resources are anticipated during operation of the SBX.

Health and Safety

Activities involved with the positioning of the SBX in Kuluk Bay would occur in accordance with existing safety protocol/procedures and applicable state and federal requirements. No adverse effects to health and safety of personnel or the public are anticipated. During operations, the SBX systems would have the appropriate safety exclusion zones established before operation, and warning procedures to inform personnel when the system is in operation and transmitting a radio frequency (RF). Mechanical and software stops would be used to prevent the main beam from being directed in specified sectors where it may present a hazard. Ground-based, airborne, and ship-based systems have been evaluated for in-band, adjacent band, and harmonic band interference in a detailed RF interference survey. Results of the survey indicate emissions from the SBX may potentially degrade the overall system performance of in-band airborne and ship-based radar systems. Based on analysis performed by the Joint Spectrum Center, the interference would most likely result in reduced range of the radars. For example, surface search radar with a range of 60 nautical miles would only be able to see targets at 50 nautical miles. This would apply to shipboard radars operating within 20 nautical miles of the SBX. This reduction in range of the radar would result in minor impacts to ships operating in the vicinity of Adak.

Socioeconomics

While the SBX is at the Adak PSB, most personnel would reside on the SBX platform. A permanent cadre of approximately three dozen people would utilize permanent housing in direct support of SBX operations. An additional temporary

contingent would utilize local hotels or guesthouses in Adak during SBX operations. Generally, by spending money in the local economy mainly via the normal procurement of goods and services, the additional SBX related personnel would represent a positive economic impact to the local community. The SBX is not expected to interfere with subsistence and commercial fishing areas, and would not have any impacts on current shipping schedules, ship-borne commerce, recreational boating, or general transit. In addition, SBX test operations would be coordinated with the Federal Aviation Administration and would be scheduled, if possible, to occur during hours of minimal aircraft operations. There would be no reduction in the amount of available airspace, almost no disruption of existing aircraft operation, and no resultant economic impacts are expected to the Adak Airfield or any air traffic in the area.

Water Resources

Implementation of Alternative 1, 2, or 3 of the Proposed Action would result in the SBX being located in Kuluk Bay. The limited increase in the number of personnel at Adak would not affect the water supply or wastewater systems at Adak. Potable water would be produced onboard the SBX by a set of three Reverse Osmosis systems. The existing water supply at Adak would not be affected by the consumption onboard the SBX. An onboard marine sanitation device would be used to treat the wastewater produced onboard the SBX prior to discharge while moored in Kuluk Bay. The SBX would operate seawater cooling pumps to cool mechanical equipment and radar systems on the SBX. The SBX mooring site would have high flushing conditions, deep water, and high wind velocities. Based on these factors at the SBX mooring site in Kuluk Bay, thermal effects from cooling water are expected to be minimal.

Cumulative Impacts

Cumulative impacts are those that result when impacts of an action are combined with the impacts of past, present, and reasonably foreseeable future actions at a location. Cumulative impacts were considered for each resource area and each alternative for positioning the SBX in Kuluk Bay, as well as for operation in the Bering Sea or Sitkin Sound, and support activities on Adak. No other projects in the region of influence have been identified that would have the potential for incremental, additive cumulative impacts to the air quality, airspace, biological resources, cultural resources, health and safety, socioeconomics, or water resources in the region of influence.

CONCLUSION: The environmental analysis shows that no significant impacts would occur from the Proposed Action to support, position/secure, and operate the SBX at or near Adak, Alaska. Preparation of an Environmental Impact Statement,

therefore, is not required. A follow-up action list will be developed and completed by the Executing Agent to ensure compliance with the actions described in the EA.

While MDA plans to implement the preferred alternative of mooring the SBX in Kuluk Bay, the funding to install the mooring is currently not available. Therefore, the SBX would primarily loiter and operate in the Bering Sea or Sitkin Sound. The SBX may also loiter and operate in Kuluk Bay.

**GROUND-BASED MIDCOURSE DEFENSE
SEA-BASED X-BAND RADAR (SBX) PLACEMENT AND OPERATION
ENVIRONMENTAL ASSESSMENT**

AGENCY: Missile Defense Agency (MDA)

ACTION: Finding of No Significant Impact

APPROVED:

MISSILE DEFENSE AGENCY

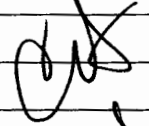
A handwritten signature in black ink, appearing to read "Chris T. Anzalone", is written over a horizontal line.

DATE: 19 OCT 05

CHRIS T. ANZALONE
Brigadier General, USAF
Deputy for Test and Assessment

MDA STAFF SUMMARY SHEET

(Internal Coordination)

TO		ACTION	SIGN OR INITIAL	MM/DD/YY	TO		ACTION	SIGN OR INITIAL	MM/DD/YY
1	TE	Sign		1	7				
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ACTION OFFICER (TYPED) Mr. Crate J. Spears		OFFICE OF ORIGIN SIGNATURE Mr. Brian D. Huizenga	OFFICE SYMBOL MDA/TER	TELEPHONE # 697-4327	TYPIST'S INITIALS bfps	MM/DD/YY 10/13/05
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SUBJECT: Ground-Based Midcourse Defense (GMD) Sea-Based X-Band Radar (SBX) Placement and Operation Adak, Alaska Environmental Assessment (EA) and Finding of No Significant Impact (FONSI)

CONTROL NUMBER	SUSPENSE DATE
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PURPOSE:

Finalize the National Environmental Policy Act (NEPA) process for the subject EA and FONSI.

DISCUSSION:

- The GMD SBX Final EA and Draft FONSI were released for a 30-day public comment period that closed on 11 Oct 05; no comments were received.
- The FONSI describes MDA's decision to implement the preferred alternative once the funding to install the mooring system at Kuluk Bay becomes available and to loiter and operate the SBX in Kuluk Bay, the Bering Sea and the Sitkin Sound.
- LA determined that this EA and action does not warrant Congressional notification. MDA coordinations are provided in Tab A and the Department of Defense, Office of Freedom of Information and Security Review (FOISR) clearance for Open Publication is provided in Tab B.
- By signing the FONSI, the NEPA process concludes and MDA can proceed with the proposed action as analyzed and documented in the Final EA.

RECOMMENDATION:

MDA's Environmental Executive sign the FONSI and return for distribution.


PATRICK T. CLANCY
Director, Test Resources

Tabs

- A. MDA coordinations
- B. DOD FOISR clearance