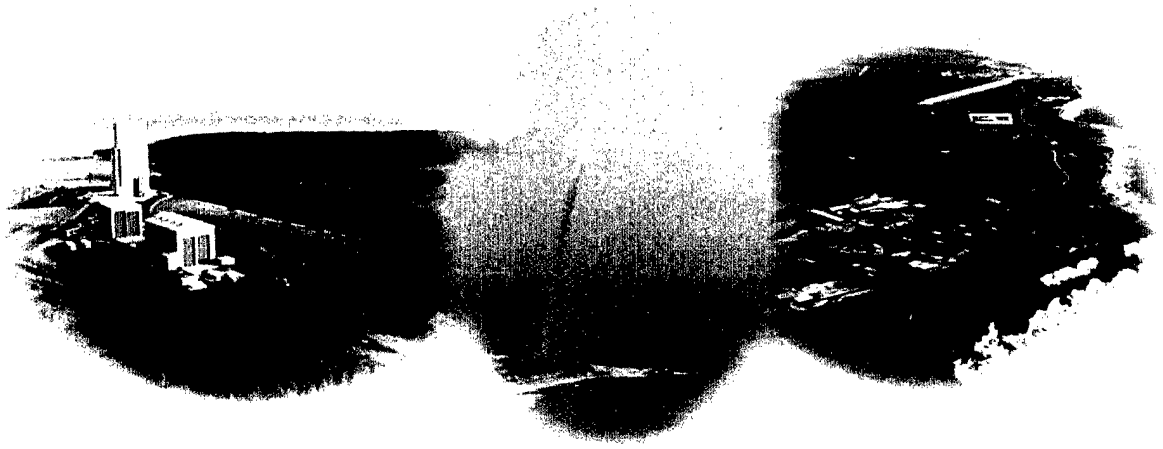
North Pacific Targets Program



Environmental Assessment

3 April 2001

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U.S. Army Space and Missile Defense Command
P.O. Box 1500
Huntsville, Alabama 35807-3801

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The Strategic Targets Product Office (STPO) within the Ballistic Missile Targets Joint Project Office of the U.S. Army Space and Missile Defense Command is responsible for providing the target launch system for various Risk Reduction Flight and Integrated Flight Test programs. The STPO would provide the Strategic Target System launch vehicle for strategic target launch services from Kodiak Launch Complex, Kodiak Island, Alaska, a commercial rocket launch facility operated by the Alaska Aerospace Development Corporation, licensed by the Federal Aviation Administration.

The Strategic Target System target would also continue to be launched from Kauai Test Facility at the Pacific Missile Range Facility (PMRF), Kauai, Hawaii to the broad ocean area near the U.S. Army Kwajalein Atoll (USAKA) in the Marshall Islands.

The STPO, supporting the Ballistic Missile Defense Organization, proposes to increase the launch capability of the Strategic Target System by adding a new Strategic Target System flight trajectory from Kauai Test Facility and providing a launch capability from Kodiak Launch Complex. The Proposed Action would provide ballistic missile targets to test North American sensors, and for possible use in testing various sensors and ground-based interceptors at USAKA and various sensors and ship-based interceptors at PMRF.

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Introduction

The Strategic Targets Product Office (STPO) within the Ballistic Missile Targets Joint Project Office of the U.S. Army Space and Missile Defense Command is responsible for providing the target launch system for various Risk Reduction Flight and Integrated Flight Test programs. The STPO would provide the Strategic Target System launch vehicle for strategic target launch services from Kodiak Launch Complex licensed by the Federal Aviation Administration for commercial rocket launches located on Kodiak Island, Alaska and operated by the Alaska Aerospace Development Corporation (AADC).

The Strategic Target System target would also continue to be launched from Kauai Test Facility at the Pacific Missile Range Facility (PMRF), Kauai, Hawaii to the broad ocean area near the U.S. Army Kwajalein Atoll/Kwajalein Missile Range (USAKA/KMR) in the Marshall Islands.

The STPO, supporting the Ballistic Missile Defense Organization, proposes to increase the launch capability of the Strategic Target System by adding a new Strategic Target System flight trajectory from Kauai Test Facility and, as a fee-paying customer, providing a launch capability from Kodiak Launch Complex. The Proposed Action is to provide ballistic missile targets to test North American sensors, and for possible use in testing various sensors and ground-based interceptors at USAKA/KMR and various sensors and ship-based interceptors at PMRF.

The primary components of the Strategic Target System vehicle are the first and second stage Polaris boosters, the third stage Orbus booster, and the development payloads. The remainder of the system consists of ground support equipment.

The Polaris and Orbus-1 boosters are currently stored at Redstone Arsenal, Alabama. Within 1 year before launch, the first and second stage boosters and parts would be x-rayed in radiographic facilities and would be certified for flight for 1 year with a 6-month extension. The third stage Orbus-1 boosters are certified for 5 years as a result of refurbishment by the manufacturer in 2001. Both Polaris A3P and newer Polaris A3R motors would be used in the first and second stage Polaris boosters. The A3R motors would have the same propellants and emission characteristics as the earlier A3P motors. The A3R motors are of a much later manufacture and have a thicker layer of insulation in the aft end of the casing, and an overhauled nozzle assembly. Otherwise, the motors are identical.

Test Program Activities

Up to four Strategic Target System launches per year are anticipated over a minimum of 5 years and into the reasonably foreseeable future at Kodiak Launch Complex. The Strategic Target System activities at Kodiak Launch Complex would consist of assembly

and integration testing, flight preparation, launch/flight operations, data collection, and data analysis. At Kodiak Launch Complex, assembly and integration testing activities would take place at the Integration and Processing Facility as described in the Kodiak Launch Complex EA. Up to 65 personnel would be working and living in the area during missile buildup activities, which would last 35 to 40 days. The Strategic Target System boosters would be processed and prepared for launch in the same manner as previous flights from Kauai Test Facility.

Flight preparations at Kodiak Launch Complex would include booster flight preparation, payload flight preparation, and flight communications preparation. The Strategic Target System boosters would be transported to Kodiak Island using military aircraft. Use of the Kodiak joint tenant airport shared by commercial pilots and the Alaska Coast Guard would be required. After arrival by military aircraft, the boosters and payload would be transported using established and permitted transportation routes to the Integration and Processing Facility on Kodiak Launch Complex.

To ensure public safety, before each launch at Kodiak Launch Complex, Naval Air Warfare Center Weapons Division would define a safety exclusion zone and the Ground Hazard Area (GHA). The proposed launches at Kodiak Launch Complex would utilize launch azimuths included in those analyzed in the Kodiak Launch Complex EA. A comprehensive safety analysis would be made for each mission to determine specific launch hazards and to meet safety criteria.

Up to four Strategic Target System missiles per year would continue to be launched from Kauai Test Facility. No new missile launch azimuths would be required for the Proposed Action. The assembly and integration testing of the first- and second-stage Polaris boosters and the third-stage Orbus-1 booster would occur at Kauai Test Facility for the continuation of Strategic Target System launches. Flight preparation would involve all activities required to assemble the major Strategic Target System components before flight.

The Strategic Target System boosters would be transported to Kauai Test Facility using military aircraft. After arrival, the boosters would be transported along existing safety routes to the missile assembly building on Kauai Test Facility. The current restrictive easement would be used to set up the launch hazard area to ensure public safety during launch. To ensure public safety during launches at Kauai Test Facility, a GHA, a launch hazard area, and a flight termination line would be established.

Methodology

To assess the significance of any impact, a list of activities necessary to accomplish the Proposed Action was developed. The affected environment at all applicable locations was then described. Next, those activities with the potential for significant environmental consequences were identified. If a proposed activity was determined to have a potential for causing significant environmental impact, it was analyzed in greater detail in terms of intensity, extent, and context in which significant impacts would occur. The significance

criteria used to evaluate the environmental effects of program activities include three levels of impacts: no impacts, no significant impact, and significant impact.

Fourteen broad environmental components were originally considered 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 of environmental consideration were air quality, airspace, biological resources, cultural resources, environmental justice, geology and soils, hazardous materials and waste, health and safety, infrastructure, land use, noise, socioeconomics, visual and aesthetics resources, and water resources.

No ground-disturbing activities are planned as part of the Proposed Action, and no new impacts to cultural resources, geology and soils, or water resources are anticipated that are not already covered under existing environmental documentation. No adverse impacts to minority or low-income communities (Executive Order 12898, *Environmental Justice*) are expected at either location. No environmental health and safety risks were identified that may disproportionately affect children, in compliance with Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. The development and use of the Kodiak Launch Complex underwent a review for consistency with Alaska Coastal Management Program standards and was issued a final consistency determination on 19 January 1996. Existing infrastructure would be used, and no change is anticipated to current land use or to the visual and aesthetics environment of the proposed locations.

No changes are expected to air quality or the use and generation of hazardous materials and waste at PMRF as a result of proposed activities.

Results

This section summarizes the conclusions of the analyses made for each of the seven remaining areas of environmental consideration based on the application of the described methodology. Within each resource summary, only those activities for which a potential environmental concern was determined are described.

Air Quality

The overall impact on the ambient air at Kodiak Launch Complex is expected to be minimal. Current applicable operating permits at Kodiak Launch Complex would cover stationary sources of pollution such as generators. Air quality impacts from the generators would be temporary and negligible offsite. Since the program would not require an increase in the number of cars on the island, the program-related traffic emissions are not anticipated to have a noticeable impact on air quality. The pollutants of greatest concern are hydrogen chloride and aluminum oxide from the proposed missile launches. The ambient air quality impacts due to hydrochloric acid and aluminum oxide exhaust from the Strategic Target System vehicle have been examined by several air quality modeling programs, and results indicate no significant impact to air quality at Kodiak Launch Complex and Kodiak.

Airspace

Before launching the target missile from Kodiak Launch Complex, Notices to Airmen would be sent in accordance with the conditions of the directive specified in Army and Federal Aviation Administration regulations. Provision would be made for surveillance of the affected airspace. In addition, safety regulations dictate that launch operations would be suspended when it is known or suspected that any unauthorized aircraft have entered any part of the surface danger zone until the unauthorized entrant has been removed or a thorough check of the suspected area has been performed. No impact to airspace in the vicinity of Kodiak Launch Complex is anticipated.

Proposed missile launches from Kauai Test Facility would have no impact on the controlled and uncontrolled airspace in the PMRF/Main Base region of influence. All other local flight activities would occur at sufficient distance and altitude that the target missile launches would have no effect. With all arriving and departing aircraft, and all participating military aircraft under the control of PMRF Radar Control Facility, there would be no airfield or airport conflicts in the region of influence under the Proposed Action, and thus no impact.

Biological Resources

No new construction or other ground-disturbing activities that could remove or impact vegetation are anticipated. Standard Operating Procedures for spill prevention, containment, and control measures while transporting equipment and materials would preclude impacts to biological resources. Since vegetation is normally cleared from areas adjacent to the launch site and the duration of high temperatures would be less than 3 seconds, no long-term adverse effects on vegetation are anticipated. Also observation of plant communities at other launch sites such as the Kauai Test Facility, Cape Canaveral, and Vandenberg AFB indicate that vegetation continues to thrive in the immediate areas surrounding launch pads.

There has been no evidence of any long-term adverse effect on vegetation from two decades of launches at PMRF. The continued presence of the adder's tongue, a species recently removed from the list of Federal Candidate species, indicates that emissions from Strategic Target System missiles have not had a significant impact on sensitive vegetative species. Based on these analyses, the potential effects to vegetation on PMRF from the Proposed Action are expected to be minimal.

Informal observation at several launch facilities indicates the increased presence of personnel immediately before a launch tends to cause birds and other mobile species of wildlife to temporarily leave the area that would be subject to the highest level of launch noise. Therefore, no direct physical auditory changes are anticipated. Launches would be infrequent, and the brief disturbance to wildlife is not expected to have a lasting impact. Wildlife such as waterfowl would quickly resume feeding and other normal behavior patterns after a launch is completed. Strategic Target System launches from Kodiak Launch Complex would have no impact on breeding or the nesting success of the Steller's eider or short-tailed albatross.

The closest Steller sea lion haulout sites are approximately 5 kilometers (3 miles) southeast on Ugak Island and 16 kilometers (10 miles) southwest of the Kodiak Launch Complex. To date no Steller sea lion rookeries have been identified within the area that could potentially be affected by proposed activities. Studies have indicated that launches are likely to produce some level of alarm response in the sea lions using Ugak Island. However, using the noise levels modeled for the Strategic Target System launches at PMRF, the maximum noise levels at the haulout sites on Ugak Island would be approximately 81 A-weighted decibels (dBA), the equivalent of a bus at the curbside of a busy street. It is possible that actual sound levels at the haulouts could be slightly higher than those indicated by modeling. Even though no substantial effects to Steller sea lions from past missile launches have been noted, the program will continue to adhere to the consultation monitoring agreement between AADC and the National Marine Fisheries Service, and the effects of actual Strategic Target System launches will be monitored and evaluated in accordance with their direction. No evidence has indicated that serious injuries would result, and no long-term adverse effects are anticipated.

The noise level thresholds of impact to marine life in general, and marine mammals in particular, are currently the subject of scientific analysis. There is the possibility that underwater noise levels resulting from missile reentry sonic booms could affect some marine mammals or sea turtles in the open ocean. However, since different species of marine mammals have varying sensitivity to different sound frequencies and may be found at different locations and depths in the ocean, it is difficult to generalize sound impacts to marine mammals from missile impacts in the broad ocean area. Patrol and surveillance aircraft are dispatched before launch at Kauai Test Facility to search the probable first stage impact water surface. If contacts are made and confirmed, the Flight Safety officer would determine whether to continue on schedule, delay the test flight, or postpone it until another day.

Studies on representative birds and mammals have indicated that low-level, short-term exposure to hydrogen chloride would not adversely affect threatened or endangered species or other wildlife. Aluminum oxide and hydrogen chloride do not bioaccumulate; therefore, no indirect effects to the food chain are anticipated.

Debris impact and booster drops in the broad ocean area are not expected to adversely affect protected marine species. The probability is rather low that migratory whales and other marine species such as the green sea turtle and hawksbill turtle would be within the area to be impacted by falling debris and boosters. Should whales or sea turtles be observed during prelaunch survey flights of the hazard areas of the Kauai Test Facility, flight tests would be delayed until these species vacate the area.

An early flight termination or mishap could result in debris impact along the flight corridor. However, sensitive marine species are widely scattered, and the probability of debris striking a threatened or endangered species is considered remote.

Evaluation by the National Aeronautics and Space Administration of the effects of missile systems that are deposited in seawater concluded that the release of hazardous materials

aboard missiles into seawater would not be significant. Materials would be rapidly diluted and, except for the immediate vicinity of the debris, would not be found at concentrations identified as producing any adverse effects.

Hazardous Materials and Waste

Transportation of the boosters would be conducted in accordance with applicable regulations and would not be a hazardous materials or hazardous waste impact. Handling of all hazardous materials would be conducted according to Standard Operating Procedures, which would be designed to minimize hazardous materials impacts to personnel and the environment. Any item containing asbestos would be disposed of as hazardous waste according to applicable regulations. All waste materials and chemicals used in flight preparations, such as cleaning rags, solvents, and lubricants, would be handled and disposed of according to all applicable Federal and state regulations.

In the case of an off-nominal flight, hazardous debris containing asbestos, magnesium-thorium, or other potentially reactive materials may occur. A debris-recovery team would be supplied to locate and recover the debris, and if required, dispose of or destroy contaminated, classified, or hazardous material. All hazardous materials would be handled and disposed of according to all applicable Federal and state regulations.

The amount of hazardous waste generated by the proposed activities would be similar to those wastes already generated by past missile programs, and no substantial hazardous materials or hazardous waste impacts are expected.

Health and Safety

All Strategic Target System launch activities would be in compliance with Federal, state, and local health and safety requirements outlined in the Sandia National Laboratories and Kodiak Launch Complex health and safety plans. Health and safety plans would provide guidance in meeting Federal, state, and local health and safety requirements, and transportation regulations. All pre-flight hazardous operations would be conducted in accordance with appropriate safety regulations to minimize potential risks to mission personnel and the general population.

Applicable safety measures would be instituted at Kodiak Airport to ensure the safety of the general public, Coast Guard personnel, and mission personnel, such as specifying parking areas, establishing (and enforcing) applicable explosive safety-quantity distances (ESQDs), restricting handling and transportation of missile components to properly-trained personnel, and using established and permitted transportation routes from Kodiak Airport to Kodiak Launch complex. In the event of a search and rescue operation, hazardous activities at the airport or the launch site would stop or move to allow the Coast Guard to proceed and would resume after an all clear is provided. Therefore, no effects to Coast Guard operations are expected. If the alternate parking area proposed for the military transport aircraft is utilized, coordination would be initiated with the Alaska State Parks, Kodiak Division at least 30 days before the missile's arrival to ensure campsites or facilities

within the ESQD at the Buskin River State Recreation Site would be vacated before the arrival of the aircraft.

Due to the establishment of and enforcement of ESQDs, no health and safety impacts are anticipated for the general public. Adherence to appropriate safety regulations and operating plans would serve to maintain mission personnel health risks within acceptable levels. To protect persons on Kodiak Island before and during each launch, nonparticipants would be excluded from the safety exclusion zone. Naval Air Warfare Center Weapons Division would establish the exclusion zone around the launch site and along the missile flight path no less than 4 hours before each launch. They would then ensure the safety exclusion zone is verified clear of non-mission essential personnel and vessels out to the territorial limit approximately 20 minutes before launch. All site personnel would be relocated to the Launch Control and Management Center for the actual launch. Commercial and private aircraft and ocean vessels would be notified in advance of launch activities. However, since commercial and private aircraft and ocean vessels could still be in the hazard zone, Range Safety protocol limits the potential for risk to the general public and non-mission aircraft and ships to less than 1 in 10 million, in compliance with Range Commanders Council 321-00. If during prelaunch activities it is determined that general public or non-mission aircraft and ships are at a higher level of risk, launch activities would cease until they are at a lower level of risk. Thus, commercial and private craft would be able to reschedule or choose alternate routes before the flight experiments.

The boosters would be transported from Redstone Arsenal via military aircraft to PMRF in accordance with applicable transportation regulations. The Strategic Target System boosters would be processed and prepared for launch in the same manner as previous flights with the exception of one minor change—newer A3R first- and second-stage motors could be used in addition to the older A3P motors. These newer motors would have the same propellants and emission characteristics as the A3P motors and as such, no new impacts to health and safety would be anticipated.

Public access to the area within the ESQD would be restricted for the length of time the booster is on the launch pad; 24-hour security would be provided during this time to ensure that the safety distance criterion is met. The current restrictive easement at PMRF would be used to set up the launch hazard area to ensure public safety during launch. To minimize safety risk to the public in these areas, PMRF security forces on the ground, in boats, and in helicopters (if necessary), would use sweep and search measures to ensure that all areas within the launch hazard area are determined clear of people by 10 minutes before launch. In addition, security forces would set up control points along the road into the launch hazard area to monitor and clear traffic during launch operations. There are no public buildings within this off-base area. All nonessential personnel on the installation would be cleared from the launch hazard area, and launch personnel within the launch hazard area would be provided personal protection equipment. Immediately after a successful launch, security forces would give the all clear signal, and the public would be allowed to re-enter the area.

Commercial and private aircraft and ocean vessels would be notified in advance of launch activities and thus would be able to reschedule or choose alternate routes before the flight experiments.

Noise

All public, civilian, and nonessential personnel would be required to be outside of the GHA. Expected noise levels beyond the GHA would be below the 115 dBA limit for short timeframe exposure. Since the Strategic Target System vehicle would be audible only for a few seconds, no significant effect would be expected in the public. In addition, the infrequency of launches would not significantly impact the ambient noise levels.

Launch of the Strategic Target System has been previously analyzed and determined not to have a significant impact within the PMRF region of influence.

Socioeconomics

Economic benefits are expected to be short-term and primarily in the form of lodging, retail, and possible tourist activities. No population impacts are anticipated. Socioeconomic impacts to commercial fishing and shipping would be minimal. Coast Guard assistance would be utilized on an as-available non-interference basis and would be funded for services provided.

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DEPARTMENT OF THE ARMY
U.S. ARMY SPACE AND MISSILE DEFENSE COMMAND
POST OFFICE BOX 1500
HUNTSVILLE, ALABAMA 35807-3801

REPLY TO
ATTENTION OF

Environmental Division

JUN 01 2001

SUBJECT: North Pacific Targets Program Environmental Assessment

TO WHOM IT MAY CONCERN:

Enclosed for your information and use are the North Pacific Targets Program Environmental Assessment and associated Draft Finding of No Significant Impact. This office should receive comments on these documents no later than July 6, 2001. The documents are also available on the internet at www.huntsville.edaw.com/northpacific

Questions and comments regarding these documents or requests for additional copies should be addressed to

Deputy Commander
U.S. Army Space and Missile Defense Command
ATTN: SMDC-EN-V (Thomas Craven)
P.O. Box 1500
Huntsville, Alabama, 35807-3801

Sincerely,

for Edwin P. Janasky
Colonel, U.S. Army
Deputy Chief of Staff,
Engineer

Enclosures

NORTH PACIFIC TARGETS PROGRAM
ENVIRONMENTAL ASSESSMENT
KODIAK, ALASKA AND KAUAI, HAWAII

UNITED STATES ARMY SPACE AND MISSILE DEFENSE COMMAND

AGENCY: U.S. Department of the Army

ACTION: Finding of No Significant Impact

BACKGROUND: Pursuant to the Council on Environmental Quality regulations for implementing the procedural provisions of the National Environmental Policy Act (40 Code of Federal Regulations 1500-1508), Department of Defense (DoD) Instruction 4715.9, and Army Regulation 200-2, which implement these regulations, an Environmental Assessment (EA) to analyze the environmental consequences of the proposed launches of the Strategic Target System in the North Pacific area has been completed.

On behalf of the Ballistic Missile Defense Organization, the Strategic Targets Product Office within the Ballistic Missile Targets Joint Project Office of the U.S. Army Space and Missile Defense Command proposes to increase the launch capability of the Strategic Target System by adding a new flight trajectory from Kauai Test Facility, at the Pacific Missile Range Facility, Kauai, Hawaii and provide a launch capability from Kodiak Launch Complex, a commercial rocket launch facility on Kodiak Island, Alaska.

The purpose of the North Pacific Targets program is to provide ballistic missile targets to test North American sensors by launching targets from Kodiak Launch Complex along the west coast of Canada, the United States, and Mexico, and from Kauai Test Facility toward the broad ocean area (BOA) off the northwest coast of the United States. The program would also provide target alternatives to U.S. Army Kwajalein Atoll Kwajalein Missile Range (USAKA/KMR) and Pacific Missile Range Facility (PMRF) for sensor and interceptor testing programs. The Strategic Target System would fly more realistic trajectories and carry larger and more diverse payloads than those used in current testing.

DESCRIPTION OF THE PROPOSED ACTION: The EA addressed the Proposed Action to provide ballistic missile targets to test North American sensors, and for possible use in testing various sensors and ground-based interceptors at USAKA/KMR and various sensors and ship-based interceptors at PMRF. The Strategic Targets Project Office would use the Strategic Target System launch vehicle provided by Sandia National Laboratories. Sandia National Laboratories or other agencies would also provide the payload. Up to four Strategic Target System launches per year are anticipated over a minimum of 5 years and into the reasonably foreseeable future at Kodiak Launch Complex. Three basic launch azimuths would be used for launches from Kodiak Launch Complex. The first mission concept would be a southeastern flight trajectory, between 125 and 145 degrees, down the west coast of North America to an impact point in the BOA of Baja California, Mexico. The second would be a southwestern flight trajectory between 205 and 225 degrees, towards a target point located in the BOA well north of USAKA/KMR. The third mission

concept would be a southerly flight trajectory, between 180 to 205 degrees, towards a target point located in the BOA near PMRF.

Up to four Strategic Target System missiles per year would continue to be launched from Kauai Test Facility. No new missile launch azimuths would be required for the Proposed Action. In addition to current missile trajectories toward the USAKA/KMR BOA, the Proposed Action would also allow for missile trajectories toward the BOA off the northwest coast of North America. The new trajectories would be implemented using current launch azimuths. Once over open ocean, the missile would then execute a turning maneuver (or series of turns) to bring it onto the new flight trajectory.

The Strategic Target System activities at both launch complexes would consist of assembly and integration testing, flight preparation, launch/flight operations, data collection, and data analysis. All Strategic Target System launch activities would be in compliance with all applicable Federal, state, and local health and safety requirements.

ALTERNATIVES CONSIDERED: A number of additional alternatives were originally examined during preliminary planning for the North Pacific Targets program. All but two alternatives were eliminated from further consideration as being unreasonable. These two launch location alternatives were analyzed for the following operational and technical considerations: deployment costs, logistics response time, range required lead time, range costs, available instrumentation, range flexibility, current target capability, multipurpose overall target capability, and target system geometry.

The alternate launch locations considered were Wake Island and Cape Canaveral, Florida. The Wake Island option was not carried forward because it would not meet the schedule and target engagement scenarios. Additionally, significant technical risk would be incurred. Cape Canaveral was removed from further consideration primarily for cost, schedule, and launch/target mission engagement considerations.

ENVIRONMENTAL EFFECTS: To provide a context for understanding the potential effects of the Proposed Action and a basis for assessing the significance of potential impacts, several environmental resource areas were evaluated. The resource areas determined to have a potential for impacts were air quality, airspace, biological resources, hazardous materials and waste, health and safety, noise, and socioeconomics. Impacts to air quality and hazardous materials and waste at PMRF were not expected and thus not included in the analysis. Each environmental resource was evaluated according to a list of activities that were determined to be necessary to accomplish the Proposed Action.

Implementation of the Proposed Action would result in negligible, short-term impacts to air quality, airspace, hazardous materials and waste, health and safety, noise, and socioeconomics. Missile impact and debris recovery and disposal operations would result in minor impacts to biological resources. Standard operating procedures and mitigation measures have been incorporated into the Proposed Action to minimize the impact.

CONCLUSION: The resulting environmental analysis determined that no significant impacts would occur as a result of the proposed launches from either Kodiak Launch Complex or Kauai Test Facility. Based on this analysis, the mitigations provided in the

attached table are required to implement the Proposed Actions. Preparation of an Environmental Impact Statement, therefore, is not required.

DEADLINE FOR RECEIPT OF WRITTEN COMMENTS: 6 July 2001

POINT OF CONTACT: Submit written comments or requests for a copy of the EA to:

U.S. Army Space and Missile Defense Command
Attention: SMDC-EN-V (Thomas M. Craven)
Post Office Box 1500
Huntsville, Alabama 35807-3801

NORTH PACIFIC TARGETS PROGRAM, KODIAK, AK AND KAUAI, HI
ENVIRONMENTAL ASSESSMENT

UNITED STATES ARMY SPACE AND MISSILE DEFENSE COMMAND

AGENCY: U.S. Department of the Army

ACTION: Finding of No Significant Impact

PROPONENT:

_____ DATE:_____

LINDA M. GENTLE
Deputy Director
Space and Missile Defense Acquisition Center

APPROVED:

_____ DATE:_____

RONALD T. KADISH
Lieutenant General, USAF
Director

Resource and Impact Description	Mitigation Measure of Action
KODIAK, ALASKA	
Airspace	
Nonparticipating aircraft within the airspace	1. Send NOTAMs in accordance with the conditions of the directive specified in Army Regulation (AR) 95-10, *Operations*.
	2. Obtain approval from the Administrator, FAA, through the appropriate Army airspace representative as required by AR 95-50 to satisfy the airspace safety requirements in accordance with AR 385-62.
	3. Provide surveillance of the affected airspace in accordance with AR 385-62.
	4. Suspend launch operations when it is known or suspected that any unauthorized aircraft, or the Coast Guard aircraft on a Search and Rescue (SAR) mission, has entered any part of the surface danger zone. Resume launch operations only after the entrant has been removed or a thorough check of the suspected area has been performed.
Biological Resources	
Protection of threatened and endangered species	1. Adhere to terms of the current Environmental Monitoring Plan used by Alaska Aerospace Development Corporation (AADC).
	2. Adhere to future terms and conditions imposed by National Marine Fisheries on AADC after first five launches from Kodiak Launch Complex are monitored during periods when requested species are present.
Hazardous Materials and Waste	
Increase in the amount of hazardous waste disposed	1. Minimize use of hazardous materials in accordance with the U.S. Army Waste Minimization Program.
	2. Conduct transportation, storage, use, and disposal of hazardous materials according to U.S. DOT and U.S. Army regulations and established project and launch complex Standard Safety Operating Plans.
	3. Conduct the transportation of the boosters in accordance with U.S. DOT regulations.
Exposure to and disposal of asbestos cloth and magnesium-thorium	1. Contact SNL Industrial Hygiene/Toxicology in the event that modifications or repairs have to be made to any of the asbestos-containing items.
	2. Notify the SNL Chemical Waste Management department if any item containing asbestos needs to be disposed.
	3. Remove debris from terrestrial impact areas.
	4. Dispose the magnesium-thorium using an Army disposal contract for low-level radioactive materials.
Health and Safety	
Protection of human health	1. Prepare health and safety plans to provide guidance in meeting Federal, state, and local health and safety requirements, such as OSHA, DoD, Department of Energy, and transportation regulations

Resource and Impact Description	Mitigation Measure of Action
Closure of the Buskin River State Recreation Site	1. Utilize proposed parking of the transport C-5 such that impact to the recreation site and the airport would be minimized.
	2. Notify the Alaska State Parks, Kodiak Division 30 days before the missile arrival that the alternate parking would be used and campsites affected by the ESQD would not be available during the off-loading operation.
Safety of the general public during transportation of the boosters to Kodiak Launch Complex	1. Establish an ESQD with a radius of 399 meters during booster offloading process.
	2. Utilize a route in accordance with the permit application submitted to and approved by the State of Alaska Department of Transportation.
	3. Suspend or move hazardous operations at the airport in the event of a SAR requiring Coast Guard support.
Safety of the general public and mission personnel at Kodiak Launch Complex	1. Establish an ESQD for explosive hazards with a radius of 399 meters to inhabited buildings, and a radius of 239 meters to public traffic routes.
	2. Conduct all pre-flight hazardous operations, payload and booster preparation activities in accordance with appropriate safety regulations and SNL and Kodiak Launch Complex regulations in order to minimize potential risks to mission personnel and the general population.
	3. Establish a safety exclusion zone, a Ground Hazard Area (GHA), and a flight termination line to ensure public safety during the launch.
	4. Exclude nonparticipants from the safety exclusion zone.
	5. Survey the safety exclusion zone to verify that it is clear of people (except for mission-essential personnel) no less than 20 minutes before each launch.
	6. Notify commercial and private aircraft and ocean vessels in advance of launch activities by the NAWCWD through NOTAMs and NOTMARs, respectively.
	7. Close Pasagshak Point Road on launch days at the site boundary to ensure no unauthorized personnel enter the GHA.
	8. Suspend hazardous operations at the launch complex in the event of a SAR requiring Coast Guard support.
Socioeconomics	
To minimize interference with fishing and other public use	1. Close ocean areas for as short a time as possible.

Resource and Impact Description	Mitigation Measure of Action
PACIFIC MISSILE RANGE FACILITY, HAWAII	
Airspace	
Interference to two en route low altitude airways.	1. Implement the altitude reservation (ALTRV) procedures for target missiles launched.
Impact to Warning Area W-188.	1. Reroute instrument flight rules aircraft using the V-15 low altitude airway that passes through its southern part by Honolulu ARTCC.
Biological Resources	
Protection of vegetation and prevention of fires.	1. Install a portable blast deflector on the launch pad.
	2. Irrigate vegetation adjacent to the launch pad to decrease the potential to burn from launch activities.
	3. Remove dry vegetation from around the launch pad.
Health and Safety	
Safety of the general public during transportation of the boosters to PMRF	1. Transport the boosters from Redstone Arsenal via military aircraft in accordance with applicable transportation regulations.
Safety of the general public and mission personnel at PMRF	1. Conduct all pre-flight operations in accordance with appropriate SNL/Kauai Test Facility safety regulations.
	2. Establish the ESQD with a radius of 381 meters centered on the site of the hazardous operation.
	3. Restrict public access to the ESQD for the length of time the booster is on the launch pad.
	4. Provide 24-hour security during this time to ensure that the safety distance criterion is met.
	5. Establish a GHA and a Flight Termination Line.
	6. Implement a launch hazard area, with a radius of 3,048 meters, as part of the current restrictive easement with the State of Hawaii.
	7. Use sweep and search measures to ensure that all areas within the launch hazard area are determined clear of people by 10 minutes before launch.
	8. Setup control points along the road using security forces to monitor and clear traffic during launch operations.
	9. Clear all nonessential personnel on the installation from the launch hazard area.
	10. Provide personal protective equipment to launch personnel within the launch hazard area.
	11. Notify commercial and private aircraft and ocean vessels in advance of launch activities by the NAWCWD and the PMRF through NOTAMs by the FAA and NOTMARs.
Socioeconomics	
To minimize interference with fishing and other public use	1. Close ocean areas for as short a time as possible.

Resource and Impact Description	Mitigation Measure of Action
OCEAN AREA (OUTSIDE U.S. TERRITORY)	
Airspace	
Interference of air routes and safety of airmen	1. Conduct target missile launches in compliance with DoD Directive 4540.1 that specifies procedures for conducting missile and projectile firing.
	2. Send NOTAMs in accordance with the conditions of the directive specified in OPNAVINST 3721.20 before conducting a missile launch.
	3. Obtain approval from the Administrator, FAA, through the appropriate U.S. Navy airspace representative.
	4. Suspend hazardous operations when it is known that any non-participating aircraft has entered any part of the danger zone until the non-participating entrant has left the area, or a thorough check of the suspected area has been performed.
Biological Resources	
Impacts to marine mammals	1. Use standard range warning and checking procedures for visible large concentrations of marine mammals in the area of the target launch, trajectory, and first stage impact area.
	2. Dispatch patrol and surveillance aircraft before the launch to search the water surface.
Health and Safety	
Safety of the general public	1. Issue appropriate NOTMARs and NOTAMs before proceeding with a launch.

1.0
INTRODUCTION

1.0 INTRODUCTION

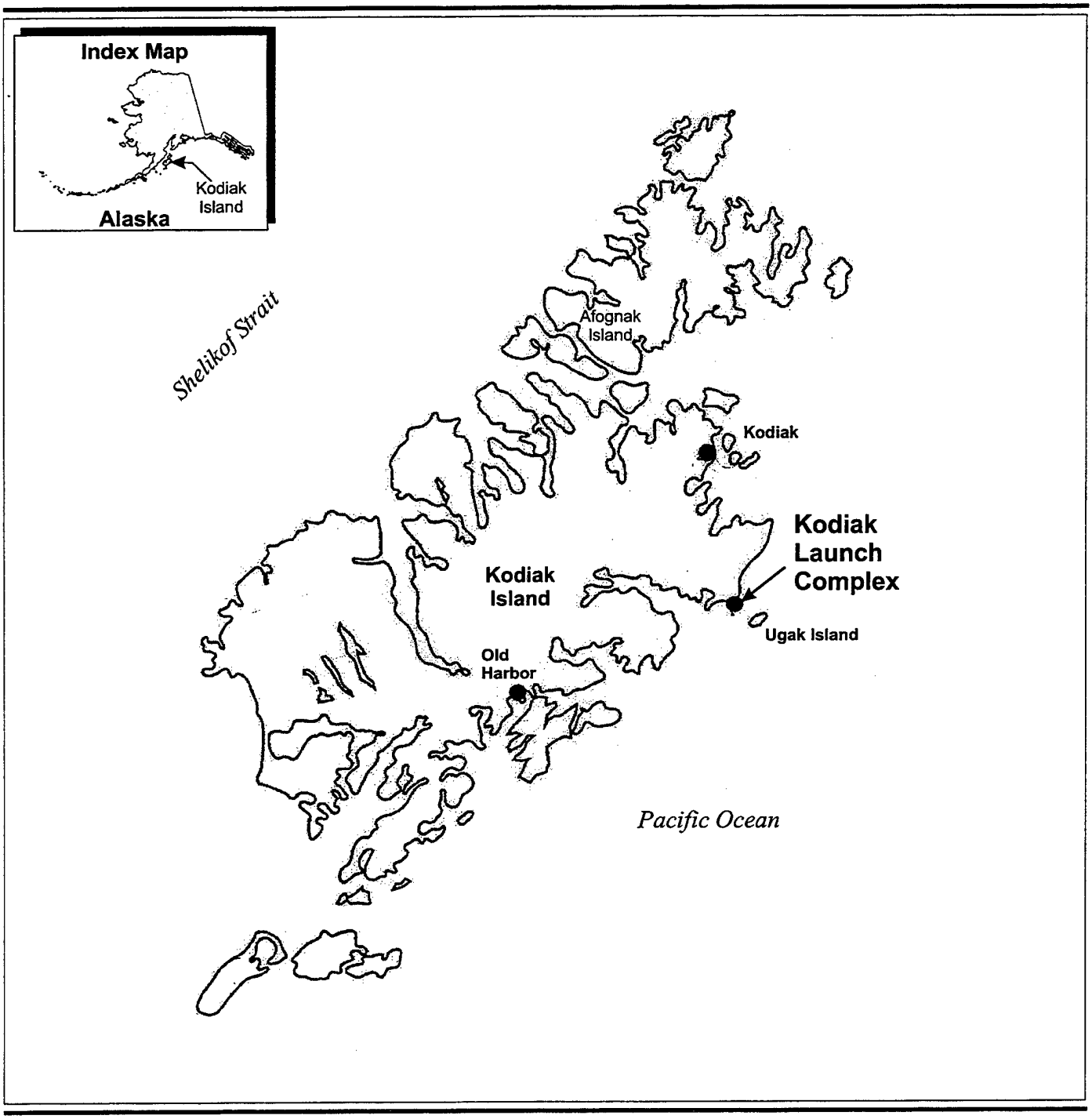
1.1 BACKGROUND

The National Environmental Policy Act (NEPA), the Council on Environmental Quality regulations implementing NEPA (40 Code of Federal Regulations [CFR] 1500-1508), Department of Defense (DoD) Instruction 4715.9, and Army Regulation 200-2 direct that DoD officials take into account environmental consequences when authorizing or approving major Federal actions. Accordingly, this environmental assessment (EA) has been prepared to analyze the environmental consequences of the proposed launches of the Strategic Target System in the North Pacific area.

The Strategic Targets Product Office (STPO), within the Ballistic Missile Targets Joint Project Office of the U.S. Army Space and Missile Defense Command (USASMDC), is responsible for providing the target launch system for various Risk Reduction Flight (RRF) and Integrated Flight Test (IFT) programs. The STPO would provide the Strategic Target System launch vehicle for strategic target launch services from Kodiak Launch Complex, Kodiak Island, Alaska (figure 1-1). Kodiak Launch Complex (figure 1-2) as a commercial rocket launch facility is licensed by the Federal Aviation Administration (FAA) and operated by the Alaska Aerospace Development Corporation (AADC). The construction and operation of Kodiak Launch Complex was analyzed in an EA prepared by the FAA (Federal Aviation Administration, 1996).

The Strategic Target System target would also continue to be launched from Kauai Test Facility (figures 1-3 and 1-4) at the Pacific Missile Range Facility (PMRF), Barking Sands, Kauai, Hawaii to the Broad Ocean Area (BOA) near the U.S. Army Kwajalein Atoll/Kwajalein Missile Range (USAKA/KMR) in the Marshall Islands. The U.S. Department of Energy owns the facilities at the Kauai Test Facility. Sandia National Laboratories (SNL) operates these facilities for the Department of Energy. The launch activities were analyzed in an EA in 1990 (U.S. Army Strategic Defense Command, 1990) and a subsequent environmental impact statement (EIS) (U.S. Army Strategic Defense Command, 1992). An EIS in 1998 addressed the enhancement of capabilities at PMRF, to include the expansion of the range's BOA and the extension of the Strategic Target System restrictive easement until 2030 (Pacific Missile Range Facility, Barking Sands, 1998).

The STPO, supporting the Ballistic Missile Defense Organization, proposes to increase the launch capability of the Strategic Target System by adding a new flight trajectory from Kauai Test Facility and, as a fee-paying customer, providing a launch capability from Kodiak Launch Complex. The launches from Kauai Test Facility would be toward the northeast, with payload impact in the BOA off the northwest coast of North America. The proposed launches from Kodiak Launch Complex would be along three different trajectories. The first would be in a southeasterly direction, off the west coasts of Canada, the United States, and Mexico, with impacts in the BOA off the coast of Mexico. The second trajectory would be in a southwesterly direction toward the BOA near USAKA/KMR.



EXPLANATION

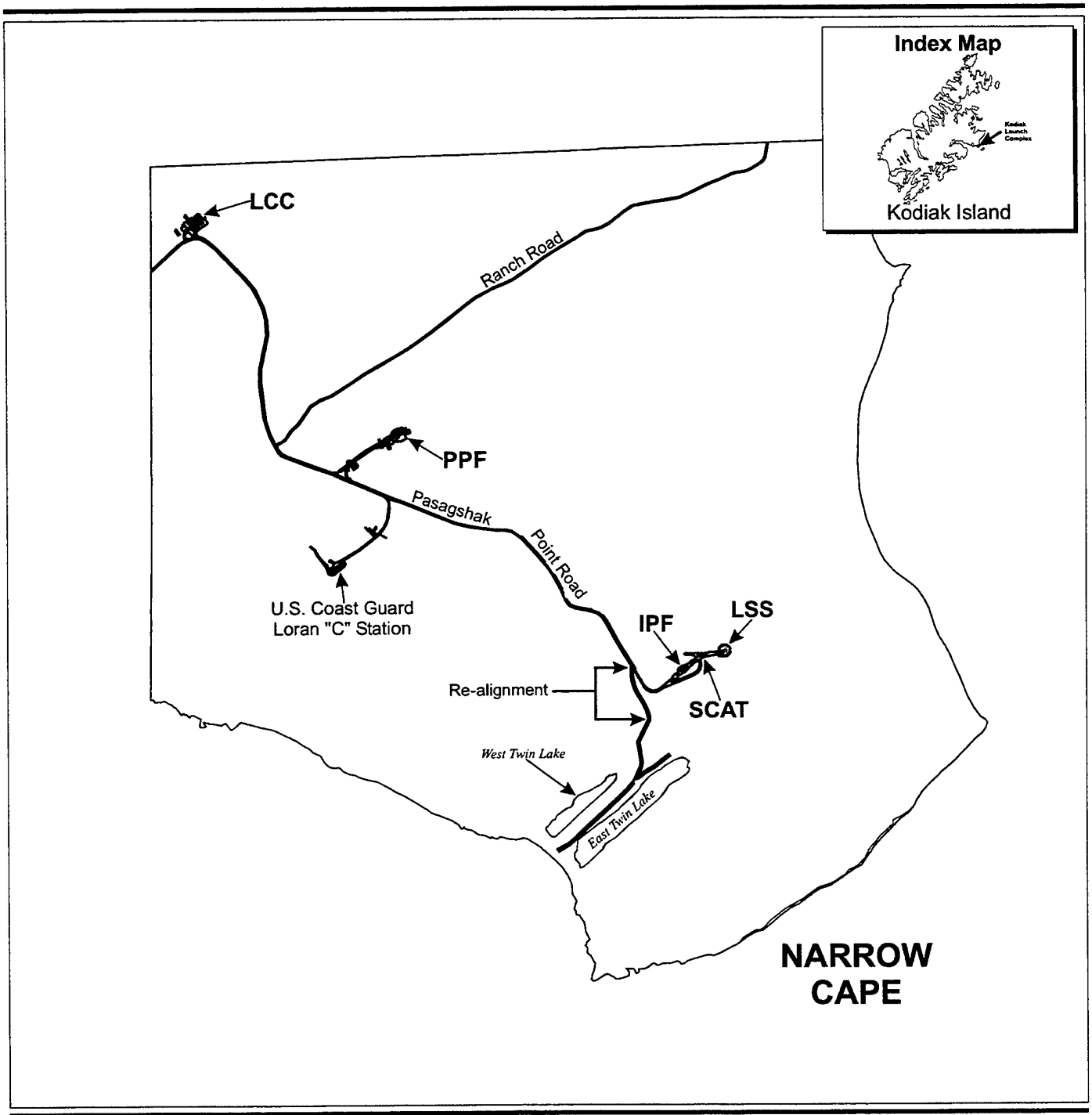
Kodiak Island

Pacific Ocean

Scale
0 11.58 23.15 Miles
0 18.63 37.26 Kilometers

NORTH

Figure 1-1



EXPLANATION

IPF = Integration and Processing Facility
LCC = Launch Control and Management Center
LSS = Launch Service System
PPF = Payload Processing Facility
SCAT = Spacecraft Assemblies Transfer

Kodiak Launch Complex

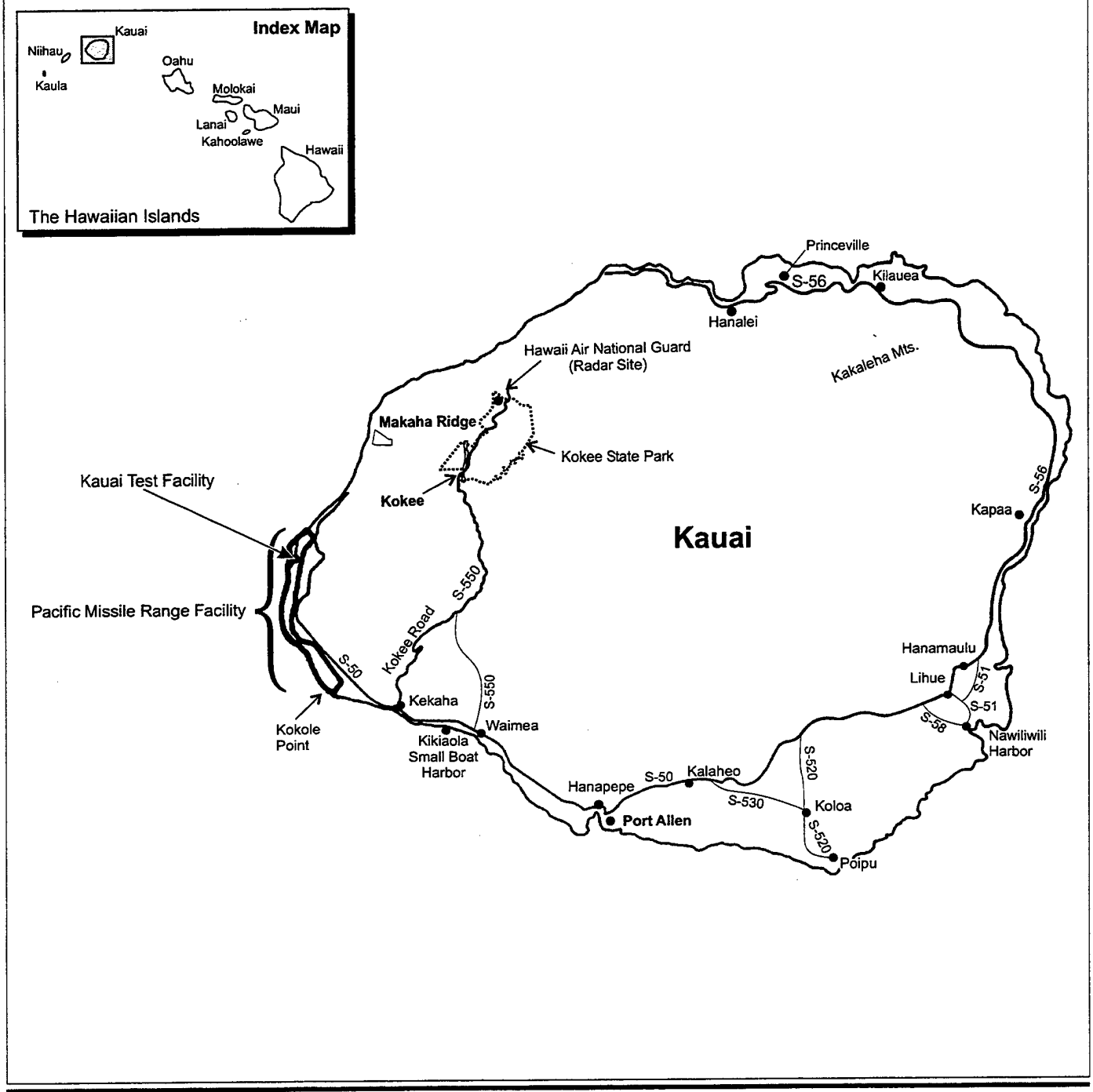
Kodiak Island, Alaska

Figure 1-2

NORTH

Scale
0 352 704 Meters
0 1,155 2,310 Feet

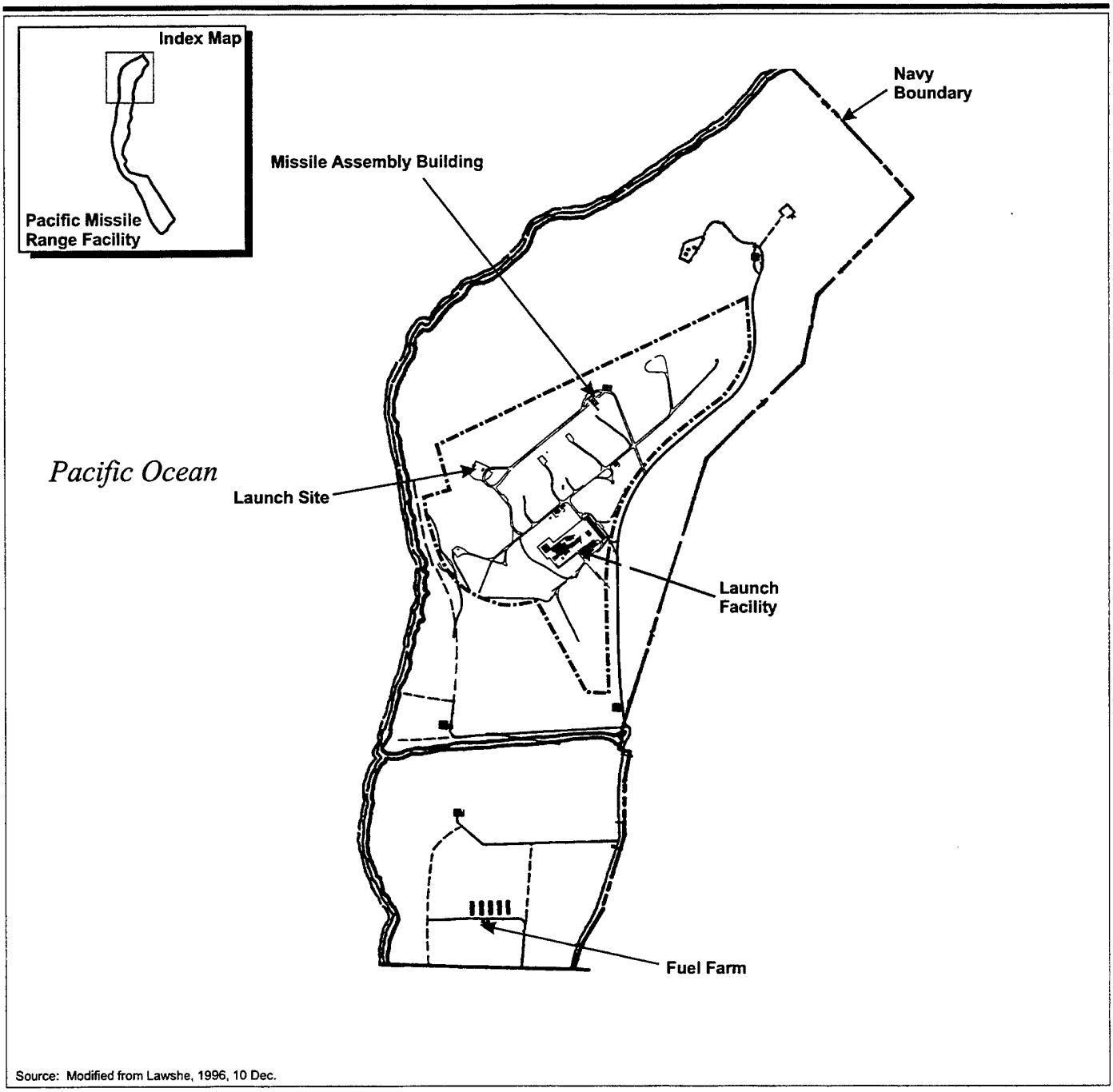
03-29-01 1-2 Kodiak_launch complex



Kauai Test Facility

Kauai, Hawaii

Figure 1-3



Source: Modified from Lawshe, 1996, 10 Dec.

EXPLANATION

Kauai Test Facility Boundary

Kauai Test Facility

Pacific Missile Range Facility
Kauai, Hawaii

NORTH

Scale
0 277 554 Meters
0 909 1,818 Feet

03-29-01 1-4 pmrf_main_north_01

Figure 1-4

The third trajectory would be in a southerly direction toward the BOA north of PMRF. Additionally, newer first and second stage Polaris A3R rocket motors would be integrated into the Strategic Target System inventory for launches.

1.2 PURPOSE AND NEED FOR THE PROPOSED ACTION

1.2.1 PURPOSE

The purpose of the North Pacific Targets program is to provide ballistic missile targets to test North American sensors by launching targets from Kodiak Launch Complex along the west coast of Canada, the United States, and Mexico and from Kauai Test Facility toward the BOA off the northwest coast of the United States. The program would also provide target alternatives to USAKA/KMR and PMRF for sensor and interceptor testing programs. The Strategic Target System would fly more realistic trajectories and carry larger and more diverse payloads than those used in current testing.

1.2.2 NEED

STPO has a requirement to provide ballistic missile targets with realistic trajectories for DoD missile and sensor programs in North America, at USAKA/KMR, and at PMRF. The STPO is providing these targets for current missile and sensor programs and to meet anticipated target needs for future programs. The North Pacific Targets program proposes to use Kodiak Launch Complex and Kauai Test Facility since these facilities can provide trajectories that simulate realistic Pacific engagement scenarios. Kauai Test Facility provides the ability to test systems using the assets and capabilities at PMRF. Kodiak Launch Complex provides the capability to provide multiple target trajectories from one location to existing test ranges. In addition, the program is needed to provide realistic targets for interceptors launched from USAKA/KMR and from Navy ships. These targets would deploy several objects for RRF and IFT programs.

1.2.3 DECISIONS TO BE MADE

The decisions to be made and supported by information contained in this EA are whether to launch the Strategic Target System in one or more of the following scenarios:

- Launch from Kodiak Launch Complex along the west coast of North America and Mexico, with impact in the BOA off the coast of Mexico
- Launch from Kodiak Launch Complex toward USAKA/KMR with impact in the BOA
- Launch from Kodiak Launch Complex toward PMRF with impact in the BOA
- Launch from Kauai Test Facility toward an impact point in the North America BOA off Washington State

1.3 PUBLIC INVOLVEMENT

The STPO held a public information session on November 30, 2000, in Kodiak, Alaska. The session had two purposes: (1) to provide information on the proposed North Pacific Targets program and (2) to receive information on pertinent environmental issues to be analyzed in the environmental assessment. The members of the public, interested agencies, and news media that attended had an opportunity to discuss various potential areas of concern with the program's technical team. Information presented to the public is provided in appendix A. Forty-two people registered during the 3-hour information session.

A website was established to facilitate dissemination of information on the program to the public. The fact sheets and the display boards used at the public information session were placed on the website. Copies of the Final EA and the draft Finding of No Significant Impact have also been placed on the website (www.huntsville.edaw.com/northpacific).

A distribution list of the Final EA is also included in appendix A.

1.4 COOPERATING AGENCY

The Department of Energy is a cooperating agency in the preparation of this EA. A copy of the acceptance letter is presented in appendix B.

1.5 RELATED ENVIRONMENTAL DOCUMENTATION

Previous NEPA documentation prepared for related test activities includes the following:

Kodiak Launch Complex

- EA of the Kodiak Launch Complex, June 1996
- Air Force Atmospheric Interceptor Technology (ait) EA, November 1997
- Quick Reaction Launch Vehicle EA, January 2001

Kauai Test Facility/PMRF

- Strategic Target System EA, July 1990
- Strategic Target System EIS, May 1992
- Kauai Test Facility EA, July 1992
- EIS for the Restrictive Easement, Kauai, Hawaii, October 1993
- U.S. Army Kwajalein Atoll Supplemental EIS, December 1993
- PMRF Enhanced Capability EIS, December 1998

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2.0
DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

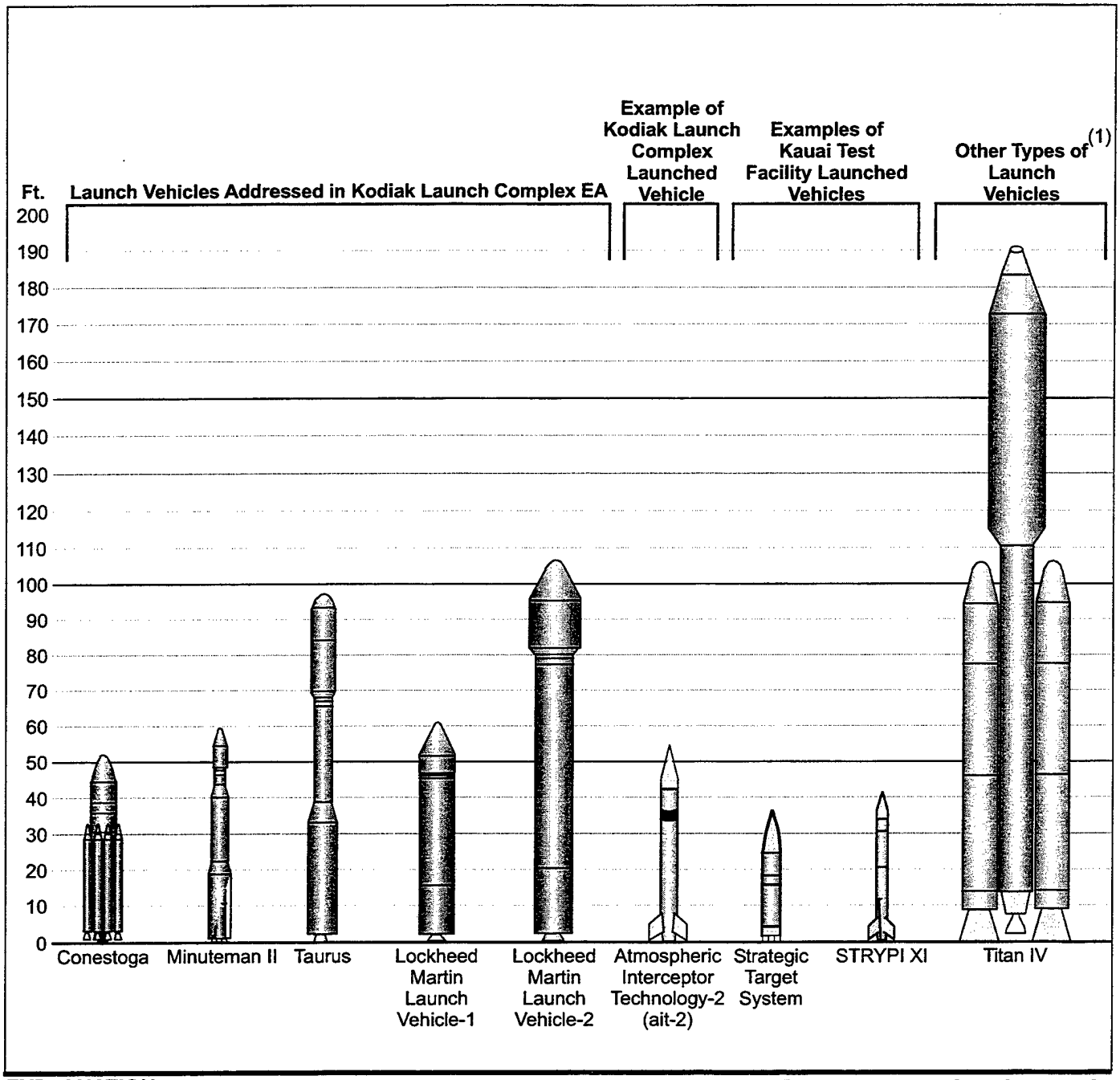
2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

The Proposed Action is to increase launch capability of the Strategic Target System in order to provide ballistic missile targets to test North American sensors, and for possible use in testing various sensors and ground-based interceptors at USAKA/KMR and various sensors and ship-based interceptors at PMRF. Effects of interceptor launches have been or will be analyzed in other environmental documentation. Launches would occur from Kodiak Launch Complex and Kauai Test Facility. Figure 2-1 shows the types of boosters analyzed in the Kodiak Launch Complex EA as compared to the atmospheric interceptor technology (ait) system (an Air Force missile launched at Kodiak Launch Complex) and the Strategic Target System that has been launched from PMRF. The STPO would use the Strategic Target System launch vehicle provided by SNL. The payload would also be provided by SNL or other agencies. Payload systems for each Strategic Target System target mission would consist of deployable targets plus their associated ejection systems, electronics, mounting hardware, and truth data instrumentation systems.

The primary components of the Strategic Target System vehicle are the first and second stage Polaris boosters, the third stage Orbus-1 booster, and the development payloads (figure 2-2). This configuration has the approximate dimensions of 11.5 meters (37.8 feet) in length, 137 centimeters (54 inches) in diameter, and 16,670 kilograms (36,750 pounds) in weight. The range of the Strategic Target System is between 1,000 and 5,500 kilometers (621 and 3,418 miles). It can turn in flight up to 70 degrees in any direction once away from the launch pad and over the ocean. Typically, the payload design and development would occur at existing SNL facilities in Albuquerque, New Mexico, as part of their routine operations. SNL, as the launch services agent for the U.S. Army, would also be responsible for designing and developing the electronic systems for the Strategic Target System boosters. The remainder of the system consists of ground support equipment.

The Polaris and Orbus-1 boosters are currently stored at the Redstone Technical Test Center, Test Area 5 of Redstone Arsenal, Alabama. Within 1 year before launch, the first and second stage boosters and parts would be x-rayed in radiographic facilities and would be certified for flight for 1 year. The 1-year certification for the Strategic Target System first and second stage motors could be extended for an additional 6 months after technical review of the environmental, transportation, and processing documentation. The third stage Orbus-1 boosters are certified for 5 years as a result of refurbishment by the manufacturer in 2001. The first and second stage boosters would be assembled and the first, second, and third stage boosters would be tested at the Redstone Arsenal facilities. Then the first, second, and third stage boosters would be transported to Kodiak Launch Complex or Kauai Test Facility by military aircraft for flight preparation. Both Polaris A3P and the newer Polaris A3R motors would be used in the first and second stage Polaris

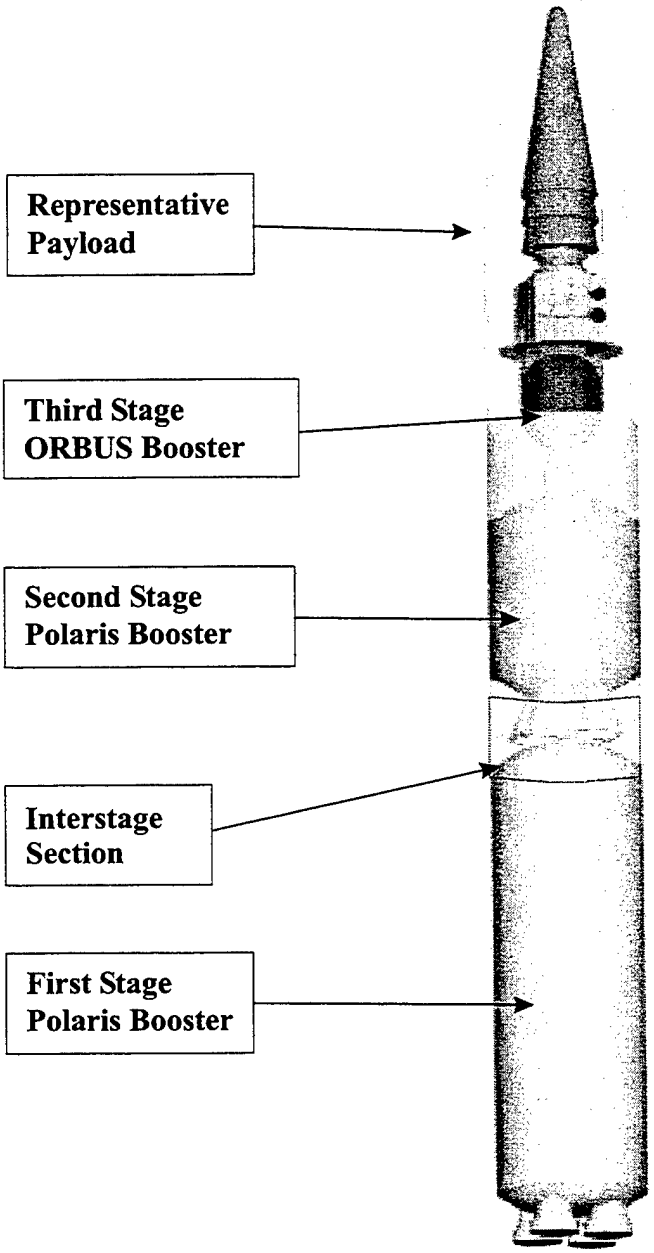


EXPLANATION

(1) Titan IV included for comparison purposes only, it is not launched from Kodiak Launch Complex or Kauai Test Facility.

Representative Launch Vehicles Comparison

Figure 2-1



Source: Sandia National Laboratories, 2000.

Strategic Target System Missile

Not to Scale

Figure 2-2

boosters. The A3R motors have the same propellants and emission characteristics as the earlier A3P motors. The A3R motors are of a much later manufacture, have a thicker layer of insulation in the aft end of the casing, and have an overhauled nozzle assembly. Otherwise, the motors are identical.

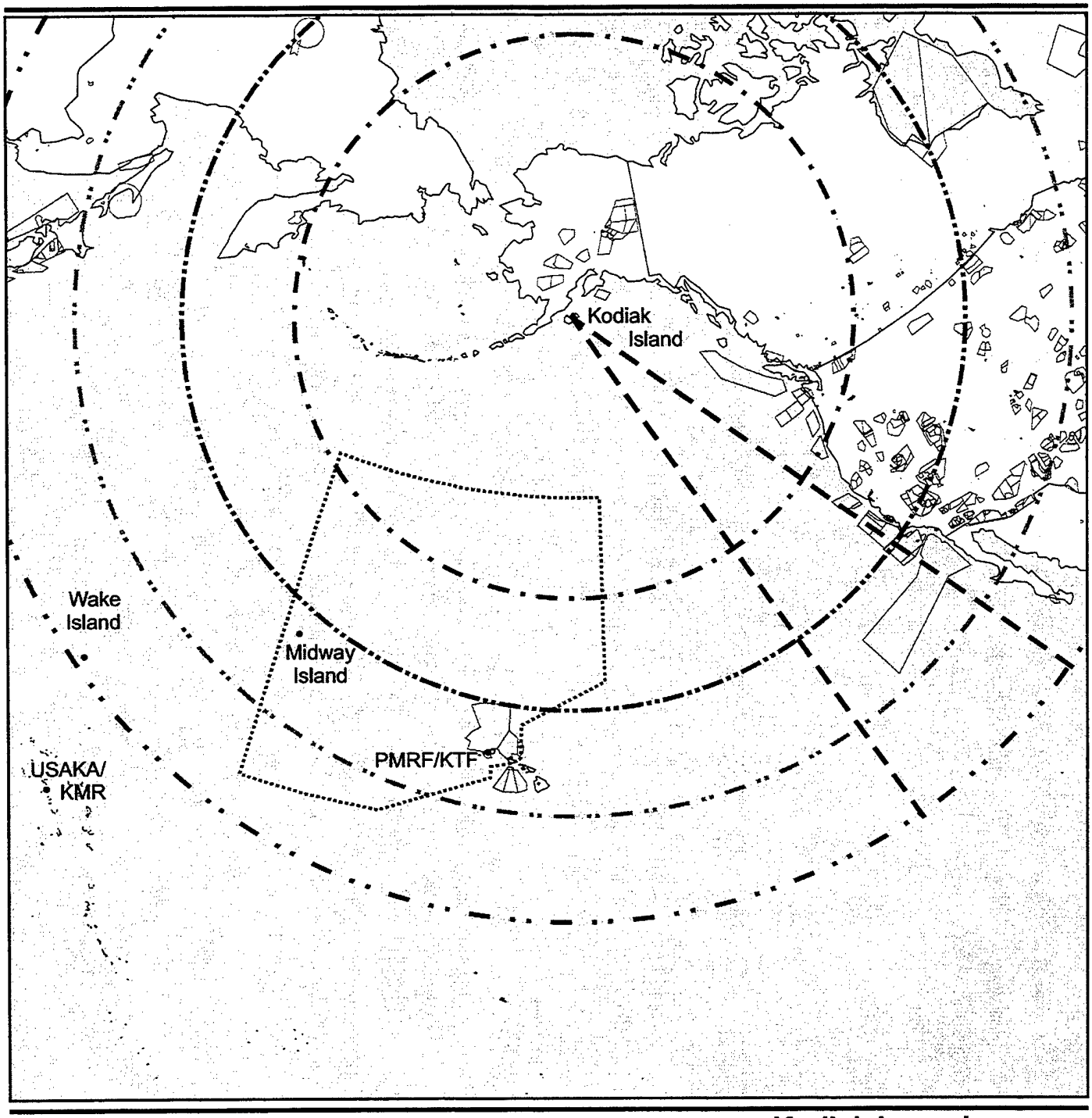
Strips of asbestos cloth are sandwiched between the second stage Freon Tank Assembly and its metallic retaining straps. There is also asbestos cloth within the Freon Tank Assembly. The asbestos cloth is a thermal protection material that was a part of the original Polaris A3 design. The asbestos cloth has not been modified by SNL for use in the Strategic Target System missile. Visual inspection of all the tanks used to date on this program has shown that these asbestos strips are undamaged and have not frayed. In addition, the first stage and second stage motors contain asbestos in their insulators and nozzle assemblies. The asbestos is an integral element to the components of these motors and is not readily exposed. In the event that modifications or repairs have to be made to any of these asbestos-containing items, the SNL Industrial Hygiene and Safety Programs department shall be contacted for guidance and assistance to resolve the problem. If any item containing asbestos needs to be disposed, the Hazardous and Solid Waste, Pollution Prevention department will be notified and disposal arranged.

The skin of the first/second interstage structure is manufactured from a magnesium-thorium alloy (HK31A-H24) containing less than 3 percent thorium. The interstage skin is 137.2 centimeters (54 inches) in diameter and 0.406 centimeter (0.160 inch) thick. The height of the skin only (not including the attachment rings, which are aluminum) is approximately 85.1 centimeters (33.5 inches). The alloy's radioactivity measures less than 80 microcuries and is handled as a normally occurring radioactive material. This is a surplus Polaris A3 asset that has been adapted to the Strategic Target System. The skin of the third stage structure, the payload support plate, and the gussets that stiffen the payload plate are fabricated from an aluminum-magnesium alloy (AZ31B-H24). The dodecagon, which serves as the mounting surface for the third stage electronics components and provides the central core of the third stage structure, is machined from a different aluminum-magnesium alloy (ZK60A-T5). Although magnesium is extremely difficult to ignite under normal circumstances, it will burn profusely if ignition does occur.

Additional materials found in rocket motors and their payloads include lead and tin in soldered joints, cadmium-plated steel fittings, silver zinc batteries, copper wiring, epoxies, and adhesives.

2.1.1 KODIAK LAUNCH COMPLEX, KODIAK, ALASKA

Up to four Strategic Target System launches per year are anticipated over a minimum of 5 years and into the reasonably foreseeable future at Kodiak Launch Complex. Three basic launch azimuths would be used for launches from Kodiak Launch Complex (figures 2-3 through 2-5). The first mission concept would be to fly on a southeastern flight trajectory, between 125 and 145 degrees, down the west coast of North America to an impact point in the BOA off Baja California, Mexico. The first Strategic Target System Kodiak Launch Complex mission would be designated the West Coast RRF and would occur in the spring of 2001 (third quarter of fiscal year 01).



EXPLANATION

- 2,500 km Radius
- 3,500 km Radius
- 4,500 km Radius
- 5,500 km Radius
- Existing Warning Areas and Special Use Airspace
- Temporary Operating Areas
- Kodiak Launch Complex to BOA Northwest of North America Launch Corridor

USAKA/KMR = United States Army Kwajalein Atoll / Kwajalein Missile Range

PMRF/KTF = Pacific Missile Range / Kauai Test Facility

NORTH

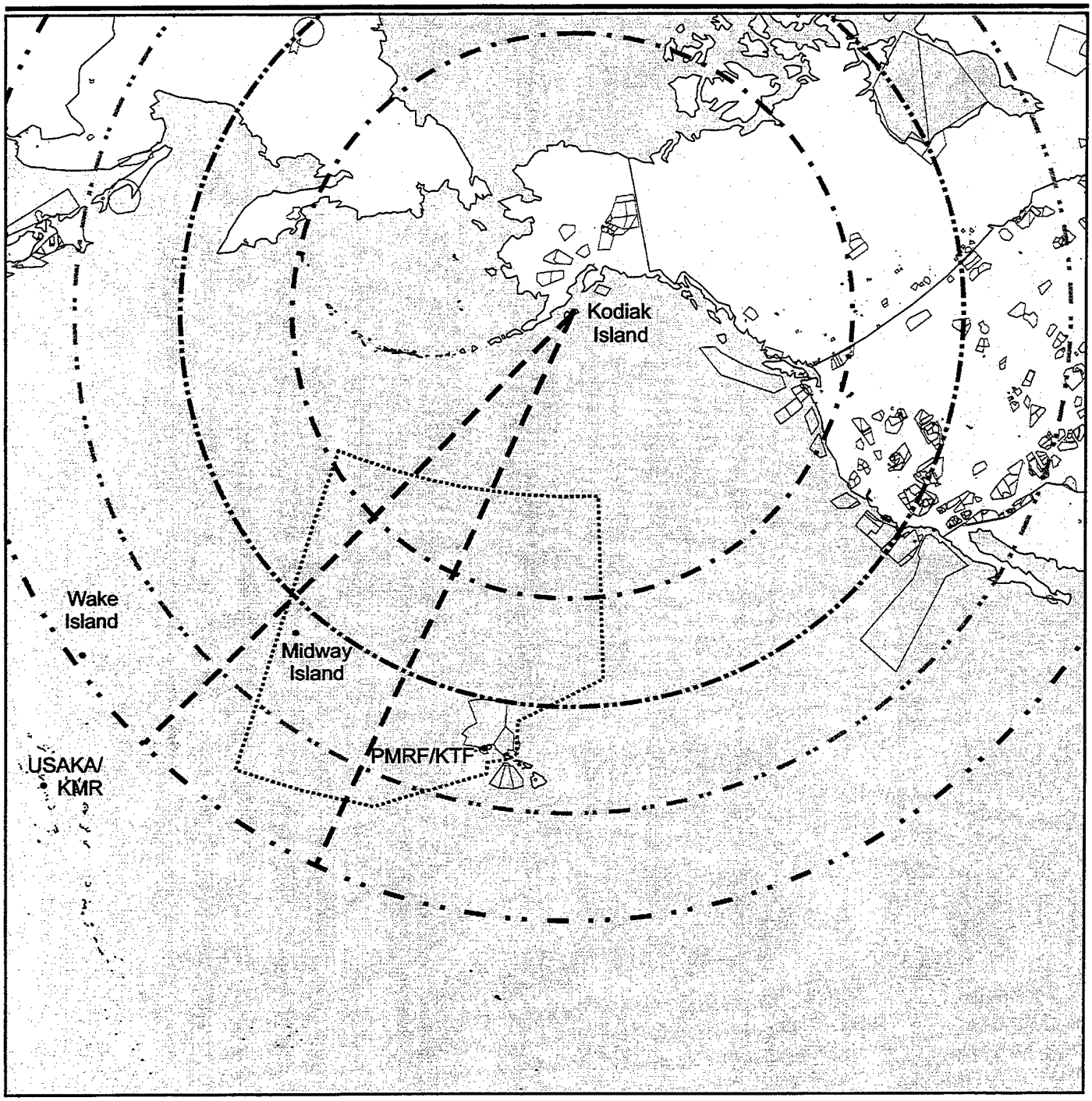
Scale
0 675 1,350 Kilometers
0 420 840 Miles

03-29-01 2-3 Trajectory_2

Kodiak Launch Complex Southeast Trajectory: 135° Centerline (Proposed Capability)

Kodiak Launch Complex, Alaska

Figure 2-3



EXPLANATION

- 2,500 km Radius
- 3,500 km Radius
- 4,500 km Radius
- 5,500 km Radius
- Existing Warning Areas and Special Use Airspace
- Temporary Operating Areas
- Kodiak Launch Complex to BOA Kwajalein Missile Range Launch Corridor (Alternative)

USAKA/KMR = United States Army Kwajalein Atoll / Kwajalein Missile Range

PMRF/KTF = Pacific Missile Range / Kauai Test Facility

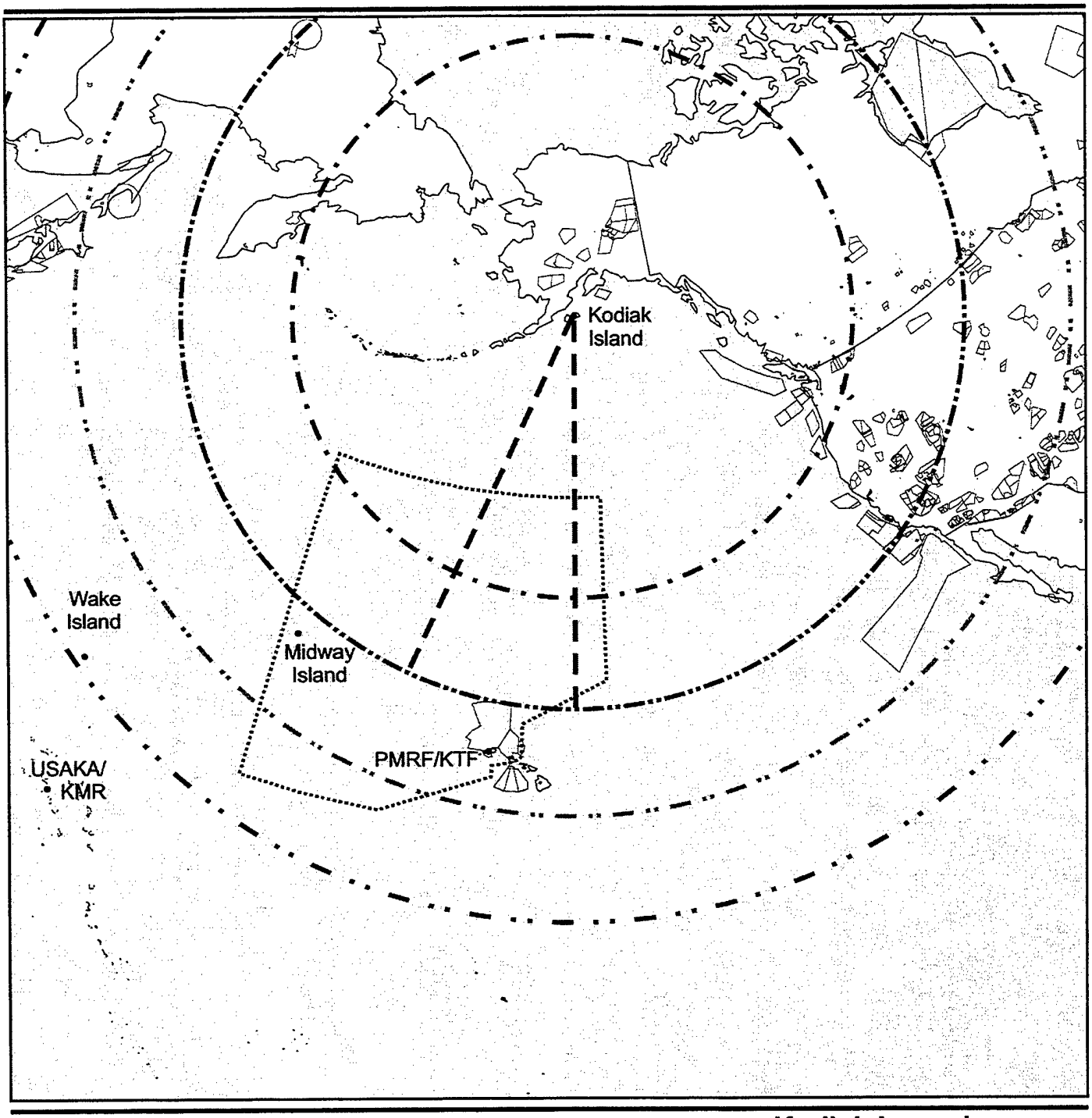
Scale
0 675 1,350 Kilometers
0 420 840 Miles
NORTH

03-29-01 2-4 Trajectory_1

Kodiak Launch Complex Southwest Trajectory: 215° Centerline (Proposed Capability)

Kodiak Launch Complex, Alaska

Figure 2-4



EXPLANATION

- 2,500 km Radius
- 3,500 km Radius
- 4,500 km Radius
- 5,500 km Radius
- Existing Warning Areas and Special Use Airspace
- Temporary Operating Areas
- Kodiak Launch Complex to BOA North of Kauai Test Facility Launch Corridor (Alternative)

USAKA/KMR = United States Army Kwajalein Atoll / Kwajalein Missile Range

PMRF/KTF = Pacific Missile Range / Kauai Test Facility

Scale
0 675 1,350 Kilometers
0 420 840 Miles

NORTH

03-29-01 2-5 Trajectory_5

Kodiak Launch Complex South Trajectory: 192° Centerline (Proposed Capability)

Kodiak Launch Complex, Alaska

Figure 2-5

The second mission concept would be to fly from Kodiak Launch Complex on a southwestern flight trajectory, between 205 and 225 degrees, towards a target point located in the BOA well north of USAKA/KMR. The second Strategic Target System Kodiak Launch Complex mission would be designated the Strategic Target System Generic Rest-of-World-1 (GROW-1) RRF target mission. The Strategic Target System GROW-1 RRF would occur in the spring of 2002 (third quarter of fiscal year 02), and would be targeted to the BOA near USAKA/KMR.

The third mission concept would be to fly from Kodiak Launch Complex on a southerly flight trajectory, between 180 and 205 degrees, towards a target point located in the BOA near PMRF. These target missions for the Navy would begin in 2004.

The Strategic Target System activities at Kodiak Launch Complex would consist of assembly and integration testing, flight preparation, launch/flight operations, data collection, and data analysis.

All Strategic Target System launch activities would be in compliance with all applicable Federal, state, and local health and safety requirements. Health and safety plans would provide guidance in meeting Federal, state, and local health and safety requirements, such as Occupational Safety and Health Administration (OSHA), DoD, Department of Energy, and transportation regulations.

2.1.1.1 Assembly and Integration Testing

The assembly and integration testing of the first, second, and third stage boosters would occur at Kodiak Launch Complex. The boosters would be transported from Redstone Arsenal by military aircraft in accordance with applicable transportation regulations. The aircraft would land at the Kodiak Airport and would be parked in an area designated by the airport manager. A new designated C-5 parking area at the airport has been established that would not impact use of the Buskin River State Recreation Site. The alternative C-5 parking area would be that location used during previous Air Force missile launches. In the event this alternate location is required, the ESQD would encroach on several campsites and require closure of the recreation site for one night while the boosters are at the airport. AADC would provide a 30-day advance notice to Alaska State Parks regarding the closure.

In the event of a search and rescue operation, hazardous activities at the airport would stop or move to allow the Coast Guard to proceed and would resume after an all clear is provided. Therefore, there should be no effect to Air Station operations.

Because the Strategic Target System propellant is categorized as a Class 1, explosives, Division 1.1, explosives with a mass explosion hazard, by the Department of Transportation (DOT). An explosive safety quantity-distance (ESQD) with a radius of 399 meters (1,310 feet) would be established. The ESQD is based on information provided in Table 9-1, Hazard Division 1.1, Inhabited Building and Public Traffic Route Distances, DoD 6055.9-STD, *Ammunition and Explosives Safety Standards,* and uses the total weight of the Strategic Target System propellant. This ESQD would keep unauthorized personnel

and individuals at a safe distance until the boosters are unloaded and transported by truck to Kodiak Launch Complex. The transportation route would be in accordance with the permit application submitted to and approved by the State of Alaska Department of Transportation.

The current plan is to send two Orbus-1 boosters to Kodiak Launch Complex; both boosters would initially go to the Integration and Processing Facility. After the missile is transported to the launch stool and the payloads are installed, the second Orbus-1 would be moved to the Payload Processing Facility. It would remain there until returned to Redstone Arsenal.

At Kodiak Launch Complex, assembly and integration testing activities would take place at the Integration and Processing Facility as described in the Kodiak Launch Complex EA. Up to 65 personnel would be working and living in the area during missile buildup activities, which would last 35 to 40 days. Some personnel would commute from commercial accommodations in and around the town of Kodiak. Other personnel would be housed in limited facilities near Kodiak Launch Complex. The Strategic Target System boosters would be processed and prepared for launch in the same manner as previous flights from Kauai Test Facility.

Prior launches from Kodiak Launch Complex have utilized Coast Guard assets to provide logistical support such as transport of boosters, payloads, and other components. The STPO would contract out the logistical support function such as those mentioned above to private firms or other Federal agencies. The Coast Guard would not be utilized to provide those logistical activities. Coast Guard assistance would only be requested in an emergency or if advance notification could be provided with no impact to assets allocated to the Coast Guard's primary mission, thus not impeding the Coast Guard's ability to perform mission-related activities using assets that would have been involved in logistical support.

If the Kodiak Launch Complex operator, AADC, requires logistical support for their activities this would be done under the provisions and guidance of their existing Memorandum of Understanding with the U.S. Coast Guard.

2.1.1.2 Flight Preparation

Payload-booster integration and mission planning would be provided by SNL and closely monitored by the STPO to support up to four Strategic Target System launches per year. Flight preparation would involve all activities required to assemble the major Strategic Target System components before flight and to transport the Strategic Target System booster and support equipment to Kodiak Launch Complex.

Flight preparations at Kodiak Launch Complex would occur in the Integration and Processing Facility and the Payload Processing Facility and would include booster flight preparation, payload flight preparation, and flight communication preparation.

Booster Flight Preparation

The Strategic Target System boosters would be transported to Kodiak Island using military aircraft. Use of the Kodiak joint tenant airport shared by commercial pilots and the Alaska Coast Guard would be required to support transportation of cargo and personnel. After arrival by military aircraft between 11:00 p.m. and 6:00 a.m., the boosters and payload would be transported using established and permitted transportation routes to the Integration and Processing Facility on Kodiak Launch Complex. The lead vehicle will make sure that the road is clear. The lead vehicle would be in front of the truck carrying the missile and in constant communication with that truck. At the tail end would be a vehicle carrying personnel who are experts in dealing with explosives in emergency situations. When that truck has passed, the closure has ended. Kodiak Launch Complex Ordnance and Security personnel provided by the Naval Air Warfare Center Weapons Division (NAWCWD) and STPO would assist in off-loading the aircraft and would transport any ordnance to the Payload Processing Facility for payloads and the Integration and Processing Facility for the boosters. The in-flight destruct package, missile instrumentation, stage assembly, and range safety equipment system would be installed at the Integration and Processing Facility. Ground and flight system tests would be conducted and all elements of the flight vehicle would be electrically connected while on the missile transporter/erector trailer. To the maximum extent practical, the final system test would simulate the mission flight profile.

The transporter/erector trailer with the assembled flight vehicle would be towed to the launch pad where the erector would elevate the missile for placement on the launch stool by a crane. Flight vehicle/range checkout would be followed by launch countdown dry runs in preparation for launch. The booster would remain on the launch pad for an average of 14 days during booster/payload integration and system checkout. Small ordnance would be processed in a small, transportable igniter shack located near the Integration and Processing Facility. All pre-flight hazardous operations would be conducted in accordance with appropriate SNL/Kodiak Launch Complex safety regulations.

The ESQD recommended by the DoD Explosives Safety Board for the commercial Kodiak Launch Complex would be an area with a radius of 399 meters (1,310 feet) to inhabited buildings, a radius of 239 meters (785 feet) to public traffic routes, and a radius of 149 meters (490 feet) for other mission-related buildings. In order to accomplish the safety distance requirements, AADC is planning to realign Pasagshak Point Road (April 2001). This realignment would ensure that public access to Fossil Beach would be outside the 239-meter (785-foot) ESQD for public traffic routes during booster preparation activities. The realignment would be approximately 274 meters (900 feet) of road, of which approximately 61 meters (200 feet) is across a wetland. Access to Fossil Beach would be closed to the public 4 hours before the launch and during the launch. Once the range is considered clear (a very short time, approximately 5 to 15 minutes after launch) the road would be reopened. AADC would be responsible for notifying the State of Alaska that the road would be closed during launch activities.

Payload Flight Preparation

The Strategic Target System launches would require the use of various experimental payloads. The payloads would be transported directly to Kodiak Launch Complex from

SNL facilities or other payload facilities. The payload preparation activities would occur in the Payload Processing Facility. Afterwards, the payloads would be transported to the Integrated Processing Facility for integration with the Strategic Target System.

Communication Flight Preparation

Before flight, NAWCWD, SNL, and STPO personnel would check the communication links, command destruct systems, and telemetry to safely conduct the mission. Initial communication links would be made between existing support facilities in North America, Hawaii, and USAKA/KMR, depending on mission requirements. These checks are part of normal operating procedures, and no additional personnel would be required.

2.1.1.3 Launch/Flight/Data Collection

The Strategic Target System launch/flight/data collection involves the collection of booster and payload data. Booster data would include normal vehicle health and communication status downlinks. Data collection from the payload would be dependent on the specific payload function and design. Post flight data would be analyzed by SNL and STPO.

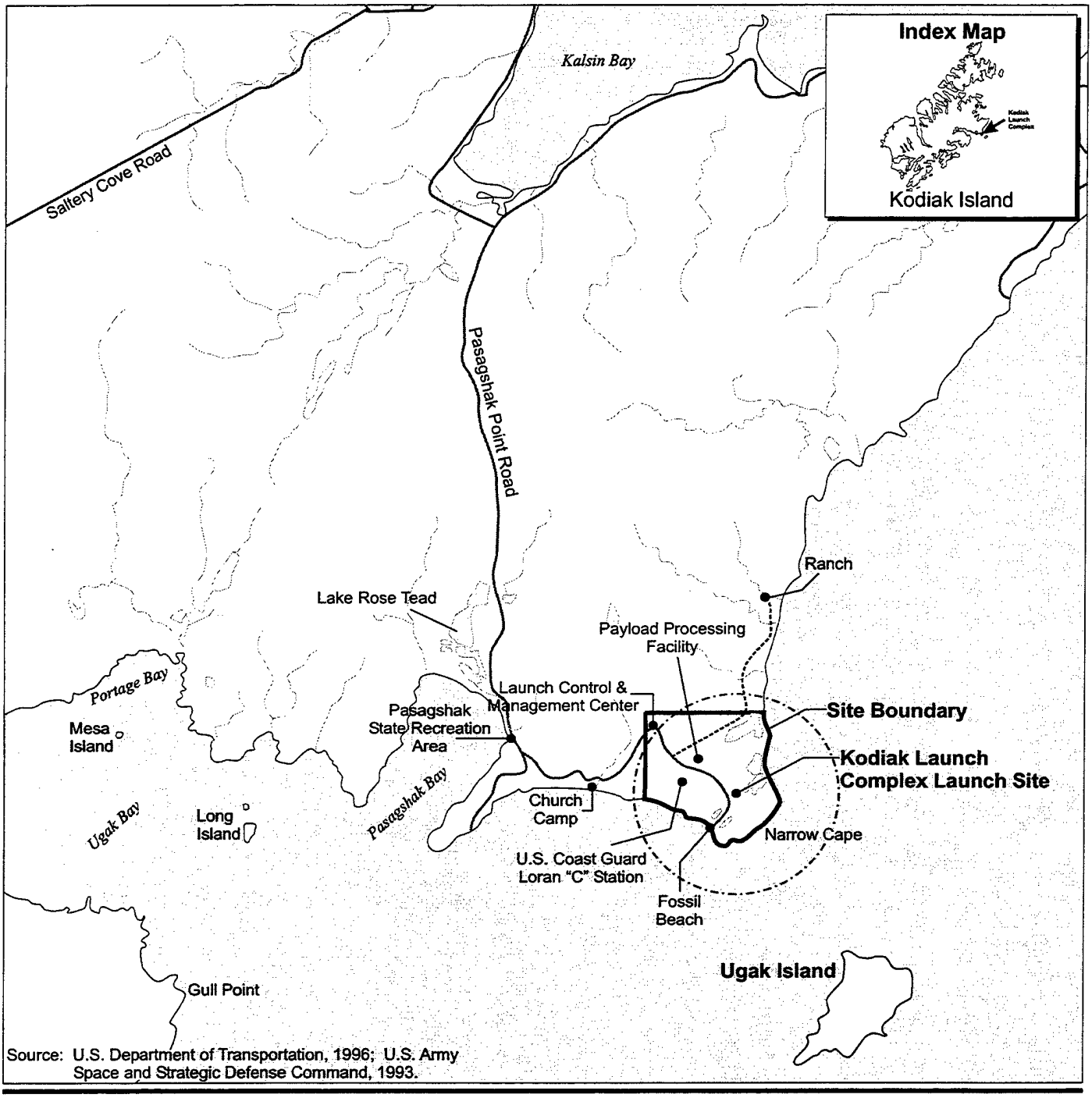
Booster Launch/Flight

To ensure public safety during launch, a safety exclusion zone, a Ground Hazard Area (GHA), and a flight termination line would be established.

Before each launch at Kodiak Launch Complex, NAWCWD would define a safety exclusion zone and the GHA in accordance with appropriate safety guidelines. The maximum exclusion zone radius shown in figure 2-6 would be approximately 2,987 meters (9,800 feet). However, the actual radius would be launch specific, based on criteria such as the payload, the vehicle being launched, and meteorological conditions at the time of launch. To ensure public safety during the hours immediately preceding, during, and after the scheduled launch time, NAWCWD would enforce the safety exclusion zones at Kodiak Launch Complex and along the missile flight path. The GHA would be cleared of all non-participants 4 hours before launch of any Strategic Target System vehicle. Figure 2-7 depicts the maximum potential exclusion zone at Kodiak Launch Complex.

The STPO would be responsible for dedicating resources to ensure that the exclusion zone is in effect. STPO would contract out to private or DoD facilities for assistance in enforcing the exclusion zone. Coast Guard assistance may be utilized on an "as available" non-interference basis and would be funded for services provided. Coast Guard assistance would only be requested in an emergency or if advance notification could be provided with no impact to assets allocated to the Coast Guard's primary mission.

In the event that a search and rescue mission is required, those Coast Guard assets involved in launch support would be diverted for the mission. Launch operations would be suspended should this occur if STPO could not find other non-Coast Guard assets to perform the functions.



EXPLANATION

Ground Hazard Area
2,897 meters (9,800 feet)

Ground Hazard Area

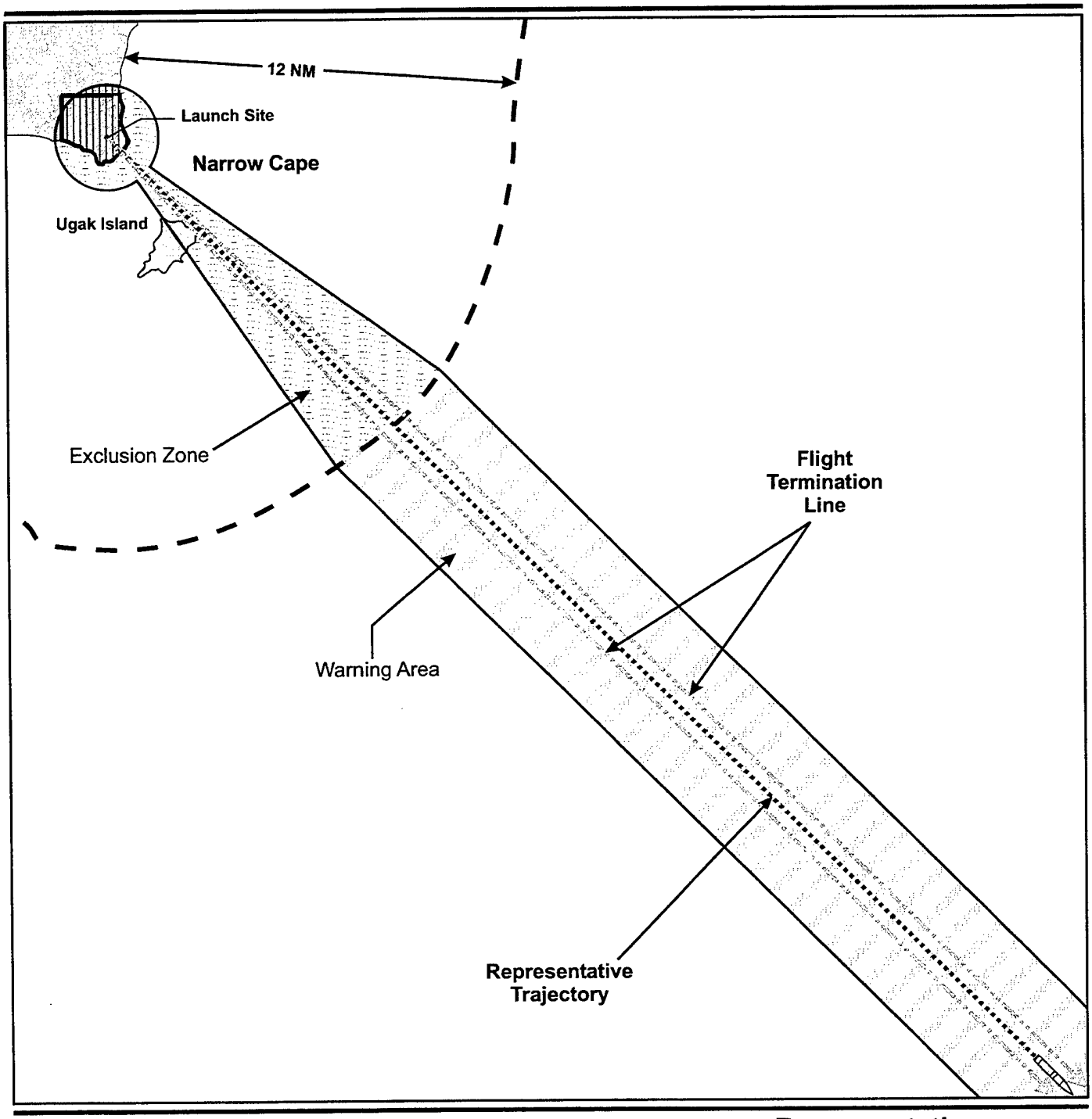
Kodiak Launch Complex, Alaska

Scale
0 2.2 4.3 kilometers
0 1.4 2.7 miles

NORTH

Figure 2-6

03-31-01 Kodiak_GHA_1



EXPLANATION

- Land
- Ground Hazard Area (2,987-meter/9,800-foot Radius)
- Territorial Limit
- Representative Trajectory
- Flight Termination Lines

NM = Nautical Miles

Scale

0 4.4 8.6 Kilometers

0 2.8 5.4 Miles

NORTH

04-01-01 2-7 Warning Areas

Representative Exclusion and Warning Areas

Kodiak Launch Complex, Alaska

Figure 2-7

The GHA is defined as the area overlying land within which the predicted risk to personnel exceeds those probabilistic limits defined in the Range Commanders Council (RCC) Standard 321-00 and summarized in table 2-1. GHAs are dependent on individual ranges and launch systems. A probabilistic risk analysis is performed before a flight test to determine that those limits have been satisfied, such that the risk to test participant personnel is less than the RCC Standard 321-00 limit. Non-participants are not allowed inside the GHA. The probabilistic risk assessment also predicts the risk to all areas near the vehicle ground track, both inside and outside the GHA. If a risk analysis as prescribed in RCC Standard 321-00 and its supplement cannot be performed, the GHA would be expanded to include the area that would contain all potentially hazardous debris from a missile malfunction or flight termination action. The definition of potentially hazardous inert debris would be limited to debris impacting the earth with a kinetic energy equal to or greater than 11 foot-pounds.

The flight termination line defines the limit/boundary at which Command Flight Termination would be initiated in order to contain the vehicle and its fragments within predetermined hazard and warning areas, such that the risk to personnel is within the RCC Standard 321-00 limits. The area encompassed by the flight termination lines would either be cleared of all non-test participants; or, the risk to non-test participants would be within the limits specified by RCC Standard 321-00. Warning areas are regions along the vehicle ground track where a possible hazard to aircraft and sea vessels exists because of missile flight operations. Figure 2-7 shows representative exclusion and warning areas.

An additional area outside the GHA would be established specifically for each launch, based on the payload, vehicle, and launch azimuth. This area is truncated and cone-shaped. It extends downrange from the GHA around the launch pad along the launch azimuth. For the safety of the public, NAWCWD would enforce a 100 percent exclusion zone 22 kilometers (12 nautical miles) from the shoreline of Narrow Cape and the width of the established safety zone. NAWCWD would minimize the time the exclusion zone is enforced and would also consider potential interference with fishing seasons.

The missile flight corridor and booster and payload impact zones would be identified through the use of Notices to Mariners (NOTMARs) and Notices to Airmen (NOTAMs). Additionally, regions within U.S. territorial waters where the hazard exceeds the limits stipulated in RCC Standard 321-00 (the warning area around Kodiak Launch Complex and the hazardous area along the missile trajectory) would be cleared of ships and aircraft before launch. The proposed launches at Kodiak Launch Complex would utilize launch azimuths included in those analyzed in the Kodiak Launch Complex EA (Federal Aviation Administration, 1996). A comprehensive safety analysis would be made for each mission to determine specific launch hazards and to meet safety criteria. The determination of specific launch azimuth and associated hazard areas would be made by NAWCWD. NAWCWD would also be responsible for the issuance of appropriate NOTMARs and NOTAMs for the missile trajectory and booster and payload impact zones. NAWCWD would establish the exclusion zone around the launch site and along the missile flight path no less than 4 hours before each launch. They would then ensure the safety exclusion zone is verified clear of non-mission essential personnel and vessels out to the territorial limit approximately 20 minutes before launch.

Table 2-1: Summary of Acceptable Range Risk Levels

Personnel Protection

General Public[1]

- Individuals shall not be exposed to a probability of fatality greater than 1 in 10 million for any single mission. This includes those persons onboard ships[2].
- Individuals shall not be exposed to a probability of fatality greater than 1 in 1 million per year of range operation.
- The collective risk for the general public shall not exceed an expected number of fatalities of 1 in 300,000 for any single mission. This includes those persons onboard ships[2].

Mission Essential Personnel[3]

- Individual mission essential personnel shall not be exposed to a probability of fatality greater than 1 in 3 million for any single mission. This includes shipborne mission essential personnel.
- Individual mission essential personnel shall not be exposed to a probability of fatality greater than 1 in 300,000 per year of range operation.
- The collective risk to mission essential personnel shall not exceed an expected number of fatalities of 1 in 30,000 for any single mission. This includes shipborne mission essential personnel.

Aircraft Protection

Non-mission Aircraft

- Non-mission aircraft shall be permitted to fly through airspace where the probability of an impact with debris capable of causing a fatal accident does not exceed 1 in 10 million.

Mission Essential Aircraft

- Mission essential aircraft shall be permitted to fly through airspace where the probability of an impact with debris capable of causing a fatal accident does not exceed 1 in 1 million.

Ship Protection[2]

Non-mission Ships

- Direct risks to personnel on ships are the same as those presented above for personnel protection.
- Ships shall be precluded from passing through those areas where the probability of an impact with debris capable of causing a catastrophic accident exceeds 1 in 1 million.

Mission Essential Ships

- Direct risks to personnel on ships are the same as those presented above for personnel protection.
- Ships shall be precluded from passing through those areas where the probability of an impact with debris capable of causing a catastrophic accident exceeds 1 in 100,000.

[1]General public includes all people not declared mission essential. This includes the public plus range personnel not essential to a mission, visitors, press, and personnel/dependents living on the base/facility.
[2] The term "ship" includes boats and watercraft of all sizes.
[3] Mission Essential Personnel are those personnel whose activities are directly relevant to the mission or who are declared essential by the safety decisionmaking authority.

The Strategic Target System has a redundant flight termination system (FTS) that works by rupturing the rocket motor casings in response to an appropriate command from the Missile Flight Safety Officer.

On all missions, the flight vehicle would have extensive instrumentation to verify and validate the performance of the boosters, control electronics, and navigation system. The Strategic Target System vehicles may carry payloads and experiments to gather unique data under conditions that cannot be duplicated in ground testing or with simulation.

2.1.1.4 Data Analysis

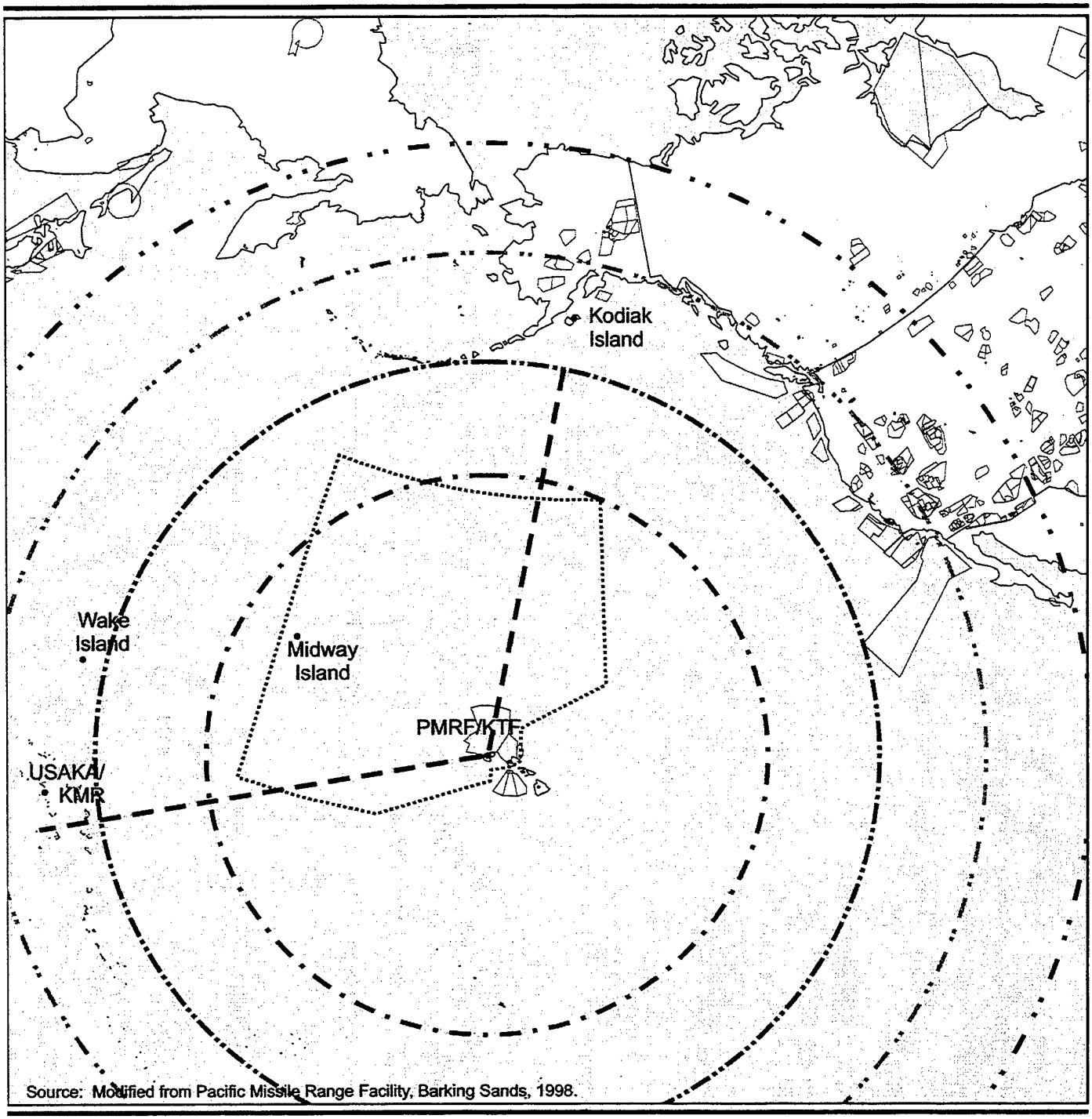
Data analysis activities would consist of evaluating data generated by the Strategic Target System launch activities. Analysis is a scientific exercise conducted to determine the cause or reasons for simulated or real phenomena noted during testing and/or evaluation. The STPO, NAWCWD, and SNL would conduct Strategic Target System data analysis activities. Data collected and analyses performed by the program personnel would be stored at existing facilities. No additional personnel or new construction or modification to existing facilities would be required.

2.1.2 KAUAI TEST FACILITY, KAUAI, HAWAII

Up to four Strategic Target System missiles per year would continue to be launched from Kauai Test Facility. No new missile launch azimuths would be required for the Proposed Action. In addition to current missile trajectories toward the USAKA/KMR BOA, the Proposed Action would also allow for missile trajectories toward the BOA off the northwest coast of North America. The current trajectory has been successfully used four times in the last 8 years. The new trajectories would be implemented using current launch azimuths. Once over open ocean, the missile would then execute a turning maneuver (or series of turns) to bring it onto the new flight trajectory. As such, the Proposed Action would not require new launch azimuths or the establishment of new special use airspace zones. Figures 2-8 and 2-9 depict the current trajectories toward the USAKA/KMR BOA and the proposed new flight trajectories toward the BOA off the northwest coast of North America.

2.1.2.1 Assembly and Integration Testing

The assembly and integration testing of the first- and second-stage Polaris boosters and the third-stage Orbus-1 boosters would occur at Kauai Test Facility for the continuation of Strategic Target System launches. The boosters would be transported from Redstone Arsenal by military aircraft in accordance with applicable transportation regulations. At Kauai Test Facility, assembly and integration testing would take place at the missile assembly building (MAB) as described in the Strategic Target System EIS. The Strategic Target System boosters would be processed and prepared for launch in the same manner as previous flights. Both A3P and the newer A3R first and second stage rocket motors discussed above would be used. These activities are more extensively described in the Strategic Target System EIS (U.S. Army Strategic Defense Command, 1992).



Source: Modified from Pacific Missile Range Facility, Barking Sands, 1998.

EXPLANATION

- 2,500 km Radius
- 3,500 km Radius
- 4,500 km Radius
- 5,500 km Radius
- Existing Warning Areas and Special Use Airspace
- Temporary Operating Areas
- Kauai Test Facility to Kwajalein Missile Range Launch Corridor (Alternative)

USAKA/KMR = United States Army Kwajalein Atoll / Kwajalein Missile Range

PMRF/KTF = Pacific Missile Range / Kauai Test Facility

NORTH

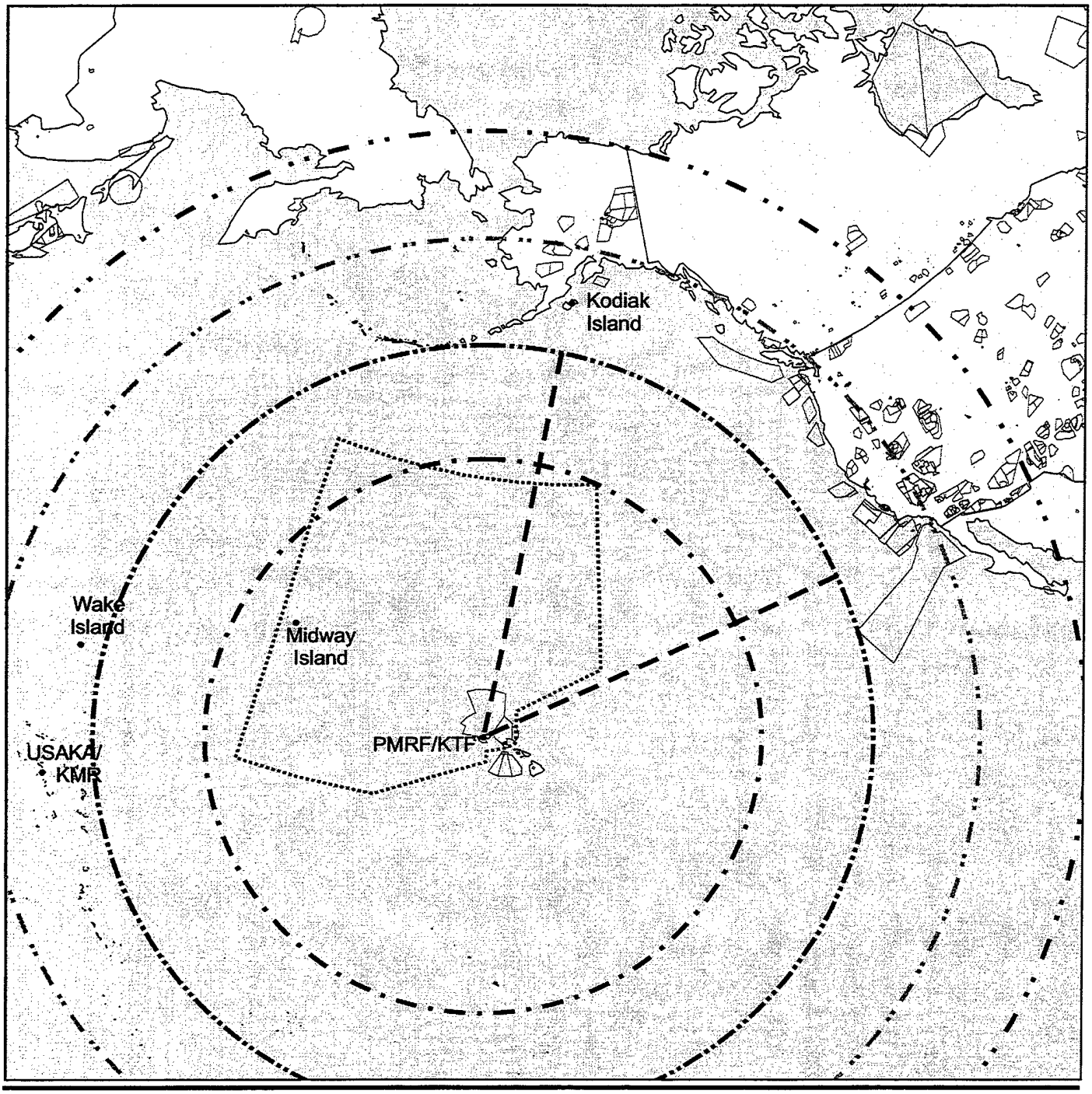
Scale
0 675 1,350 Kilometers
0 420 840 Miles

Kauai Test Facility West Trajectory (Current Capability)

Kauai Test Facility, Hawaii

Figure 2-8

04-01-01 2-8 Trajectory_3



EXPLANATION

- 2,500 km Radius
- 3,500 km Radius
- 4,500 km Radius
- 5,500 km Radius
- Existing Warning Areas and Special Use Airspace
- Temporary Operating Areas
- Kauai Test Facility to BOA Northwest of North America Launch Corridor (Alternative)

USAKA/KMR = United States Army Kwajalein Atoll / Kwajalein Missile Range

PMRF/KTF = Pacific Missile Range / Kauai Test Facility

Scale
0 675 1,350 Kilometers
NORTH 0 420 840 Miles

04-01-01 2-9 Trajectory_4

Kauai Test Facility East/Northeast Trajectory: 40° Centerline (Proposed Capability)

Kauai Test Facility, Hawaii

Figure 2-9

2.1.2.2 Flight Preparation

SNL would provide payload-booster integration and mission planning to support up to four Strategic Target System launches per year. Flight preparation would involve all activities required to assemble the major Strategic Target System components before flight. Flight preparation would involve transporting the Strategic Target System booster and support equipment to Kauai Test Facility. For continued launches from Kauai Test Facility, flight preparation activities would include booster flight preparation, payload flight preparation, and communication flight preparation. These activities have been previously analyzed in the Strategic Target System EIS.

Booster Flight Preparation

The Strategic Target System boosters would be transported to Kauai Test Facility using military aircraft. After arrival, the boosters would be transported along existing safety routes to the MAB on Kauai Test Facility. The in-flight destruct package, missile instrumentation, booster assembly, and range safety equipment system would be installed at that facility. Ground and flight system tests would be conducted to simulate the mission flight profile.

The transporter/erector trailer with the assembled flight vehicle would be towed to the launch pad where the erector would elevate the missile for placement on the launch stool by a mobile crane. Flight vehicle/range checkout would be followed by launch countdown dry runs in preparation for launch. The booster would remain on the launch pad for an average of 14 days during booster/payload integration and system checkout. All pre-flight hazardous operations would be conducted in accordance with the appropriate SNL/Kauai Test Facility safety regulations.

The ESQD for explosive hazards from the Strategic Target System boosters with the destruct charge is an area with a radius of 381 meters (1,250 feet) centered on the site of the hazardous operation, the launch pad, and the MAB where explosives handling and storage would take place. An ESQD of 229 meters (750 feet) from a public traffic route is used at PMRF. The ESQDs used on PMRF, a controlled-access military installation, are based on a 50 percent trinitrotoluene (TNT) equivalent weight of the first-stage booster weight, are calculated in accordance with DoD *Ammunitions and Explosive Safety Standards* (DoD 6055.9) and with the U.S. Navy *Ammunitions and Explosives Ashore Manual* (NAVSEA OP-5) and were approved by the DoD Explosive Safety Board.

The launch pad is about 262 meters (800 feet) from the high tide line. Approximately 688 meters (2,256 feet) of public access area along the coastline of PMRF are within this ESQD. To ensure public safety, public access to this area would be restricted for the length of time the booster is on the launch pad; 24-hour security would be provided during this time to ensure that the safety distance criterion is met. This area would be closed for an average of 14 days per launch, or an average of 56 days per year.

Payload Flight Preparation

The Strategic Target System launches would require the use of various experimental payloads. Payloads would be transported directly to Kauai Test Facility from the SNL facilities or other payload facilities. Payload preparation activities would occur in Assembly Buildings 2 and 3. Activities related to payload flight preparation would be reviewed against previous environmental documentation. Any significant deviation would be addressed by separate environmental documentation.

Communication Flight Preparation

Before flight, SNL, PMRF, and NAWCWD personnel would check the communication links, command destruct systems, and telemetry to safely conduct the mission. Initial communication links would be made between existing support facilities in North America, Hawaii, and USAKA/KMR, depending on mission requirements. These checks are part of the PMRF and Kauai Test Facility normal operating procedures, and no additional personnel would be required.

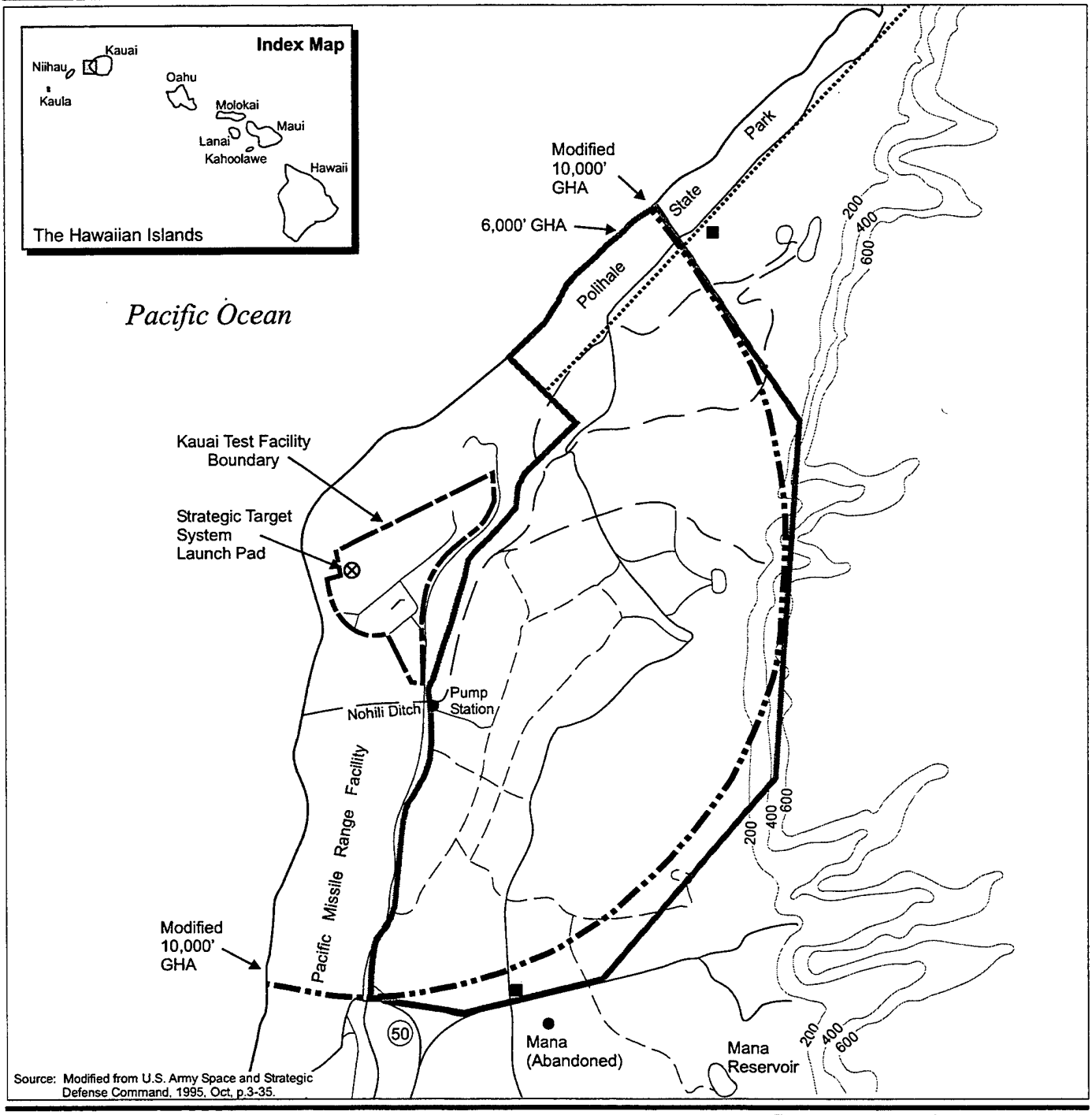
2.1.2.3 Launch/Flight/Data Collection

The Strategic Target System launch/flight/data collection involves the collection of booster and payload data. Booster data would include normal vehicle health and communication status downlinks. Data collection from the payload would be dependent on the specific payload function and design.

Booster Launch/Flight

To ensure public safety during launches at Kauai Test Facility, a GHA and a flight termination line would be established as described in section 2.1.1.3. In addition, a launch hazard area (figure 2-10) with a radius of 3,048 meters (10,000 feet) would be implemented as part of the current restrictive easement that PMRF has established with the State of Hawaii. The launch hazard area is defined as the area within which any dangerous debris from the destruction of the missile (should flight termination be required) would fall. The Missile Flight Safety Officer, as part of the flight safety operating procedures, may destroy the missile if a missile systems failure is detected that causes the flight vehicle to cross the flight termination line, in order to allow destruct debris to fall within the predefined area. (U.S. Army Strategic Defense Command, 1990)

The current restrictive easement would be used to set up the launch hazard area to ensure public safety during launch. The use of the restrictive easement until 2030 was analyzed in the PMRF Enhanced Capability EIS. To minimize safety risk to the public in these areas, PMRF security forces on the ground, in boats, and in helicopters (if necessary), would use sweep and search measures to ensure that all areas within the launch hazard area are determined clear of people by 10 minutes before launch. In addition, security forces would set up control points along the road into the launch hazard area to monitor and clear traffic during launch operations. There are no public buildings within this off-base area. All nonessential personnel on the installation would be cleared from the launch hazard area, and launch personnel within the launch hazard area would be provided personal protection



EXPLANATION

- Irrigation Drainage Ditch
- Approximate Ground Hazard Area Boundary
- Restrictive Easement Boundary
- Polihale State Park Boundary
- 200 Contour Lines (ft)
- Kauai Test Facility
- GHA = Ground Hazard Area
- Strategic Target System Control Points

Scale

NORTH

0 457 914 Meters

0 1,500 3,000 Feet

Restrictive Easement and Ground Hazard Area Boundaries

Kauai, Hawaii

Figure 2-10

04-01-01 2-10 pmrf_easement_01

equipment. Immediately after a successful launch, security forces would give the all clear signal, and the public would be allowed to re-enter the area. Evacuation procedures have been established for other launches at PMRF. (Pacific Missile Range Facility, Barking Sands, 1998)

Commercial and private aircraft and ocean vessels would be notified in advance of launch activities by NAWCWD and PMRF as part of their routine operations through NOTAMs by the FAA and NOTMARs, respectively. Thus, they would be able to reschedule or choose alternate routes before the flight experiments.

For launches from Kauai Test Facility toward the BOA near USAKA/KMR (figure 2-8), the previously used launch azimuth of 280 degrees could be used to avoid an overflight of the Island of Niihau, as described in the 1992 Strategic Target System EIS. Approximately 71 seconds into the flight, the vehicle is turned southwest toward the impact area.

Strategic Target System launches from Kauai Test Facility for payload impact in the BOA off the northwest coast of North America would launch with an initial azimuth between 310 and 360 degrees (figure 2-8). The missile would maintain flight in this direction until separation of the first booster. At that point, it would initiate a right turn, the extent of which would be based on mission requirements and the availability of booster drop zones (figure 2-9). In any case, no turn would result in a flight trajectory exceeding 70 degrees.

No new land use requirements are anticipated. Discussion with the PMRF Range Safety Office indicates that appropriate launch safety criteria can be applied to preclude the need for new land use requirements. The established criteria, documented in the 1992 Strategic Target System EIS, regarding non-nominal flight hazards and destruct actions would be maintained.

The Strategic Target System command system consists of a completely redundant FTS as discussed above.

On all missions, the vehicle's state of health would be monitored and extensive instrumentation would verify and validate the performance of the boosters, control electronics, and navigation system. The Strategic Target System vehicles may carry payloads and experiments to gather unique data under conditions that cannot be duplicated in ground testing or with simulation.

2.1.2.4 Data Analysis

Data analysis activities would be the same as those described in section 2.1.1.4.

2.2 NO-ACTION ALTERNATIVE

The No-action Alternative would be to continue to launch Strategic Target System targets only from Kauai Test Facility. Under this alternative, the U.S. Army would continue to use the Strategic Target System to fulfill its target requirements at USAKA/KMR. The No-action Alternative would mean that the requirements for the RRF and IFT tests would not be fulfilled.

2.3 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD

During preliminary planning for the North Pacific Targets program, different launch location alternatives were examined. A number of additional alternatives were originally examined and all but two were eliminated from further consideration as being unreasonable. The alternate launch locations considered were Wake Island and Cape Canaveral, Florida.

These alternatives were analyzed for the following operational and technical considerations:

- Deployment costs
- Logistics response time
- Range required lead time
- Range costs
- Available instrumentation
- Range flexibility
- Current target capability
- Multipurpose overall target capability
- Target system geometry

The Wake Island options were not considered because they would not meet the schedule and target engagement scenarios. Additionally, significant technical risk would be incurred. Cape Canaveral was removed from further consideration primarily for cost, schedule, and launch/target mission engagement considerations. The result of this preliminary process was the selection of the Proposed Action.

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3.0
AFFECTED ENVIRONMENT

3.0 AFFECTED ENVIRONMENT

This section describes the environmental and socioeconomic characteristics that may be affected by the Proposed Action at Kodiak Island, PMRF, and the open ocean. To provide a baseline point of reference for understanding any potential impacts, the affected environment is concisely described; any components of greater concern are described in greater detail.

Available reference materials, including EAs, EISs, and base master plans, were reviewed. Questions were directed to installation and facility personnel; Federal, state, and local regulatory agencies; and private individuals. Site visits were also conducted, where necessary, to gather the baseline data presented below.

Environmental Resources

Fourteen broad areas of environmental consideration were originally considered 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, environmental justice, geology and soils, hazardous materials and waste, health and safety, infrastructure, land use, noise, socioeconomics, visual and aesthetics resources, and water resources. Seven of the areas—cultural resources, environmental justice, geology and soils, infrastructure, land use, visual and aesthetics resources, and water resources—were not further analyzed for any of the proposed locations.

No ground-disturbing activities are planned as part of the Proposed Action, and no new impacts to cultural resources, geology and soils, or water resources are anticipated that are not already covered under existing environmental documentation, such as those listed below. Although the Kodiak Launch Complex region is seismically active, the ESQD for the area is based on a major explosion; thus, any impacts from the missile blowing up or falling over from an earthquake would be within the prescribed ESQD. No additional analysis is provided for seismic activity at Kodiak Launch Complex. The Kodiak Launch Complex is state-owned land and represents less than one-tenth of 1 percent of the state-owned land area in the Kodiak Island Borough. The development and use of the launch complex underwent a review for consistency with standards established under the Alaska Coastal Management Program (Alaska Administrative Code, Title Six, Chapter 80) and was issued a final consistency determination on 19 January 1996 (appendix B). Existing infrastructure would be used, and no change is anticipated in current land use or to the visual and aesthetic environment of the proposed locations. Although approximately 65 personnel would be required for the Proposed Action, these personnel would be drawn from the existing workforce; thus minimizing the beneficial impacts to socioeconomics in the affected regions.

No changes are expected to air quality at PMRF as a result of proposed activities. No increase in hazardous materials used or hazardous waste generated is anticipated at PMRF as a result of the proposed activities.

Existing Related Environmental Documentation

The FAA prepared an EA in 1996 for the construction and operation of Kodiak Launch Complex, which supported the licensing of the complex for commercial operations (Federal Aviation Administration, 1996). The U.S. Air Force prepared an EA in 1997 that proposed launching two sub-orbital test vehicles (the ait program) on a southeasterly course from Kodiak Launch Complex (U.S. Department of the Air Force, 1997). The U.S. Air Force also prepared an EA in 2001 that proposed launching one Quick Reaction Launch Vehicle (QRLV) per year beginning in 2001 and ending in 2008 (U.S. Department of the Air Force, 2001). These documents discuss the existing affected environment on Kodiak Island in detail and are incorporated into this document by reference.

Several NEPA documents have been prepared that analyze operations at PMRF, including Strategic Target System launches from Kauai Test Facility and related data collection and analysis. The EIS for the Strategic Target System (U.S. Army Strategic Defense Command, 1992); Kauai Test Facility EA (U.S. Department of Energy, 1992); and the PMRF Enhanced Capability EIS (Pacific Missile Range Facility, Barking Sands, 1998) are incorporated into this document by reference.

In 1989 the U.S. Army prepared an installation EIS for USAKA (U.S. Army Strategic Defense Command, 1989), a subsequent Supplemental EIS (U.S. Army Space and Strategic Defense Command, 1993b), and an EA in 1995 (U.S. Army Space and Strategic Defense Command, 1995b). These documents discuss in detail the environmental consequences to the BOA north of USAKA from interceptor launches, and no further discussion is provided in this EA.

The following sections summarize applicable data from the documents mentioned above. Information from any other sources of data is specifically referenced.

3.1 KODIAK, ALASKA

3.1.1 AIR QUALITY—KODIAK, ALASKA

Air quality in a given location is described by the concentrations of various pollutants in the atmosphere, expressed in units of parts per million or micrograms per cubic meter. Pollutant concentrations are determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and meteorological conditions related to the prevailing climate. The significance of a pollutant concentration is determined by comparison with National Ambient Air Quality Standards (NAAQS) and local ambient air standards that establish limits on the maximum allowable concentrations of various pollutants to protect public health and welfare.

Region of Influence

Identifying the region of influence (ROI) for air quality assessment requires knowledge of the pollutant types, source emissions rates and release parameters, the proximity relationships of project emission sources to other emission sources, and local and regional meteorological conditions. For inert pollutants (all pollutants other than ozone and its precursors), the ROI is generally limited to an area extending no more than a few tens of miles downwind from the source.

The ROI for ozone may extend much further downwind than the ROI for inert pollutants; however, as the project area has no heavy industry and very few automobiles, tropospheric ozone and its precursors are not of concern. Consequently, for the air quality analysis, the ROI for project operational activities is a circular area with a 24-kilometer (15-mile) radius centered on the site of activity.

Affected Environment

The ambient air quality at Narrow Cape is unimpaired. The limited number of emission sources contributes to minimal air quality deterioration. Additionally, the State of Alaska requires emission testing on motor vehicles. No impact to air quality has been identified as a result of launch personnel in the region for prior launches. The primary air contaminant at Kodiak Launch Complex is wind-blown volcanic dust. Based on the NAAQS, Kodiak Island is classified as a Class II area for air quality deterioration. With this designation, the air quality at Kodiak could sustain moderate changes due to industrial growth while still maintaining air quality in accordance with NAAQS.

Atmospheric stability, wind speed, and surface roughness are factors that impact the dispersion of air pollutants on Kodiak Island. Kodiak's atmosphere is generally classified as neutral in regard to the dispersion of air pollutants. The island's climatology includes periods of high winds and overcast skies, which makes the island's atmosphere optimal for dispersion of air pollutants.

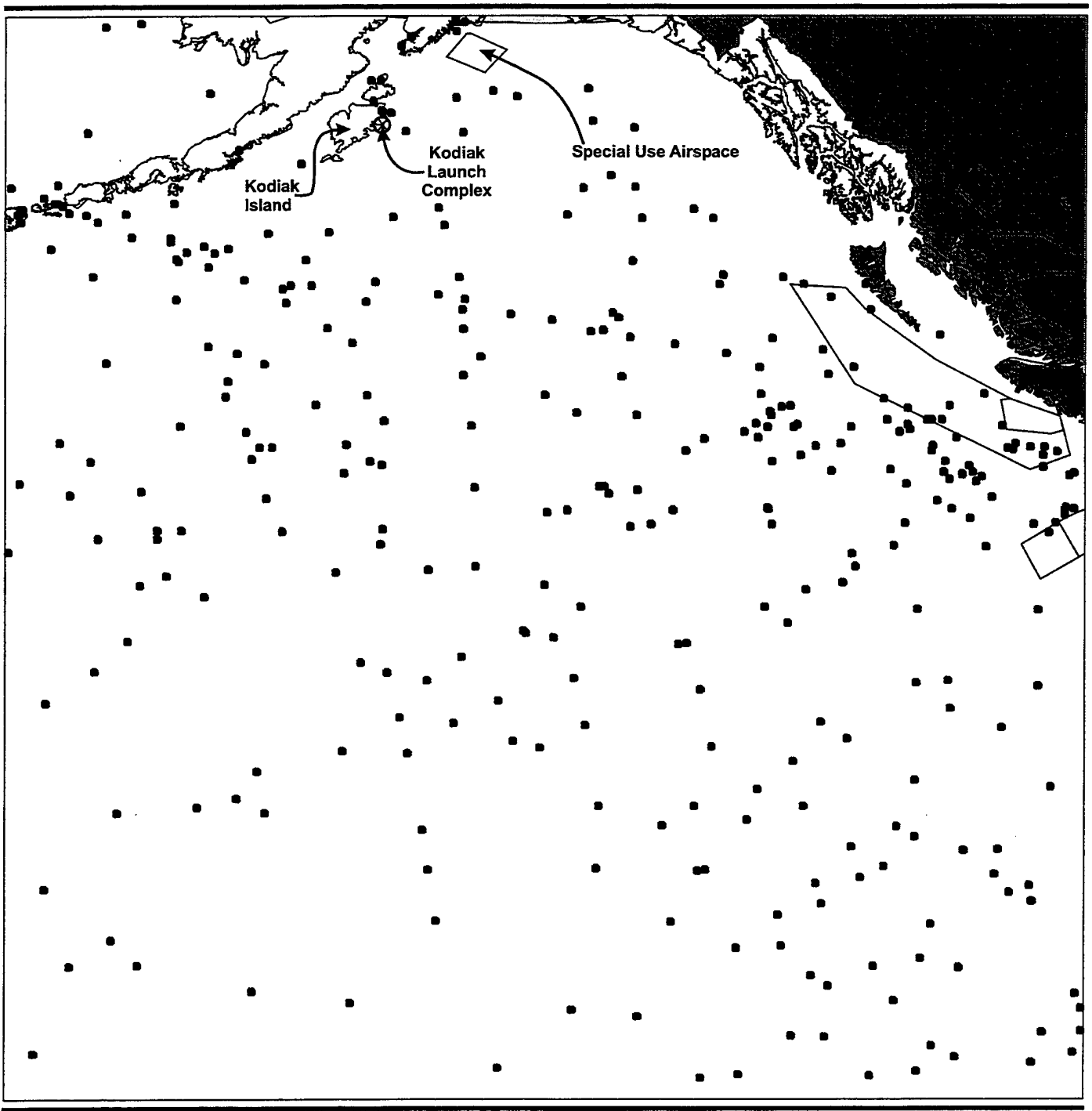
Gas and particulate air emissions from launch operations at Kodiak Launch Complex include the rocket-motor exhaust plume emitted during launch and diesel generator emission. These emissions have not impacted the air quality at Kodiak Launch Complex during previous rocket launch operations.

3.1.2 AIRSPACE—KODIAK, ALASKA

Airspace, while generally viewed as being unlimited, is finite in nature. It can be defined dimensionally by height, depth, width, and period of use (time). The FAA is charged with the overall management of airspace and has established criteria and limits for use of various sections of this airspace in accordance with procedures of the International Civil Aviation Organization (ICAO).

Region of Influence

The ROI for airspace includes commercial air corridors, Military Operations Areas, and the airspace over and surrounding Kodiak Launch Complex (figures 3-1 and 3-2).



EXPLANATION

- Special Use Airspace
- Ship Location During August 1997
- Kodiak Launch Complex

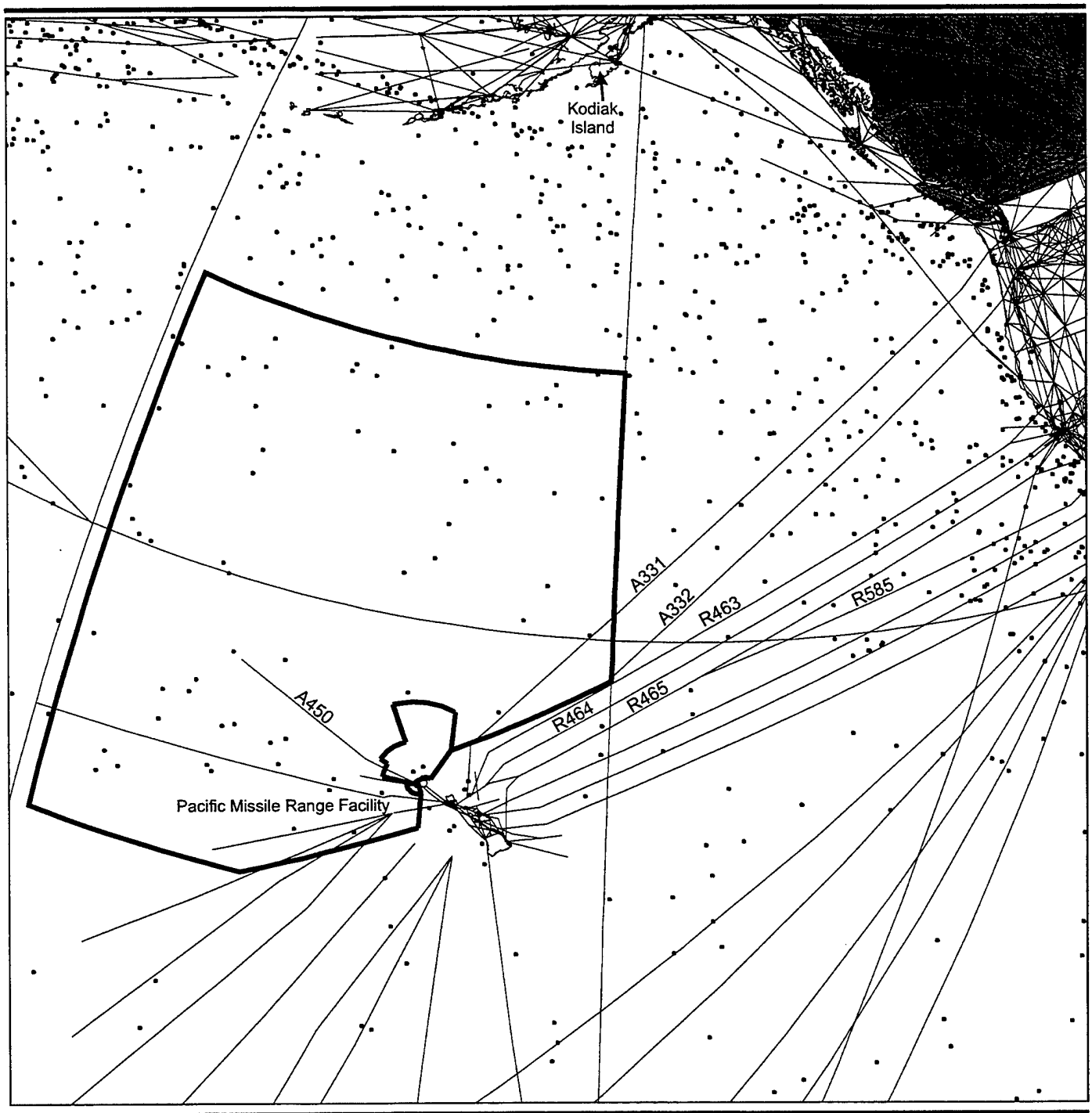
Special Use Airspace

Pacific Ocean

Scale
0 194 388 Kilometers
NORTH 0 120.5 241 Miles

03-29-01 3-1 Special Use Airspace

Figure 3-1



EXPLANATION

- Existing Warning Area and Temporary Operating Area
- High and Low Altitude Airways
- Ship Locations During August 1997

High Altitude Jet Routes and Low Altitude Airways

Pacific Ocean

Scale
0 395.5 791 Kilometers
0 246 492 Miles

NORTH

03-29-01 3-2 Alt_Airways

Figure 3-2

Affected Environment

Special Use Airspace

The closest Alaska Military Operations Area for Air Force training exercises is approximately 320 kilometers (200 miles) north-northeast of Kodiak Island (figure 3-1).

Previous launches from Kodiak Launch Complex were successful in maintaining Kodiak airspace integrity. Airspace conflicts are avoided by the existing airspace coordination protocol among Kodiak Launch Complex, commercial aircraft carriers, and military aircraft. In addition, with commercial air corridors to the north of the launch area, there were no adverse impacts from commercial aircraft traffic or from Kodiak State Airport. Furthermore, launches from Kodiak Launch Complex do not affect Air Force training exercises.

En Route Airways and Jet Routes

Commercial air corridors enter and exit Kodiak State Airport to and from the east-southeast (Corridor V 506) and west-southwest (Corridor G 10). These corridors are north of the Narrow Cape area, more than 24 kilometers (15 miles) from the launch area to the edge of the V 506 Corridor.

Airports/Airfields

Kodiak Airport is the airport closest to the Kodiak Launch Complex. It is located approximately 40 kilometers (25 miles) northeast of the launch site. It is a state operated regional airport that routinely handles daily passenger and cargo jet service and has accommodated C-141 and C-5 military aircraft.

Air Traffic Control

The Anchorage Air Route Traffic Control Center (ARTCC) and the Kodiak Air Traffic Control Tower regulate air traffic in the vicinity of the Kodiak Launch Complex.

3.1.3 BIOLOGICAL RESOURCES—KODIAK, ALASKA

Native or naturalized vegetation, wildlife, and the habitats in which they occur are collectively referred to as biological resources. Existing information on plant and animal species and habitat types in the vicinity of the proposed sites was reviewed, with special emphasis on the presence of any species listed as threatened or endangered by Federal or state agencies, to assess their sensitivity to the effects of the Proposed Action. For the purpose of discussion, biological resources have been divided into the areas of vegetation, wildlife, threatened and endangered species, and environmentally sensitive habitat.

Region of Influence

The ROI for biological resources includes the area on and adjacent to Kodiak Launch Complex that could potentially be affected by the proposed activities.

Affected Environment

Vegetation

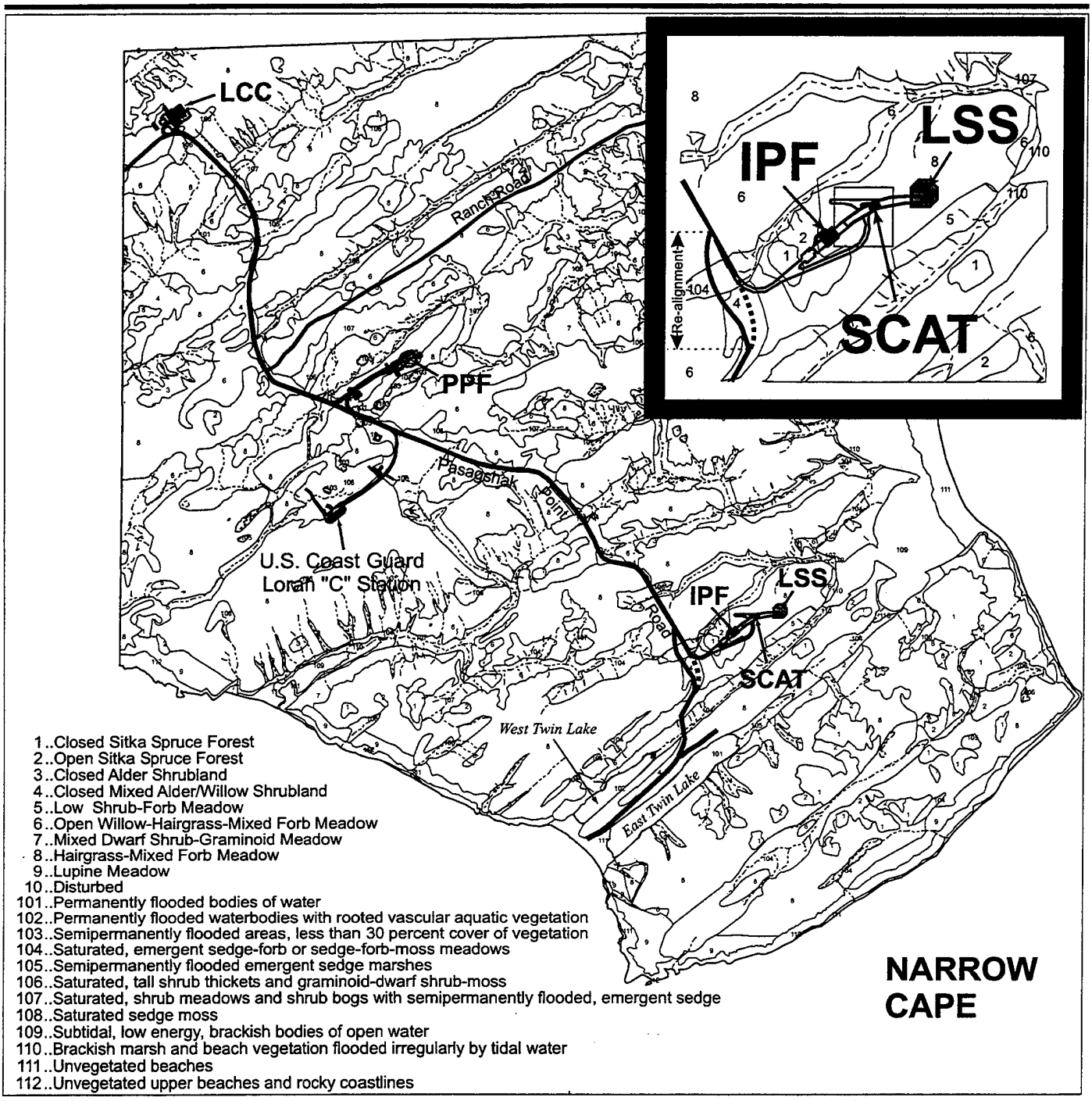
The predominant vegetation types covering Kodiak Launch Complex include meadows, shrubs, wetlands, and intermittent stands of spruce (figure 3-3). Some of the most common plants are Norcoast Bering hairgrass, tufted hairgrass, meadow fescue, alder, willow, and Sitka spruce.

Wildlife

The Kodiak Launch Complex site provides habitat for about 143 species of terrestrial and marine birds. Typical birds found in the area include loons, grebes, harlequin ducks, kingfishers, chickadees, juncoes, sparrows, and terns. The seabird colony closest to the Kodiak Launch Complex site, believed to be an Arctic and Aleutian tern colony, is approximately 3 to 5 kilometers (2 to 3 miles) north of the launch pad. Although this colony was not active during a 1994 survey, it has generally been active since 1975. Ugak Pass is attractive to marine birds year-round due to its shallow waters and abundant fish and invertebrates. The bald eagle, which is protected by the Bald and Golden Eagle Protection Act, is common throughout the year on Kodiak Island and is often seen in the Narrow Cape area. Bald eagles have historically nested on the Kodiak Launch Complex property.

Little brown bat, Tundra vole, red fox, brown bear, short-tailed weasel, and river otter are common terrestrial mammals found at Kodiak Launch Complex. Snowshoe hare, red squirrel, muskrat, beaver, Sitka black-tailed deer, buffalo, and mountain goat are examples of species introduced to Kodiak Island.

Approximately 12 percent of the Kodiak Launch Complex site is occupied by open water including small streams, two freshwater lakes, and a series of lagoons. Two of the streams have been incorporated into the Alaska Department of Fish and Game's anadromous stream catalog since coho salmon juveniles were detected there. Essential Fish Habitat includes those waters and substrate (sediment, hard bottom) necessary to the complete life cycle of fish, from spawning to maturity. The waters south of Kodiak Island, including the Narrow Cape vicinity, are essential habitat for commercially important fish species year-round. Habitat Areas of Particular Concern include all streams, lakes, and other freshwater areas used by salmon and other anadromous fish. The closest major salmon stream to Kodiak Launch Complex is the Pasagshak River, which is approximately 10 kilometers (6 miles) to the northwest. The most common marine fish in nearshore and offshore water around Kodiak Island are flounder, sole, pollock, skate, cods, and halibut. Other common marine organisms include crabs, scallops, octopus, shrimp, and clams.



EXPLANATION

- Wetland
- Existing & Planned Roads
- Fluviatile Waters
- Original road to be removed and area restored to natural condition

LCC	Launch Control and Management Center
PPF	Payload Processing Facility
IPF	Integration and Processing Facility
SCAT	Spacecraft Assemblies Transfer
LSS	Launch Service System

NORTH

Scale

0 306.5 613 Meters

0 1,006 2,011 Feet

Map of Major Vegetation Types in the Vicinity of Narrow Cape

Kodiak Island, Alaska

Figure 3-3

03-29-01 3-3 GROW1_Vegetation Map

The harbor seal is a year-round resident of the area. Several haulout and general use areas occur near Kodiak Launch Complex, the closest of which is Ugak Island, approximately 5 kilometers (3 miles) southeast. The northern fur seal occurs offshore of the Kodiak Launch Complex site from January through April. The sea otter is found along most of Kodiak Island's coast in all months of the year. A number of cetacean species, including Dall's and harbor porpoise, Pacific white-sided and Risso's dolphin, and killer whale, are found year round in the water surrounding Kodiak Island.

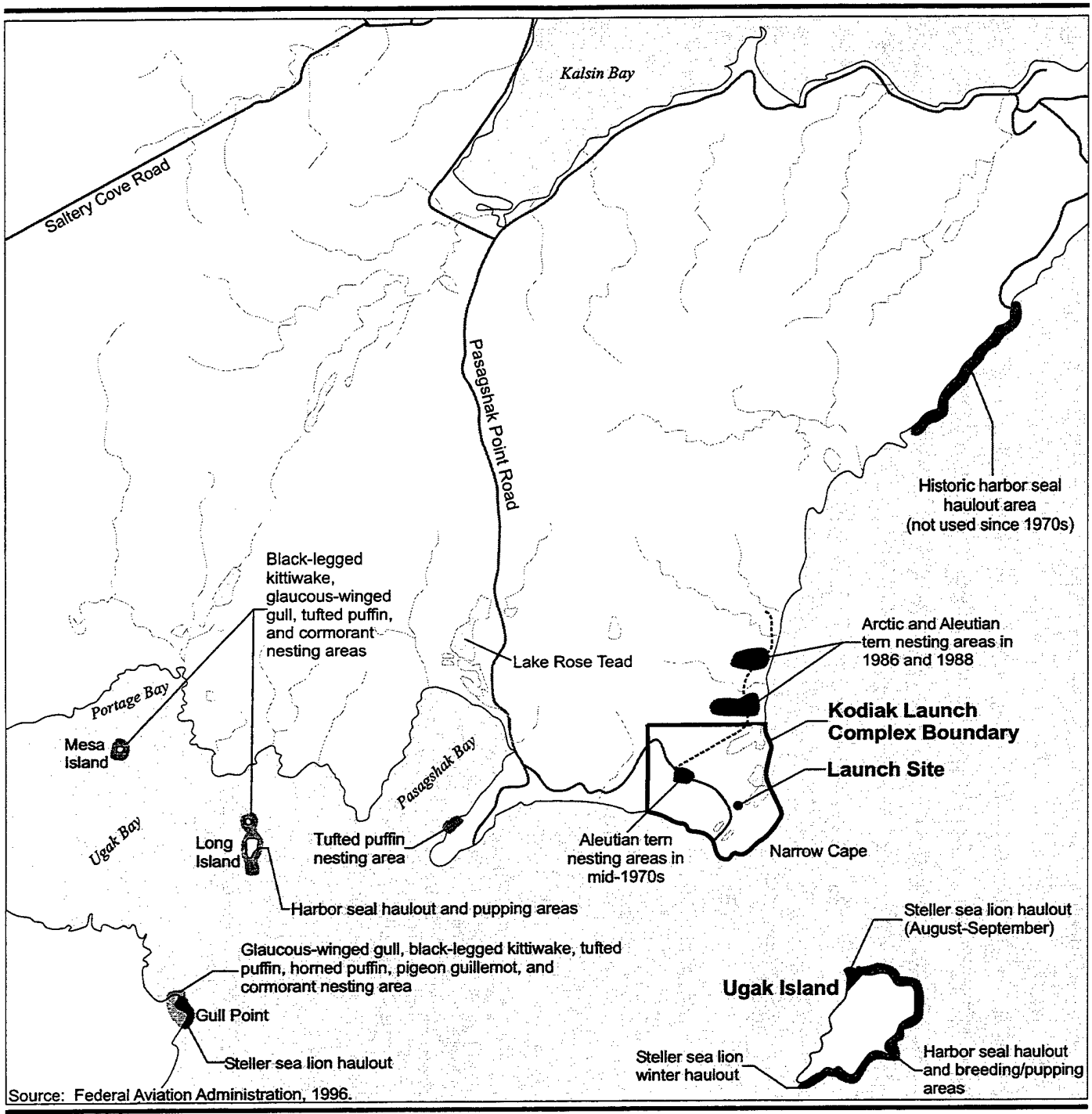
Threatened and Endangered Species

No federally listed candidate, threatened, or endangered species are located within the boundaries of Kodiak Launch Complex. However, several species occur in the ROI, including marine waters in the area (table 3-1). The Steller sea lion (*Eumetopias jubatus*) population near Kodiak Island was included in the population classified as endangered in 1997. Ugak Island, approximately 5 kilometers (3 miles) southeast of Kodiak Launch Complex, contains the closest sea lion haulout. To date no Steller sea lion rookeries have been identified in the ROI (Smith, 2001). Although seven whale species are found in the waters near Kodiak Island, only the delisted gray whale and the endangered humpback whale (*Megaptera novaeangliae*) use the nearshore waters of Kodiak Island (Federal Aviation Administration, 1996). Humpback whales are generally found in the nearshore areas of Kodiak Island in the summer. They have been occasionally observed in the Narrow Cape and Ugak Island area. Figure 3-4 depicts the locations of seabird colonies and pinniped haulout areas in the vicinity of Kodiak Launch Complex.

Table 3-1: Threatened and Endangered Species in the Kodiak ROI

Scientific Name	Common Name	Status	
		Federal	State
Birds			
Phoebastria albatrus	Short-tailed albatross	E	E
Polysticta stelleri	Steller's eider	T	SSC
Mammals			
Balaena glacialis	Northern right whale	E	E
Balaenoptera borealis	Sei whale	E	--
Balaenoptera musculus	Blue whale	E	E
Balaenoptera physalus	Fin whale	E	--
Megaptera novaeangliae	Humpback whale	E	E
Physeter macrocephalus	Sperm whale	E	--
Eumetopias jubatus	Steller sea lion	E	SSC

Source: U.S. Fish and Wildlife Service, 2000
Legend:
-- = Not Listed
E = Endangered
SSC = State Species of Special Concern
T = Threatened



Seabird Colonies and Pinniped Haulout Areas

Kodiak Launch Complex, Alaska

Figure 3-4

Scale
0 2.2 4.3 Kilometers
0 1.4 2.7 Miles
NORTH

03-29-01 3-4 Kodiak_bio_1

A small portion of the world's Steller's eiders (*Polysticta stelleri*) nest in Alaska, and the U.S. Fish and Wildlife Service (USFWS) has classified this population as threatened. Most of the world's Steller's eiders winter along the Alaskan Peninsula, an area that includes Kodiak Island. The Steller's eiders occur in the Kodiak Island area primarily during the winter months. The origin of this overwintering population is unknown. The federally endangered short-tailed albatross (*Phoebastria albatrus*) occurs in the ROI primarily during the summer months (U.S. Fish and Wildlife Service, 2000).

Environmentally Sensitive Habitat

Wetlands. Wetlands cover approximately 29 percent of the Kodiak Launch Complex site.

Critical Habitat. In surveys around Kodiak and southern Afognak Islands, Steller's eiders were reported to be present, and hundreds to low thousands are counted during the Christmas Bird Count in Kodiak. Consistent and extensive use by the Steller's eider in the Kodiak area has been observed. Although critical habitat has not been designated in the Kodiak Archipelago, the area still contains important habitat for Steller's eiders and protection afforded by the Endangered Species Act still applies.

Critical habitat for the Steller sea lion includes a special aquatic foraging area in the Shelikof Strait area consisting in part of an area between the Alaskan Peninsula and Kodiak Island. (Title 50 Wildlife and Fisheries, Part 226)

3.1.4 HAZARDOUS MATERIALS AND WASTE—KODIAK, ALASKA

Several regulatory agencies (e.g., the Environmental Protection Agency and the U.S. DOT) have promulgated differing definitions of a hazardous material as applied to a specific situation. Of these definitions, the broadest and most applicable is the definition specified by the U.S. DOT for regulation of the transportation of these materials. As defined by the U.S. DOT, a hazardous material is a substance or material that is capable of posing an unreasonable risk to health, safety, or property when transported in commerce and has been so designated (49 CFR 171.8).

Waste materials are defined in 40 CFR 261.2 as "any discarded material (i.e., abandoned, recycled, or 'inherently waste-like')" that is not specifically excluded. This waste can include materials that are both solid and liquid (but contained). Hazardous waste is further defined in 40 CFR 261.3 as any solid waste not specifically excluded, which meets specified concentrations of chemical constituents or has certain toxicity, ignitability, corrosivity, or reactivity characteristics.

Region of Influence

The ROI for potential impacts related to hazardous materials/wastes would be limited to areas of the island to be used for launch activities, prelaunch site preparation, and in areas where hazardous materials are stored and handled.

Affected Environment

Handling and use of hazardous materials at Kodiak Launch Complex is limited. An NAWCWD launch point of contact identifies hazardous materials and outlines the guidelines for proper disposal. Hazardous material use, management, and disposal are handled in such a way as to minimize impacts to the environment.

AADC is authorized to operate Kodiak Launch Complex as a Small Quantity Generator according to the Alaska Hazardous Waste Management Regulations. With this designation, Kodiak Launch Complex can produce no more than 998 kilograms (2,220 pounds) of hazardous waste per month, which amounts to just under five drums of hazardous waste. Small amounts of hazardous and non-hazardous wastes generated during operations may include spent solvents, lead-acid batteries, anti-freeze, waste oil, spill cleanup materials, and empty containers. In addition, waste from toilets, showers, and sinks is expected to be nominal. AADC is responsible for removal of sewage waste.

3.1.5 HEALTH AND SAFETY—KODIAK, ALASKA

Health and safety includes consideration of any activities, occurrences, or operations that have the potential to affect one or more of the following:

- **The well-being, safety, or health of workers**—Workers are considered to be persons directly involved with the operation producing the effect or who are physically present at the operational site.

- **The well-being, safety, or health of members of the public**—Members of the public are considered to be persons not physically present at the location of the operation, including workers at nearby locations who are not involved in the operation and the off-base population. Also included within this category are hazards to equipment, structures, flora, and fauna.

Region of Influence

The ROI for health and safety of workers includes the immediate work areas, radiation hazard areas, and the launch site and flight corridor during launches. The ROI for public safety includes Kodiak Launch Complex, temporary ESQDs implemented during transport of the missile boosters and payload, exclusion areas, and warning areas.

Affected Environment

The launch vehicle operator and/or payload operator submits a Ground Safety Plan to AADC for review and approval before launch operations. A hazard potential is present during transport, pre-launch processing, and launch of solid rocket motors due to the significant amounts of propellant contained in the motors. The exposure to launch mishaps is greatest within the early portions of the flight after launch. Measures are currently in place to limit the number of personnel involved in the launch operations and to ensure that hazardous operations are performed by highly skilled personnel.

The Kodiak Launch Complex Safety Policy mandates the establishment of launch safety levels that meet or exceed those of RCC Standard 321-00 (see table 2-1). In accordance with the Kodiak Launch Complex Safety Policy, the criteria per year of Range operations for public casualty is limited to 1 in 1 million and the casualty criteria for personnel involved in the launch is limited to 1 in 300,000.

Figure 3-5 shows the locations of state recreation sites in the vicinity of Kodiak Launch Complex. For prior launches, Kodiak Launch Complex security personnel have closed Pasagshak Point Road to public access while transferring payloads from the Payload Processing Facility to the Launch Area. The AADC is planning to realign Pasagshak Point Road. The realignment would be approximately 5.5 meters (18 feet) wide with a 0.3-meter (1-foot) wide shoulder on each side.

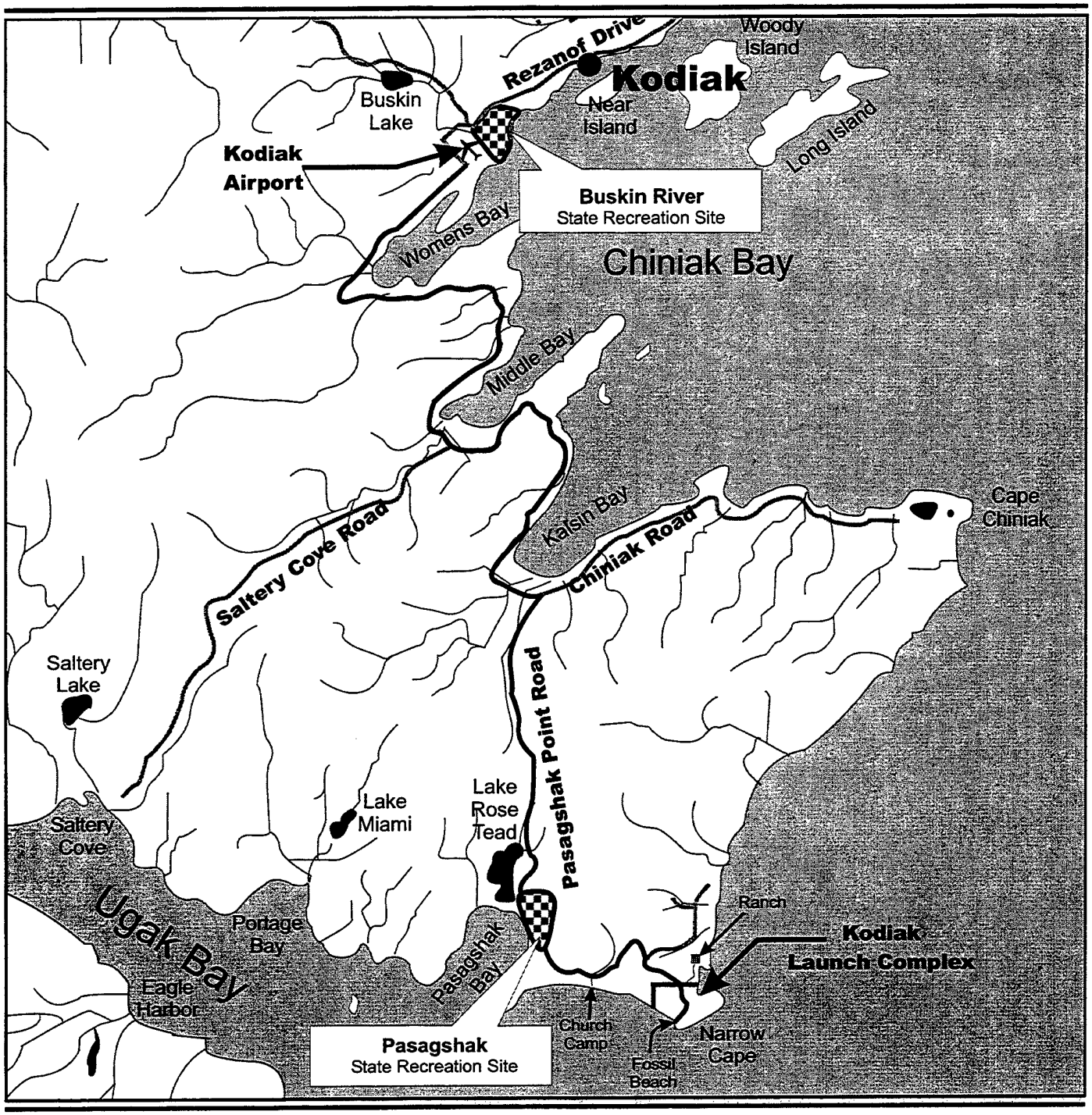
The road realignment is beyond the anticipated ESQDs at Kodiak Launch Complex. Its location will allow for continued access to Fossil Beach when Pasagshak Point Road is closed for safety reasons.

To ensure public safety during launch days, Kodiak Launch Complex security personnel close Pasagshak Point Road at the site boundary and ensure no unauthorized personnel enter the GHA. The safety zone is under constant surveillance beginning 2 hours before launch. If the safety zone is compromised, the launch is delayed until the area is confirmed clear. Pre-launch notifications to aviators and mariners are issued at least 24 hours before launches.

Each Kodiak Launch Complex launch has an established flight termination line. These lines are established to minimize potential adverse impacts on populated areas. In addition, various contingency plans will be in effect for emergency situations such as rocket motor mishap, fire, and injury. The Strategic Target System has an FTS.

3.1.6 NOISE—KODIAK, ALASKA

The characteristics of sound include parameters such as amplitude, frequency, and duration. Sound can vary over an extremely large range of amplitudes. The decibel (dB), a logarithmic unit that accounts for the large variations in amplitude, is the accepted standard unit for the measurement of sound. Different sounds may have different frequency contents. Sound levels that incorporate frequency-dependent amplitude adjustments established by the American National Standards Institute (American National Standards Institute, 1996) are called weighted sound levels. When measuring typical sources of noise, such as transportation or equipment, to determine its effects on a human population, A-weighted sound levels (dBA) are often used to account for the frequency response of the human ear. In general, the weighting reduces the impact of lower frequencies because they are less perceptible to humans. When high-intensity impulsive noise is evaluated to determine its effects on a human population, C-weighted sound levels are used so that the low-frequency effects of the noise are considered. The low-frequency content of impulsive noise contributes to effects such as window rattle that influence people's perception of and reaction to the noise.



EXPLANATION

- Land
- Water
- Recreation Site
- Kodiak Airport
- River or Creek
- Road
- Proposed Missile Transport Route
- Kodiak

Scale
0 2.8 5.6 Kilometers
0 1.75 3.5 Miles
NORTH

03-29-01 3-5 State Parks_A

State Recreation Sites in the Vicinity of Kodiak Launch Complex

Kodiak, Alaska

Figure 3-5

To be meaningful, sound levels must be associated with a distance from the source. As sound travels away from the source, it decreases due to atmospheric spreading and atmospheric absorption. Atmospheric spreading concerns the fact that the sound wave "stretches" to cover a larger area as it moves away from the source, similar to ripples in a pond. Atmospheric absorption describes the energy the sound wave loses because it transfers some energy to the air molecules it passes through. In general, atmospheric spreading results in a loss of 6 dB for each doubling of the distance. Atmospheric absorption results in a loss of *x* dB per meter, where *x* is a frequency-dependent value. As such, atmospheric spreading effects dominate sound level losses at relatively short distances, and atmospheric absorption has a greater impact as distances from the source increase. While noise levels decrease regularly as a function of distance from the launch pad in noise modeling situations, in actuality levels are affected by terrain and atmospheric conditions.

Noise is usually defined as sound that is undesirable because it interferes with speech communication and hearing, is intense enough to damage hearing, or is otherwise annoying. Noise levels often change with time; therefore, to compare levels over different periods of time, several descriptors were developed that take into account this time-varying nature. Two common descriptors include the average day-night sound level (L_{dn}) and maximum sound level (L_{max}). These descriptors are used to assess and correlate the various effects of noise on humans and animals, including land use compatibility, sleep interference, annoyance, hearing loss, speech interference, and startle effects.

Region of Influence

The minimum ROI for noise analysis is the area within the L_{max} = 85 dB contours generated by program activities.

Affected Environment

There are no legally established national standards for noise outside of the work environment. The OSHA Act of 1970 (Public Law 91-596) was established to "assure safe and healthy working conditions for working men and women." It delegated implementation and enforcement of the law to the OSHA of the U.S. Department of Labor. Title 29 CFR Section 1910.95 of the law pertains to the protection of workers from potentially hazardous occupational noise exposure. OSHA regulations establish a maximum noise level of 90 dBA for a continuous 8-hour exposure during a working day and higher sound levels for shorter exposure time (table 3-2). Protection against the effects of noise exposure must be provided when sound levels exceed those listed in table 3-2. Under OSHA regulations, exposure to impulse or impact noise should never exceed a 140-dB peak sound pressure level.

A consideration in Army policy is to equate different kinds of noise based on equal annoyance. Army researchers found that heavy weapons noise (impulsive noise) had to be measured in a different way than aircraft noise and that an aircraft flyover and blast noise of the same sound level were not equally annoying. In order to set the upper limit of an acceptable blast noise exposure to be comparable with the existing upper limit of an acceptable aircraft noise exposure, the Army followed the recommendation of the National

Research Council (1981) by adopting Army Regulation 200-1, which defines three noise zones (shown in table 3-3) in terms of annual average L_{dn}.

Table 3-2: Permissible Noise Exposures*

Duration (hours) Per Day	Sound Level dBA Slow Response
8	90
6	92
4	95
3	97
2	100
1 to 1.5	102
1	105
0.5	110
0.25 or less	115

Source: 29 CFR 1910.95, Table G-16.
*Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level.

Table 3-3: Definition of Land Use Zones for Noise

Noise Zone	Compatibility with Noise Sensitive Land Uses	Percent of Population Highly Annoyed	C-weighted Annual Average Day-Night Sound Level (L_{dn})
I	Acceptable	Less than 15%	Less than 62 dB
II	Normally unacceptable	15–39%	62–70 dB
III	Unacceptable	More than 39%	More than 70 dB

Source: U.S. Army Regulation 200-1.

The most common man-made noise in the ROI is occasional traffic on the road from Kodiak to Narrow Cape, from nearby off-road recreational vehicles, and from standby generators at nearby Loran Station.

Critical human and wildlife noise receptors have been identified at various locations. The closest human noise receptors are located at Kodiak Ranch (3 kilometers [2 miles] away from the Kodiak Launch Complex), Church Camp (5 kilometers [3 miles] away), and at Pasagshak State Recreation Area (10 kilometers [6 miles] away). The wildlife receptors are located at the shoreline around Narrow Cape and Ugak Island at or near the water surface.

3.1.7 SOCIOECONOMICS—KODIAK, ALASKA

Socioeconomics describes the social and economic characteristics of a community by isolating and analyzing several variables including population size, employment characteristics, income generated, and the type and cost of housing. This section presents a brief socioeconomic overview of the region.

Region of Influence

The ROI for socioeconomic analysis is Kodiak Island, specifically the City of Kodiak.

Affected Environment

Recreation and subsistence activities are widespread in the southwestern region of Alaska, which includes Kodiak Island. Principal activities include snowmachining, hunting, fishing, and trapping. Most marine waters of the region have an active saltwater commercial fishery. Figures 3-1 and 3-2 provide representative ship locations in the summer of 1997. There is also a large recreational fishery in freshwater streams and lakes on Kodiak. (Alaskan Command, 1996) Kodiak is a transportation hub for southwest Alaska, and home of the largest U.S. Coast Guard base in the country (Kodiak Chamber of Commerce, 2001). Nearly 2,000 active duty personnel and a like number of dependents reside on the facility.

The City of Kodiak is the seventh largest city in Alaska, in terms of population. The ROI is sparsely populated. The closest population center is Cape Chiniak with a population of 75. The estimated population of the Kodiak Island Borough in 2000 was 14,028. The Alaska Department of Labor reported in 1999 that the annual average monthly wage for workers in the Kodiak Island Borough was $2,364. The U.S. Department of Commerce reported in 1998 that Kodiak's personal, per capita income was $22,032, compared to a statewide average of $24,983. (Kodiak Chamber of Commerce, 2001)

Common industries include commercial fishing, guided hunting and fishing, charter aircraft operations, tourism, and limited mining. The Government, including the Coast Guard, accounts for a large percentage of the jobs in the region (Alaskan Command, 1996). In 1998, Kodiak was the nation's third highest port in seafood volume and value, with 358 million pounds of seafood landed, at a value of $79.7 million (Kodiak Chamber of Commerce, 2001).

Tourism, like many other Kodiak industries, is based on Kodiak's natural resources. Tourists come to view the scenery, hike, camp, visit historical and cultural sites, view and photograph wildlife (such as the annual Whale Fest), and hunt and fish. The visitor industry remains stable in Kodiak, with visitor spending in 1998 estimated at $17.6 million. (Kodiak Chamber of Commerce, 2001)

3.2 PACIFIC MISSILE RANGE FACILITY, HAWAII

3.2.1 AIRSPACE—PMRF

Airspace is defined in section 3.1.2.

Region of Influence

The ROI for airspace includes the airspace over and surrounding PMRF. It includes the PMRF Operational Areas, the R-3101 Restricted Area, and surrounding airspace off the western and northwestern coast of Kauai (figure 3-6).

Affected Environment

Special Use Airspace

Restricted Areas are airspace segments within which the flight of nonparticipating aircraft, while not wholly prohibited, is subject to restriction. Restricted Area R-3101 has been established to provide the airspace required by PMRF to meet its primary missions (figures 3-6 and 3-7). Special use airspace in the PMRF ROI also includes portions of Warning Area W-188 north of Kauai and Warning Area W-186 southwest of Kauai.

En Route Airways and Jet Routes

Although relatively remote from the majority of jet routes that crisscross the Pacific, the airspace ROI has two instrument flight rules en route low-altitude airways used by commercial air traffic that pass through the ROI: V-15, which passes east-west through the southernmost part of the Warning Area W-188; and V-16, which passes east-west through the northern part of Warning Area W-186 (figure 3-7). A count of the number of flights using each airway is not maintained.

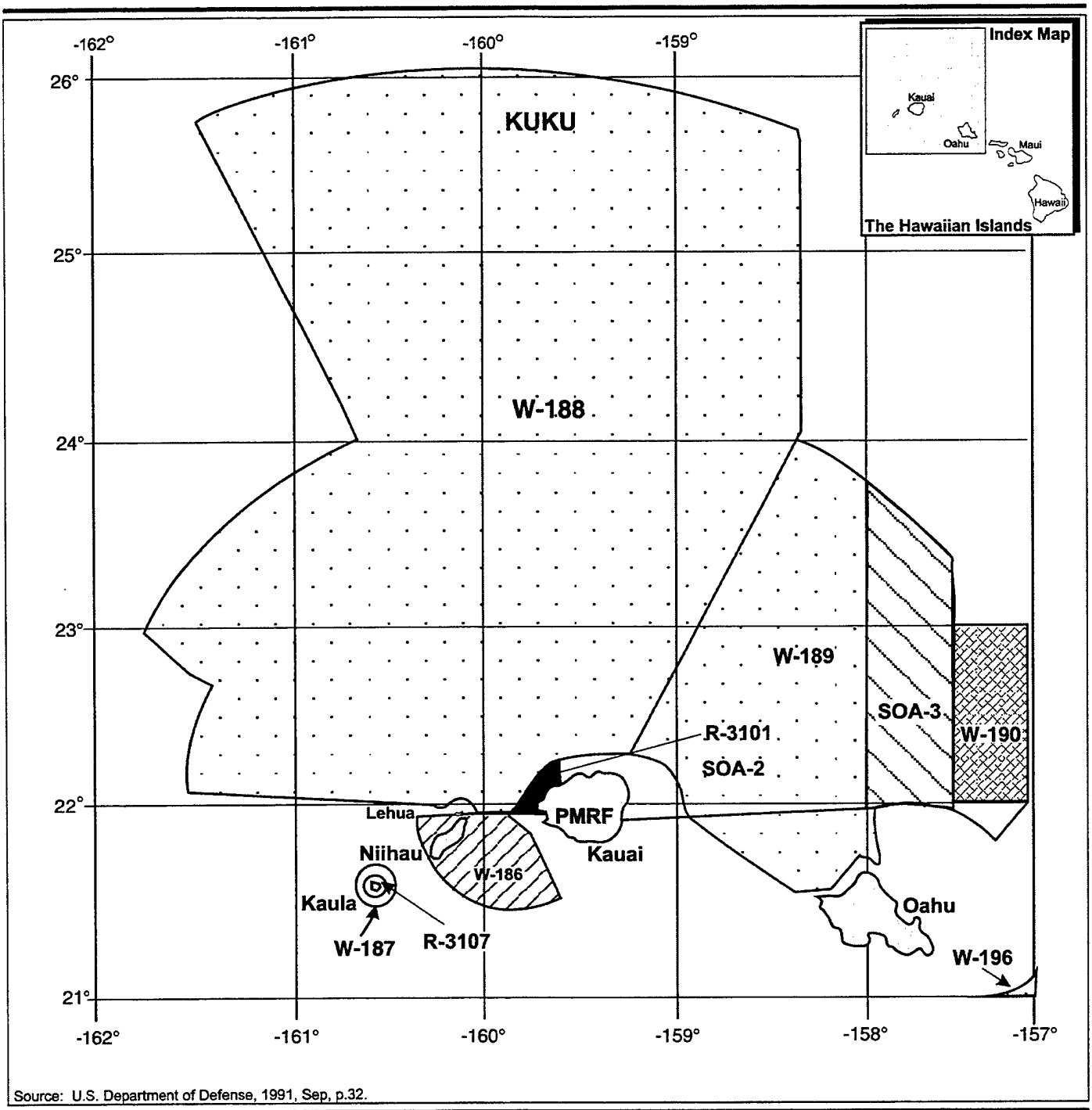
The airspace ROI, located to the west and northwest of Kauai, is far removed from the low-altitude airway carrying commercial traffic between Kauai, Oahu, and the other Hawaiian islands, all of which lie to the southeast of Kauai. There is a high volume of island helicopter sightseeing flights along the Na Pali coastline and over the Waimea Canyon. However, they do not fly into Restricted Area R-3101.

Airports/Airfields

There are no airports or airfields in the ROI with the exception of the airfield at PMRF-Barking Sands itself and the Kekaha airstrip approximately 5 kilometers (3 miles) to the southeast and 3 kilometers (2 miles) northwest of Kekaha. The standard instrument approach and departure procedure tracks for Kauai's principal airport at Lihue are all to the east and southeast of the island itself, well removed from the airspace use ROI.

Air Traffic/Range Control

Utilization of the airspace by the FAA and PMRF is established by a Letter of Agreement between the two agencies. By this agreement PMRF is required to notify the FAA by 1400 the day before range operations are going to infringe upon the designated airspace.



Source: U.S. Department of Defense, 1991, Sep, p.32.

EXPLANATION

- W-188/W-189/W-196
- W-186
- SOA-3
- W-190

PMRF = Pacific Missile Range Facility
R = Restricted Area
SOA = Special Operating Area
W = Warning Area

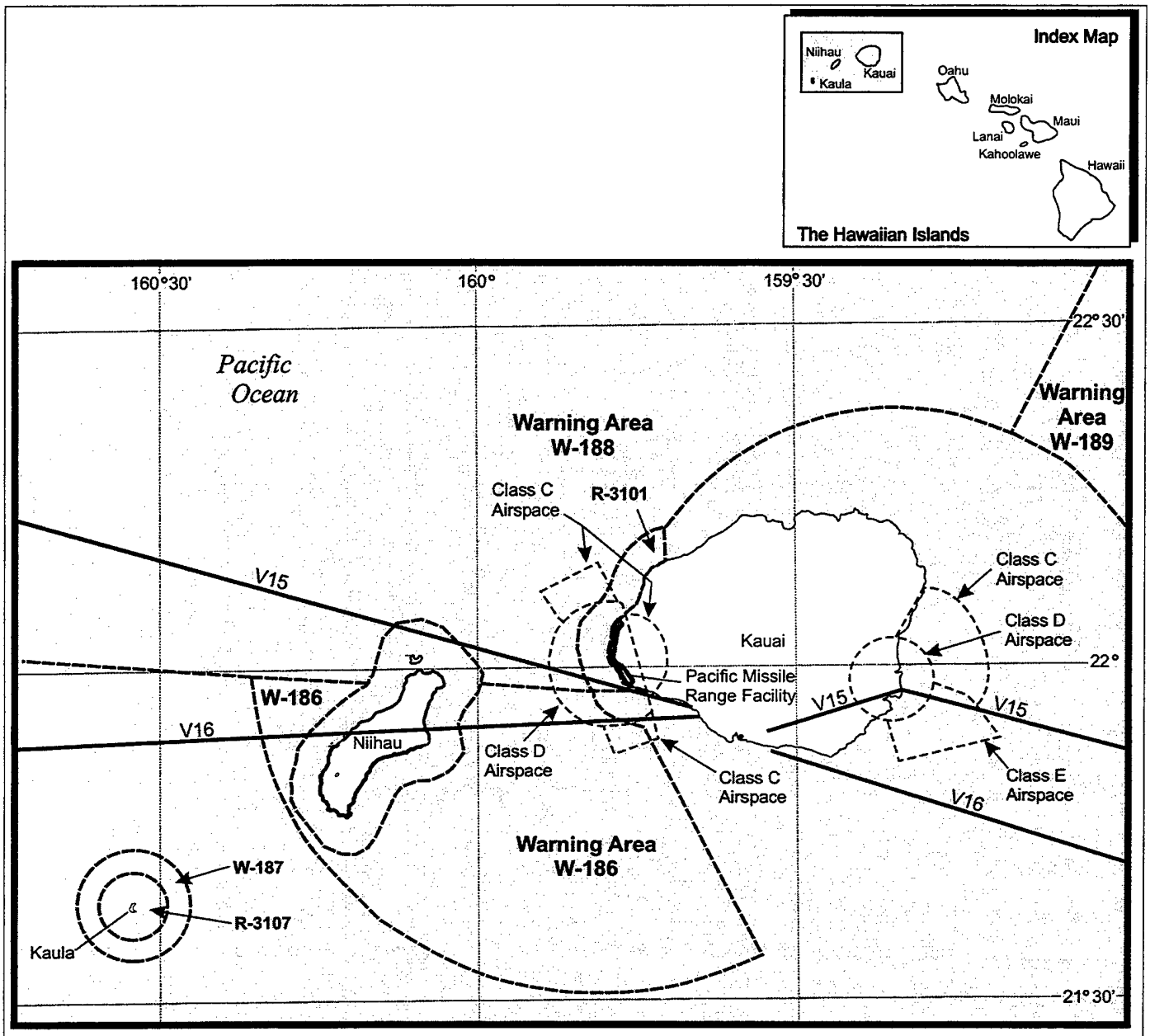
Scale
0 37 74 Kilometers
0 23 46 Miles
NORTH

03-29-01 3-6 pmrf_as_01

Pacific Missile Range Facility Operational Areas

Open Ocean

Figure 3-6



Source: National Ocean Service, 1997, Hawaiian Islands Sectional Aeronautical Chart, May 22.

EXPLANATION

—— En Route Low Altitude Airways

Airspace and En route Low Altitude Airways Immediately Surrounding Pacific Missile Range Facility/ Kauai Test Facility

Hawaii

Figure 3-7

Scale
0 13.5 27 Kilometers
0 8.5 17 Miles
NORTH

Range Control and the FAA are in direct communication in real time to ensure safety of all aircraft using the airways and the Warning Areas. Within the Special Use Airspace, military activities in Warning Areas W-186 and W-188 are under PMRF control. Warning Areas W-189, W-187, and W-190 are scheduled through the Fleet Area Control and Surveillance Facility.

The Warning Areas are located in international airspace. Because they are in international airspace, the procedures of the ICAO are followed. The FAA acts as the U.S. agent for aeronautical information to the ICAO, and air traffic in the ROI is managed by the Honolulu ARTCC.

3.2.2 BIOLOGICAL RESOURCES—PMRF

Section 3.1.3 provides a general description of biological resources.

Region of Influence

The ROI for biological resources encompasses the portions of PMRF that could potentially be affected by the Proposed Action.

Affected Environment

Vegetation

Ruderal vegetation (weed-like plants that occur in disturbed areas) and kiawe (*Prosopis pallida*)/koa haole (*Leucaena leucocephala*) scrub are the two principal habitat types on PMRF. The vegetation adjacent to PMRF is dominated by sugar cane, ruderal vegetation, and wetlands associated with agricultural ponds and drains. Wetlands are also associated with the Mana base pond and Kawaiele wildlife sanctuaries, and agricultural drains within PMRF. Within PMRF, ruderal vegetation is present where natural vegetation has been disturbed. Much of the ruderal vegetation is mowed on a regular basis. The understory, when present, consists of naturalized shrub and herbaceous species such as lantana (*Lantana camara*) and Guinea grass (*Panicum maximum*). Other introduced species are present beneath the kiawe in smaller numbers. Clearings in the kiawe are dominated by patchy, non-native, herbaceous species. In the south central part of PMRF, mosaic-like patches of vegetation dominated by the indigenous species *Dodenaea viscosa* are present on a sandy substrate.

Wildlife

Forty species of birds have been identified at PMRF, including species endemic to Hawaii. Non-native bird species on Kauai are usually common field and urban birds. Several species of migratory waterfowl may be present during some portion of the year.

The Laysan albatross (*Diomedea immutabilis*), a migratory bird protected under the Migratory Bird Treaty Act, uses ruderal vegetation areas for courtship and nesting. The Laysan albatross is being discouraged from nesting at PMRF to prevent incidents/strikes from aircraft using the runway. PMRF has an ongoing feral dog-trapping program to

protect the albatross as well as the wedge-tail shearwater and other birds on base. Albatross on the airfield are tagged and released on the north portion of the base or returnees are relocated to Kilauea National Wildlife Refuge in order to prevent bird/aircraft strikes. This action is being accomplished under a USFWS permit. The ring-necked pheasant (*Phasianus colchicus*) is one of several non-native game birds that occur throughout the ROI.

Feral dogs (*Canis familiaris*) and cats (*Felis catus*) occur in the region and prey on native and introduced species of birds. Rodents including the Polynesian black rat (*Rattus exulans*), Norway or brown rat (*Rattus norwegicus*), and the house mouse (*Mus musculus domesticus*) are also known to occur in the region.

Threatened and Endangered Species

Ten terrestrial species potentially occur on and adjacent to PMRF (table 3-4).

Two federally listed plant species have been observed north of PMRF: Ohai (*Sesbania tomentosa*), a federally endangered species of spreading shrub, and Lau'ehu (*Panicum niihauense*), a federally endangered species of rare grass.

Six species of birds that are listed as federally threatened or endangered are potentially present or confirmed in the PMRF area. Kauai provides the last Hawaiian habitat for the federally threatened Newell's shearwater (*Puffinus auricularis newelli*). The Newell's shearwater nests from April to November in the interior mountains of Kauai. Nestlings leave the nesting grounds at night in October and November and head for the open ocean. They become temporarily blinded by lights when flying near urban areas and have a tendency to collide with trees, utility lines, buildings, and automobiles. The most critical period for these collisions is 1 week before and 1 week after the new moon in October and November.

The dark-rumped petrel (*Pterodroma phaeopygia sandwichensis*), which is listed as federally endangered, may traverse the area from their nesting grounds to the sea. Fledging of the dark-rumped petrel occurs in October, slightly earlier than that of the Newell's shearwater.

The Hawaiian (American) coot (*Fulica americana alai*), Hawaiian black-necked stilt (*Himantopus mexicanus knudseni*), Hawaiian common moorhen (*Gallinula chloropus sandvicensis*), and Hawaiian duck (*Anas wyvilliana*) are Federal and State endangered birds that have been observed in the drainage ditches and ponds on PMRF.

Pueo *(Asio flammeus sandwichensis)* (Hawaiian short-eared owl) is a State listed endangered species. This short-eared owl is the only endemic terrestrial bird species that occurs in the region.

The native Federal endangered Hawaiian hoary bat (*Lasiurus cinereus* spp. *semotus*) has not been observed at PMRF, although it is known to feed offshore and has been observed at the Polihale State Park north of the base.

Table 3–4: Threatened and Endangered Species in the PMRF ROI

Scientific Name	Common Name	Status	
		Federal	State
Plants			
Panicum niihauense	Lau'ehu	E	E
Sesbania tomentosa	Ohai	E	E
Birds			
Anas wyvilliana	Koloa-maoli (Hawaiian duck)	E	E
Asio flammeus sandwichensis	Pueo (Hawaiian short-eared owl)	--	E
Fulica americana alai	'Alae-ke'oke'o (American/ Hawaiian coot)	E	E
Gallinula chloropus sandvicensis	'Alae-'ula (Hawaiian Gallinule/common moorhen)	E	E
Himantopus mexicanus knudseni	Ae'o (Hawaiian black-necked stilt)	E	E
Pterodroma phaeopygia sandwichensis	Hawaiian dark-rumped petrel	E	E
Puffinus auricularis newelli	A'o (Newell's shearwater)	T	T
Mammals			
Balaenoptera borealis	Sei whale	E	E
Balaenoptera musculus	Blue whale	E	E
Balaenoptera physolus	Fin whale	E	E
Lasiurus cinereus semotus	Hawaiian hoary bat	E	E
Megaptera novaeangliae	Humpback whale	E	E
Monochus schauinslandi	Hawaiian monk seal	E	E
Physeter macrocephalus	Sperm whale	E	E
Reptiles			
Caretta caretta	Loggerhead sea turtle	T	--
Chelonia mydas	Green sea turtle	T	E
Dermochelys coriacea	Leatherback sea turtle	E	--
Eretmochelys imbricata	Hawksbill sea turtle	E	E
Lepidochelys olivacea	Olive Ridley sea turtle	T	--

Source: U.S. Fish and Wildlife Service, 1999
Legend:
E = Endangered
-- = Not listed
T = Threatened

Three marine wildlife species listed as Federal and state threatened or endangered also occur in the area. The Hawaiian monk seal (*Monachus schauinslandi*), a Federal and state endangered species, is an indigenous mammal and has been observed at PMRF. No seal pupping has been observed on PMRF beaches. Two or three seals are regularly seen around the island of Kauai but are considered stragglers. The fact that all beaches on PMRF are frequented by humans may discourage use by monk seals.

Approximately 32 green sea turtles (*Chelonia mydas*), a Federal and state threatened species, were observed during a 1990 survey of the shoreline of the PMRF. One turtle nest was discovered on the southern portion of PMRF in 1985, but no other use has been documented.

The migratory humpback whale, Federal and state endangered, is known to use the channel between Kauai and Niihau. Approximately two-thirds of the North Pacific population of humpback whales winter in Hawaii.

Sensitive Habitat

Hawaiian Islands Humpback Whale National Marine Sanctuary. The Hawaiian Islands Humpback Whale National Marine Sanctuary was created by Congress in 1992. Federally endangered humpback whales are located in the shallow waters surrounding the Hawaiian Islands in the winter months. The purposes of the sanctuary include protection of the humpback and its habitat, management of human uses within the sanctuary, and identification of marine resources and ecosystems of national significance. Sanctuary regulations recognize that all existing military activities are authorized, as are new military activities following consultation with National Marine Fisheries Service. Figure 3-8 shows the boundaries of the Hawaiian Islands Humpback Whale National Marine Sanctuary.

Submerged Barrier Reef Offshore of PMRF. A submerged barrier reef, roughly 13 kilometers (8 miles) long, lies offshore of PMRF. Coral density is low and is dominated by *Porites lobata* and small stands of arborescent (branched or tree shaped) corals. The recently protected North-western Hawaiian Islands Coral Reef Ecosystem Reserve (Executive Orders 13178 and 13196) lies outside the pertinent ROI.

3.2.3 HEALTH AND SAFETY—PMRF

Section 3.1.5 provides a general description of health and safety.

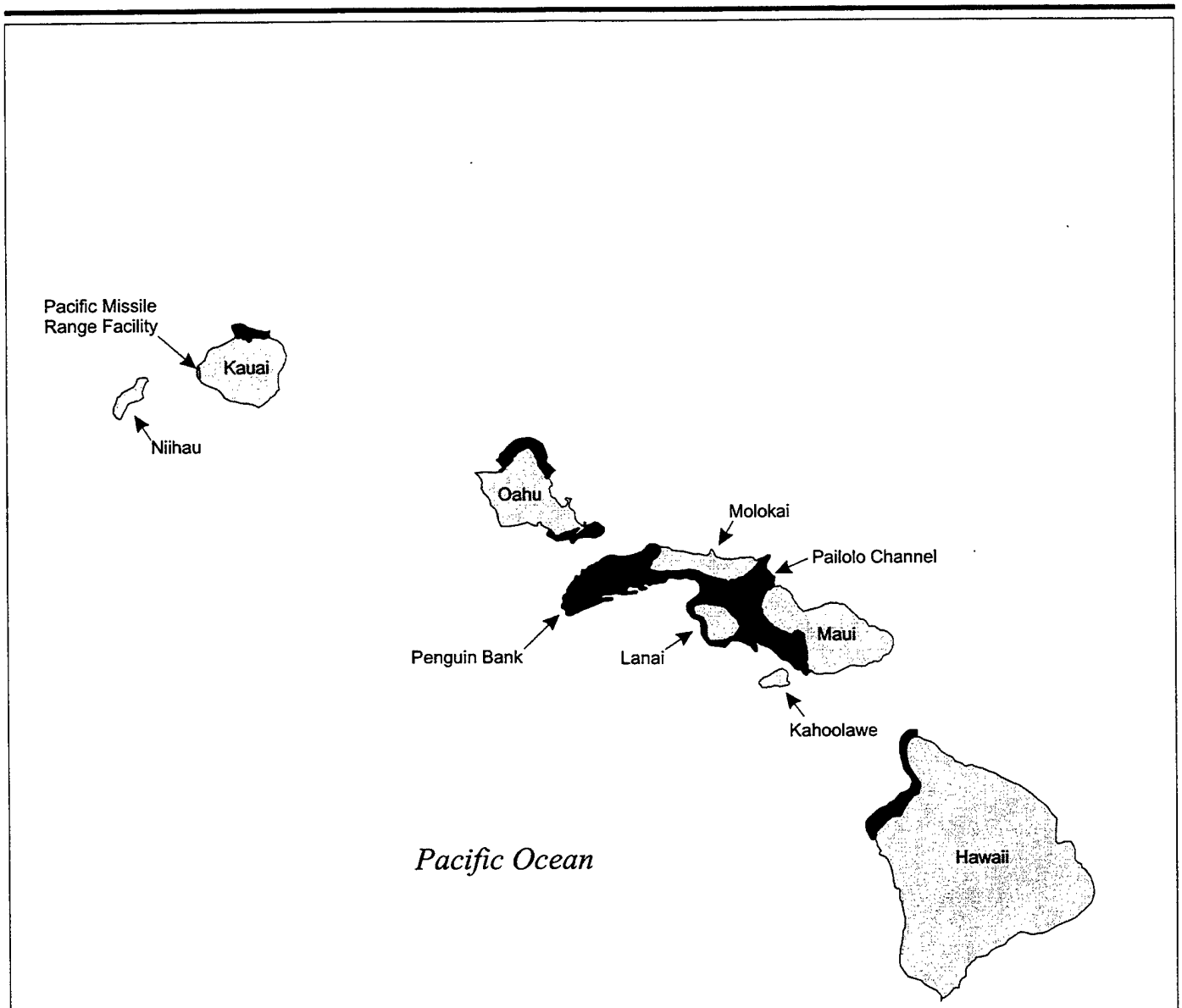
Region of Influence

The ROI for health and safety of workers includes the immediate work areas, radiation hazard areas, the launch site, and the flight corridor. The ROI for public safety includes PMRF and any bordering areas that may be affected by proposed activities.

Affected Environment

The Navy takes every reasonable precaution during the planning and execution of the operations and test and development activities to prevent injury to human life or property.

Figures 3-9 and 3-10 show recreational areas adjacent to PMRF and the boundaries of Polihale State Park north of PMRF, respectively. Figure 3-11 provides the azimuth limits for launches from PMRF. In addition to explosive, physical impact, and electromagnetic hazards, potential hazards from chemical contamination, ionizing and non-ionizing radiation, radioactive materials, and lasers are studied by the NAWCWD.



Source: Modified from National Marine Sanctuaries, 1996, 29 May. p. 1-3.

EXPLANATION

State of Hawaii's Areas for Inclusion in Sanctuary Boundary, 1997 (defined as within the 100 fathom isobath)

Land Area

Hawaiian Islands Humpback Whale National Marine Sanctuary Boundary

Hawaiian Islands

Figure 3-8

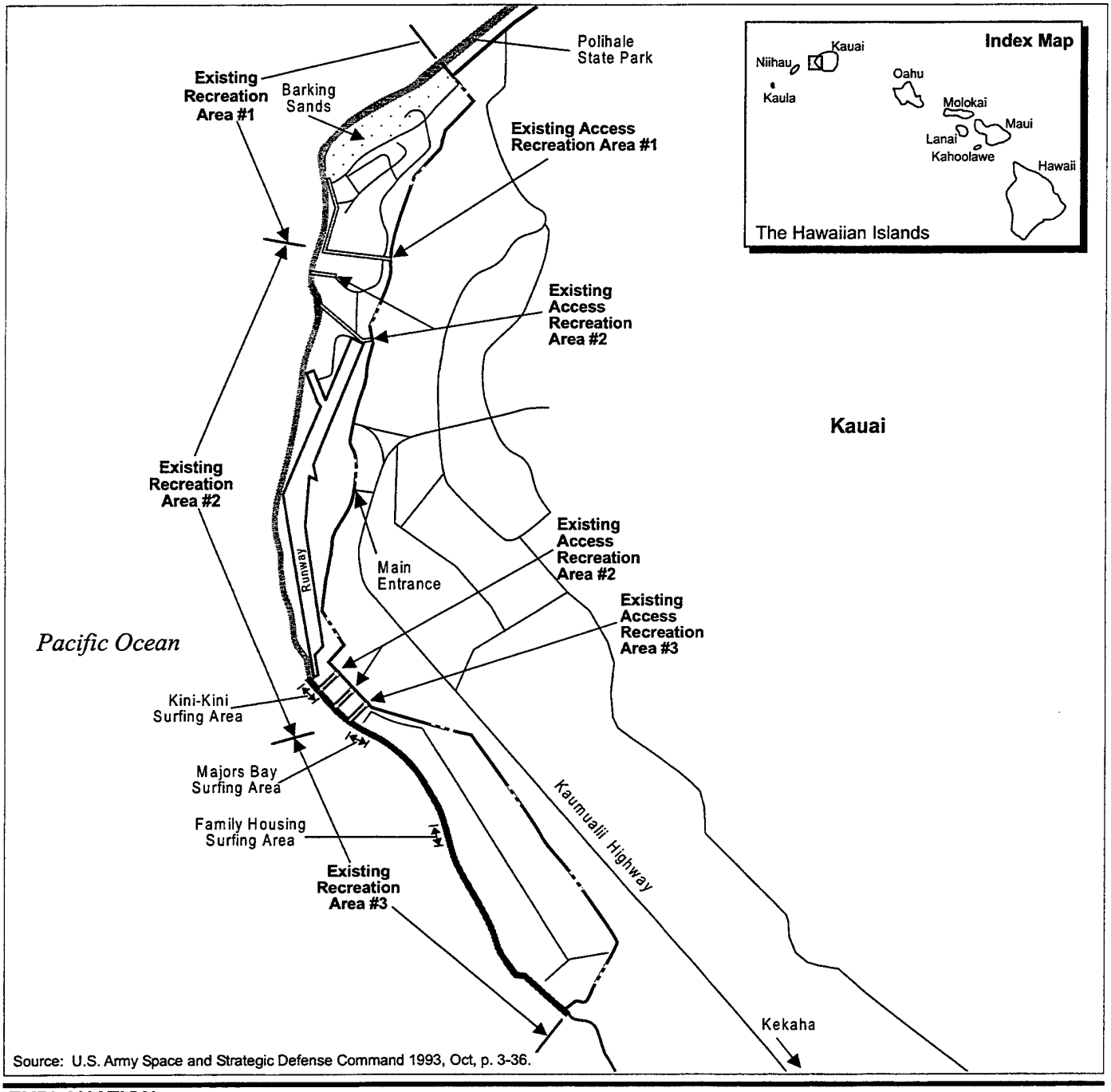
NORTH

Scale

0 40 80 Kilometers

0 25 50 Miles

03-29-01 3-8 pmrf_br_02



Source: U.S. Army Space and Strategic Defense Command 1993, Oct, p. 3-36.

EXPLANATION

- Sand Dune
- Rocky Beach
- Sandy Beach
- Beach Access
- Pacific Missile Range Facility Boundary

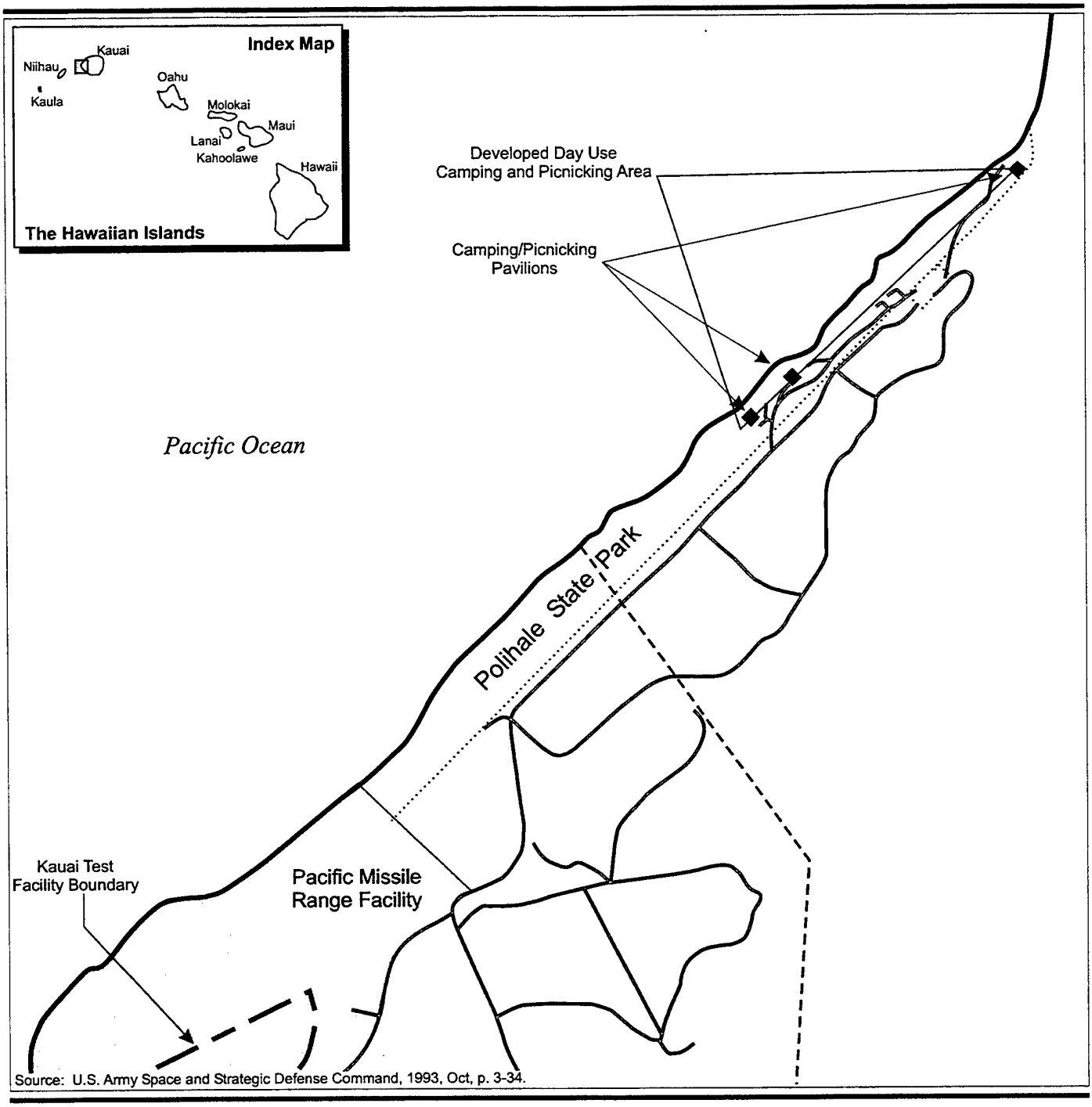
Scale
0 754 1,508 Meters
0 2,474 4,948 Feet

NORTH

Pacific Missile Range Facility Recreational Areas

Kauai, Hawaii

Figure 3-9



EXPLANATION

- Restrictive Easement Boundary
- Polihale State Park Boundary
- Kauai Test Facility

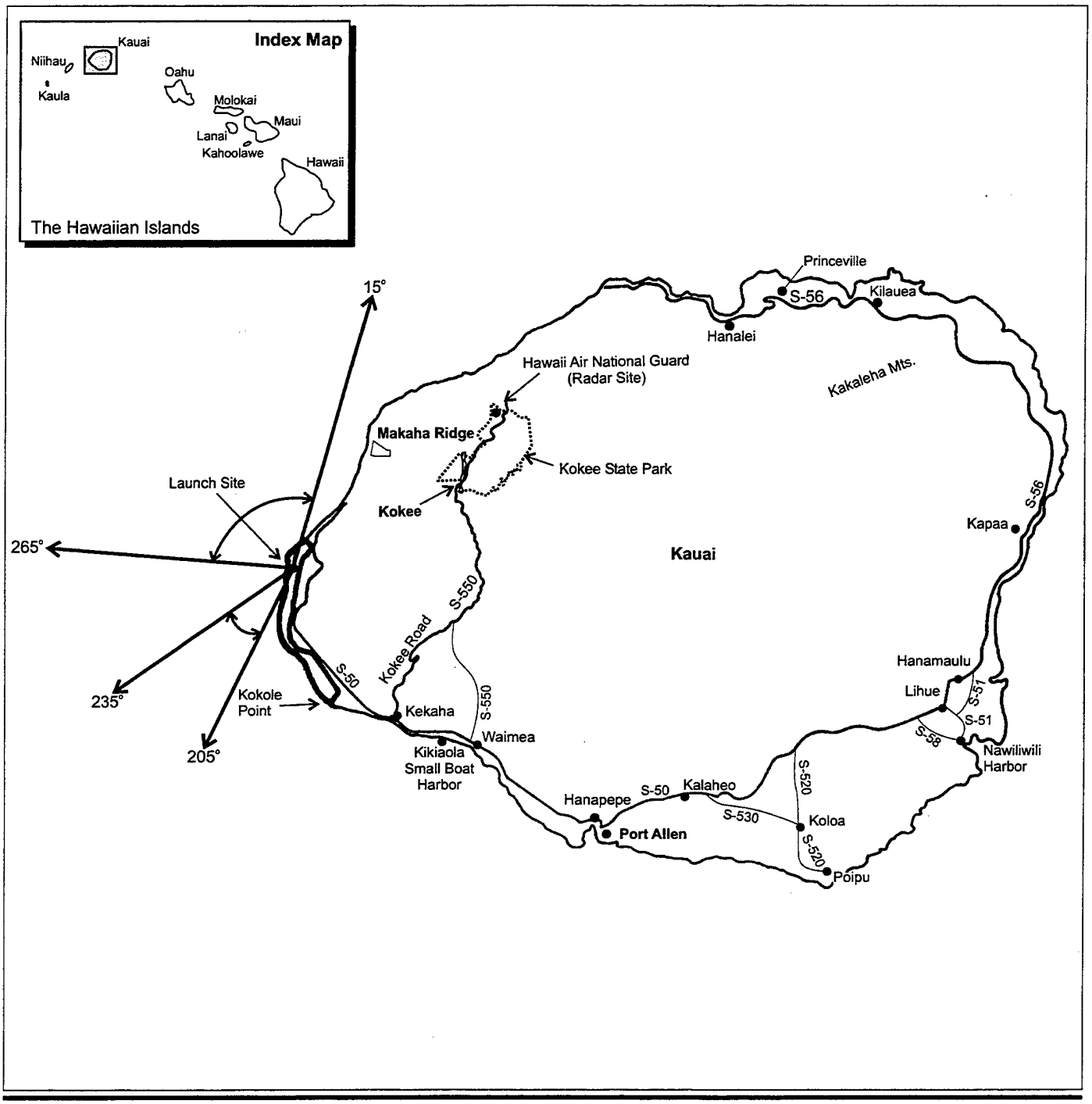
Polihale State Park

Kauai, Hawaii

Scale
0 300 600 Meters
0 1,000 2,000 Feet
NORTH

Figure 3-10

03-29-01 3-10 PMRF_REC_01



EXPLANATION

- Pacific Missile Range Facility Boundary
- Flight Corridor Azimuth Limits
- ..... Kokee State Park Boundary

Scale
0 4.9 9.7 Kilometers
0 3 6 Miles
NORTH

Kauai Test Facility Flight Corridor Azimuth Limits

Kauai, Hawaii

Figure 3-11

Range Safety

Range Control is in charge of surveillance, clearance, and real-time range safety. Range Safety Approval and Range Safety Operation Plan documents are required for all weapons systems using PMRF. PMRF sets requirements for minimally acceptable risk criteria to occupational and non-occupational personnel, test facilities, and non-military assets during range operations.

The Naval Air Warfare Center, Point Mugu, is responsible for establishing GHAs and launch hazard areas over water beyond which no debris from early flight termination is expected to fall. Hazard areas are determined by size and flight characteristics of the missile, as well as individual flight profiles of each flight test. Data processed by ground-based or onboard missile computer systems may be used to recognize malfunctions and terminate missile flight. Before an operation is allowed to proceed, the range is determined cleared using input from ship sensors, visual surveillance from aircraft and range safety boats, radar data, and acoustic information. Other safety areas under PMRF's control include radars, explosives, and airspace.

Electromagnetic radiation (EMR) zones are designated around transmitter sites and tracking radars. PMRF uses a combination of establishing safety zones and conducting sector blanking in occupied areas to avoid potential EMR exposure. To ensure exposure risks to personnel are minimal, the Navy conducts regular radiation hazard surveys before any modifications to a unit are made or when new radar equipment is installed. In addition, all radar units have red (radar unit is on) and blue (radar unit is emitting EMR) warning lights. EMR generated from PMRF radar units does not expose the public to any hazardous radiation.

3.2.4 NOISE—PMRF

Section 3.1.6 provides a general description of noise.

Region of Influence

The minimum ROI for noise analysis is the area within the L_{max} = 85 dB contours generated by program activities.

Affected Environment

Noise sources from PMRF and Kauai Test Facility include target drones, aircraft, helicopters, rocket and missile launches, and daily base operations. Noise levels on PMRF near the runway average 75 dBA. Locations on the base away from the runway are typical of a commercial area with noise levels around 65 dBA or less. Infrequent, short-term launch noise from the PMRF and Kauai Test Facility has come from Strategic Target System, Strypi, and ZEST missile launches. The Strategic Target System noise has been measured at 126 dB at 175 meters (575 feet) from the launch pad to 97 dB at the GHA boundary (3,048 meters [10,000 feet]). The Strypi noise is 120 dB at 346 meters (1,135 feet) from the launch pad to 109 dB at the Ground Hazard Boundary (830 meters [2,722 feet]). Noise associated with the ZEST program is 124.8 dB at 221 meters (725 feet)

from the launch pad to 109.0 dB at 907 meters (2,975 feet). Noise levels generated from the 320 rocket boosters launched from Kauai Test Facility from 1962 through 1990 were not monitored.

The nearest on-base housing area is located approximately 8 kilometers (5 miles) south of Kauai Test Facility. The nearest off-base residential area is Kekaha, which is approximately 13 kilometers (8 miles) south of Kauai Test Facility. Both of these locations are outside the ROI. The portions of the ROI that extend beyond the boundaries of the PMRF include sugar cane fields to the east and the ocean to the west.

3.2.5 SOCIOECONOMICS—PMRF

Section 3.1.7 provides a general description of socioeconomics.

Region of Influence

The ROI for socioeconomic analysis is Kauai, which includes 11 inhabited census tracts.

Affected Environment

The socioeconomic character of Kauai was discussed in detail in the PMRF Enhanced Capability EIS (Pacific Missile Range Facility, Barking Sands, 1998). The following paragraphs summarize pertinent data from the EIS.

The population of Kauai County was estimated as 56,539 in 1999, a change of approximately 9.5 percent over the 9-year period (U.S. Bureau of the Census, 2001).

Tourism, tourism-related services, and the Government have continued to be the main employment generators on Kauai. Currently, the three largest employers are the County of Kauai, PMRF, and Wilcox Health Systems.

It is estimated that over 176,000 people are employed in tourism and travel in the State of Hawaii. This figure represents over 31 percent of the workforce. Kauai's share of the Hawaii visitor market was 13.9 percent in 1995.

PMRF is the largest Federal Government employer on Kauai. In September 1997, it employed a total of 870 personnel. Of those, 290 worked directly for PMRF, while the remaining were employed by tenant organizations and subcontractors. PMRF has an annual average daily temporary duty count of 39 personnel supporting mission activities. The actual peak temporary duty population could be higher than this average. Most of these personnel stay in off-station locations.

3.3 OPEN OCEAN (OUTSIDE U.S. TERRITORY)

For purposes of this analysis, Open Ocean refers to those ocean areas beyond U.S. territorial limits as described for each launch alternative. Open ocean areas are subject to

Executive Order 12114, *Environmental Effects Abroad of Major Federal Actions*. A limited number of resources would potentially be impacted by the Proposed Action, including airspace, biological resources, health and safety, transportation, and water resources.

3.3.1 AIRSPACE—OPEN OCEAN

Region of Influence

The ROI is defined as that area that would be potentially affected by the Proposed Action that would utilize portions of the international airspace over the open Pacific Ocean.

Affected Environment

The affected airspace use environment in the Ocean Area ROI is described below in terms of its principal attributes, namely: controlled and uncontrolled airspace, special use airspace, en route airways and jet routes, and air traffic control. There are no military training routes in the ROI.

Controlled and Uncontrolled Airspace

Because the airspace beyond the territorial limit is in international airspace, the procedures of the ICAO are followed. The FAA acts as the U.S. agent for aeronautical information to the ICAO, and air traffic in the ROI is managed by the Anchorage ARTCC, the Honolulu ARTCC, and the Oakland ARTCC.

Special Use Airspace

The special use airspace in the Ocean Area ROI is described in sections 3.1.2 and 3.2.1.

En Route Airways and Jet Routes

The Ocean Area airspace use ROI has several en route high altitude jet routes, A331, A332, R463, R464, R465, Corridor V 506, and Corridor G 10, which pass through the ROI. Most of the Ocean Area airspace use ROI is well removed from the jet routes that currently crisscross the North Pacific Ocean (figure 3-2).

As an alternative to aircraft flying above 8,839 meters (29,000 feet) following published, preferred instrument flight rules routes, the FAA is gradually permitting aircraft to select their own routes. This "Free Flight" program is an innovative concept designed to enhance the safety and efficiency of the National Airspace System. The concept moves the National Airspace System from a centralized command-and-control system between pilots and air traffic controllers to a distributed system that allows pilots, whenever practical, to choose their own route and file a flight plan that follows the most efficient and economical route. (Federal Aviation Administration, 1997).

Free Flight calls for limiting pilot flexibility in certain situations, such as, to ensure separation at high-traffic airports and in congested airspace, to prevent unauthorized entry into special use airspace, and for any safety reason. Free Flight is being developed, tested,

and implemented incrementally by the FAA and the aviation community. Safety remains the highest priority throughout the transition to full Free Flight. The annual air traffic rate is expected to grow by 3 to 5 percent for at least the next 15 years, but the current airspace architecture and management is not able to efficiently handle this increase. Implementation of Free Flight, which offers benefits in system safety, capacity, and efficiency, is key to advancing aviation by accommodating the nation's growing airspace needs. (Federal Aviation Administration, 1997)

Free Flight is a joint initiative of the global aviation industry and the FAA. Planning has been done primarily through the Radio Technical Commission for Aeronautics, Inc., an organization that serves in an advisory capacity to the FAA. International coordination is being accomplished through this organization's Government/Industry Free Flight Steering Committee, which contains international representation, and the FAA's membership in the ICAO. The phased approach for Free Flight, along with international aviation participation, contributes to building a seamless global airspace system. (Federal Aviation Administration, 1997)

Free Flight is already underway, and the plan for full implementation will occur as procedures are modified and technologies become available and are acquired by users and service providers. With the full implementation of this program, the amount of airspace in the ROI that is likely to be clear of traffic will decrease as pilots, whenever practical, choose their own route and file a flight plan that follows the most efficient and economical route, rather than following the published preferred instrument flight rules routes across the Pacific Ocean, as shown in figure 3-2.

Air Traffic Control

Air traffic in the ROI is managed by the Anchorage ARTCC, the Honolulu ARTCC, and the Oakland ARTCC. Control of oceanic air traffic in the United States is carried out from oceanic centers in Anchorage, Oakland, and New York. The Oakland Oceanic Flight Information Region is the world's largest, covering approximately 48.4 million square kilometers (18.7 million square miles) and handling over 560 flights per day. Traffic between the continental U.S. and Hawaii flies on the Central East Pacific Composite Route System. The bulk of the Anchorage oceanic traffic flows along a set of routes in the north Pacific called the North Pacific Composite Route System, which connects Japan, Korea, and other Pacific-rim countries with Anchorage and points east and south. Anchorage also handles domestic civilian traffic throughout Alaska as well as a large number of military operations. Total instrument flight rules traffic volume averaged 1,900 operations per day in 2000, peak days approaching 3,000 operations per day. (Federal Aviation Administration, 2000)

3.3.2 BIOLOGICAL RESOURCES—OPEN OCEAN

Marine biology of the Ocean Area consists of the animal and plant life that lives in and just above the surface waters of the sea and its fringes, the salient physical and chemical properties of the ocean, biological diversity, and the characteristics of its different ecosystems or communities.

Region of Influence

The ROI occupies areas in the central north Pacific Ocean bounded by the potential trajectory fans for potential launches from Kodiak Launch Complex toward the western United States, PMRF, and USAKA and launches from PMRF toward the northwest coast of North America. The average depth of the Ocean Area ROI is 3,932 meters (12,900 feet).

The general composition of the ocean includes water, sodium chloride, dissolved gases, minerals, and nutrients. These characteristics determine and direct the interactions between the seawater and its inhabitants. The most important physical and chemical properties are salinity, density, temperature, pH, and dissolved gases. For oceanic waters, the salinity is approximately 35 parts of salt per 1,000 parts of seawater.

The three layers of the ocean include the surface layer, from 0 to 550 meters (0 to 1,804 feet); an intermediate layer, from 550 to 1,500 meters (1,804 to 4,921 feet); and a deep-water layer, from 1,500 meters (4,921 feet) to the sea floor.

Most organisms have a distinct range of temperatures in which they may thrive. A greater number of species live within the moderate temperature zones, with fewer species tolerant of extremes in temperature. Most areas of the Pacific maintain a temperature of 4°C (39.2°F).

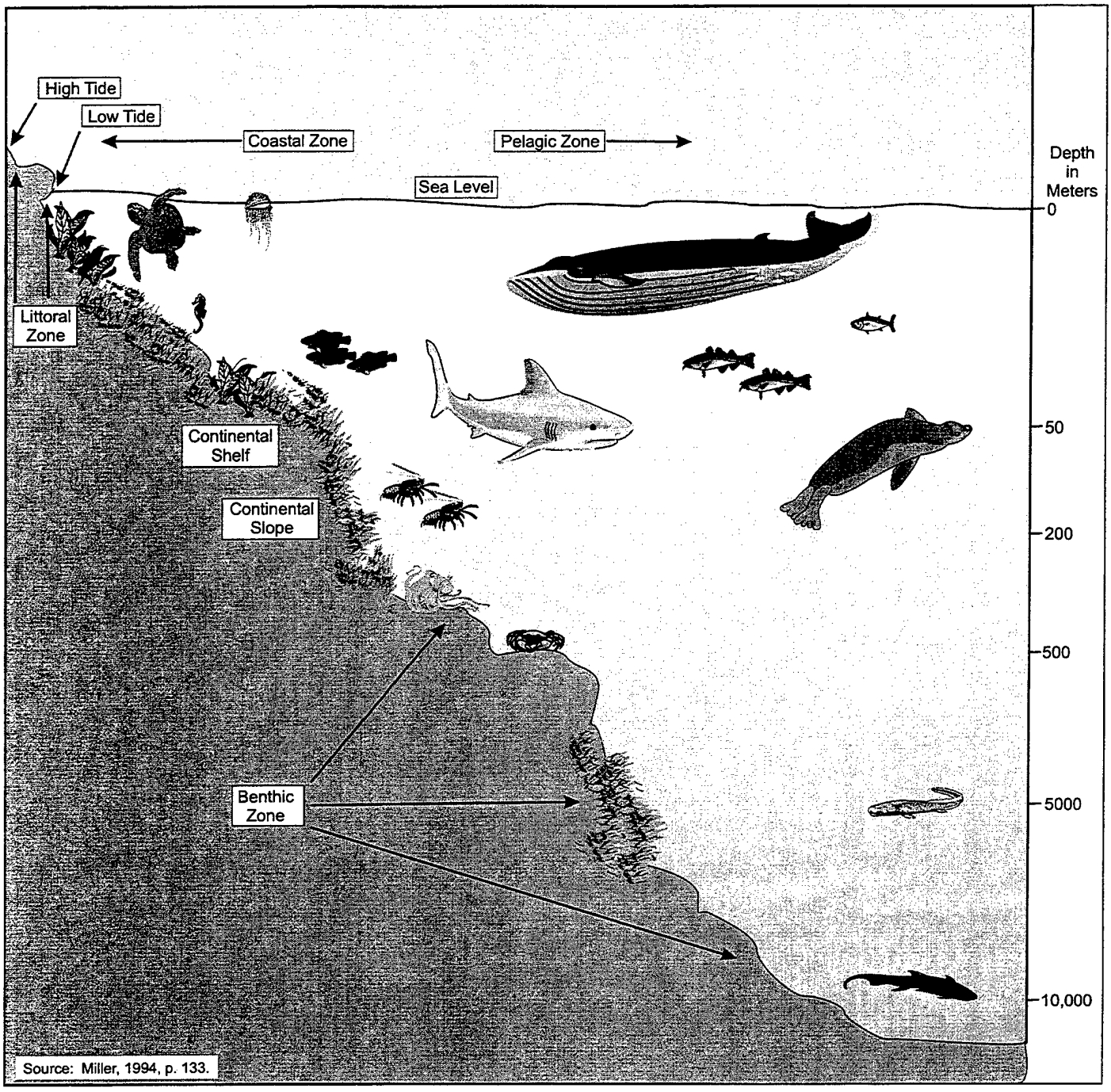
Surface seawater often has a pH between 8.1 and 8.3 (slightly basic), but generally is very stable with a neutral pH. The amount of oxygen present in seawater will vary with the rate of production by plants, consumption by animals and plants, bacterial decomposition, and by surface interactions with the atmosphere. Most organisms require oxygen for their life processes. Carbon dioxide is a gas required by plants for photosynthetic production of new organic matter. Carbon dioxide is 60 times more concentrated in seawater than it is in the atmosphere.

Ocean Zones

Classification of the Pacific Ocean zones (figure 3-12) is based upon depth and proximity to land. Using this methodology, there are four major divisions or zones in the ocean: the littoral zone, the coastal zone, the offshore zone, and the pelagic zone. Spanning across all zones is the benthic environment, or sea floor. This section discusses the pelagic zone and the benthic environment.

The pelagic zone is commonly referred to as the open ocean. The organisms that inhabit the open oceans typically do not come near land, continental shelves, or the seabed. Approximately 2 percent of marine species live in the open oceans.

The bottom of the sea floor is known as the benthic area. It comprises 98 percent of the species of animals and plants in the ocean. Less than 1 percent of benthic species live in the deep ocean below 2,000 meters (6,562 feet).



Ocean Zones

Open Ocean

Figure 3-12

Not to Scale

Biological Diversity

Marine life ranges from microscopic one-celled organisms to the world's largest animal, the blue whale. Marine plants and plant-like organisms can live only in the sunlit surface waters of the ocean, the photic zone, which extends to only about 101 meters (330 feet) below the surface. Beyond the photic zone, the light is insufficient to support plants and plant-like organisms. Animals, however, live throughout the ocean from the surface to the greatest depths.

The organisms living in pelagic communities may be drifters (plankton) or swimmers (nekton). The plankton consists of plant-like organisms and animals that drift with the ocean currents, with little ability to move through the water on their own. The nekton consists of animals that can swim freely in the ocean, such as fish, squids, and marine mammals. Benthic communities are made up of marine organisms, such as kelp, sea grass, clams, and crabs that live on or near the sea floor.

Threatened and Endangered Species

Species identified as threatened and endangered that exist in the Ocean Area ROI, listed in table 3-4, include the sei whale (*Balaenoptera borealis)*, blue whale (*Balaenoptera musculus*), fin whale (*Balaenoptera physolus*), humpback whale, sperm whale (*Physeter macrocephalus*), Hawaiian monk seal, loggerhead sea turtle (*Caretta caretta*), green sea turtle, leatherback sea turtle (*Dermochelys coriacea*), hawksbill sea turtle (*Eretmochelys imbricata*), and olive ridley sea turtle (*Lepidochelys olivacea*).

3.3.3 HEALTH AND SAFETY—OPEN OCEAN

Region of Influence

The Ocean Area ROI is defined as that area that would be potentially affected by the booster impacts of the Proposed Action.

Affected Environment

The affected health and safety environment for the Ocean Area is described below in terms of its principal attributes, namely: range control procedures and verification of Ocean Area clearance procedures.

Range Control is charged with surveillance, clearance, and real-time range safety. The Range Control Officer using PMRF assets is solely responsible for determining range status and setting RED (no firing) and GREEN (range is clear and support units are ready to begin the event) range firing conditions. The Range Safety Approval and the Range Safety Operation Plan documents are required for all weapons systems using PMRF. PMRF uses RCC 321-00, *Common Risk Criteria for National Test Ranges*. RCC 321-00 sets requirements for minimally-acceptable risk criteria to occupational and non-occupational personnel, test facilities, and non-military assets during range operations. Under RCC 321-00, individuals of the general public shall not be exposed to a probability of fatality greater than 1 in 10 million for any single mission and 1 in 1 million on an annual basis.

Range Safety officials ensure operational safety for projectiles, targets, missiles, and other hazardous operations into PMRF operational areas. The operational areas consist of two Warning Areas (W-186 and W-188) and one Restricted Area (R-3101) under the local control of PMRF. The Warning Areas are in international waters and are not restricted; however, the surface area of the Warning Areas is listed as "HOT" (actively in use) 24 hours a day. For special operations, multi-participant or hazardous weekend firings, PMRF publishes dedicated warning NOTAMs and NOTMARs.

The range safety clearance procedures at PMRF are some of the most rigorous because of the extra sensors available. Before an operation is allowed to proceed, the range is verified cleared of non-participants using inputs from ship sensors, visual surveillance of the range from aircraft and range safety boats, radar data, surface and underwater sonic information obtained from a series of hydrophones within a portion of the open ocean utilized by PMRF, and surveillance from shore. If whales are present in the operations areas, activities are stopped until the mammals have cleared the area. In addition, all activities must be in compliance with DoD Directive 4540.1 (as enclosed by Chief of Naval Operations Instruction (OPNAVINST) 3770.4A, *Use of Airspace by U.S. Military Aircrafts and Firing Over the High Seas*, 23 March 1981) which specifies procedures for conducting aircraft operations and for missile/projectile firing, namely: the missile/projectile "firing areas shall be selected so that trajectories are clear of established oceanic air routes or areas of known surface or air activity."

4.0
ENVIRONMENTAL CONSEQUENCES

4.0 ENVIRONMENTAL CONSEQUENCES

This section describes the potential environmental consequences of the proposed activities by comparing these activities with the potentially affected environmental components. Sections 4.1 through 4.3 provide discussions of the potential environmental consequences of these activities. The amount of detail presented in each section is proportional to the potential for impacts. Sections 4.4 through 4.11 provide discussions of the following with regard to proposed program activities: environmental effects of the No-action Alternative; adverse environmental effects that cannot be avoided; conflicts with Federal, state, and local land use plans, policies, and controls for the area concerned; energy requirements and conservation potential; irreversible or irretrievable commitment of resources; relationship between short-term use of the human environment and the maintenance and enhancement of long-term productivity; natural or depletable resource requirements and conservation potential; *Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations* (Executive Order 12898); and *Federal Actions to Address Protection of Children from Environmental Health Risks and Safety Risks* (Executive Order 13045)

To assess the potential for and significance of environmental impacts from the proposed program activities, a list of activities was developed (sections 1.0 and 2.0) and the environmental setting was described, with emphasis on any special environmental sensitivities (section 3.0). Program activities were then compared with the potentially affected environmental components to determine the environmental impacts of the proposed activities.

To help define the affected environment and determine the significance of program-related effects, written, personal, and telephone contacts were made with applicable agencies. A list of all agencies contacted is included in section 7.0.

4.1 KODIAK, ALASKA

4.1.1 AIR QUALITY—KODIAK, ALASKA

The overall impact on the ambient air at Kodiak Launch Complex is expected to be minimal. Potential air quality issues for Kodiak Launch Complex include maintaining compliance with national and state ambient air quality standards for pollutants released during pre-launch and launch activities and limiting exposure to those pollutants for which no standard has been established. The pollutants of greatest concern are hydrogen chloride and aluminum oxide. Since missiles are not stationary sources, neither of these pollutants is subject to stationary emissions permits at the launch complex. However, since booster emissions add pollutants to the ambient air, impacts are examined based on guidelines established by governmental agencies or professional organizations.

The ROI for air quality includes the immediate launch area at Kodiak Launch Complex, the GHA, and Kodiak Island.

The sources of operational emissions include stationary sources associated with the launch facility and the mobile sources including the launch vehicle itself during liftoff. The stationary sources include three standby diesel generators, primarily used as backup for approximately 5 hours during launches, 1 hour per week for testing during non-launch periods, and during commercial power outages (estimated maximum total 240 hours per year). Current applicable operating permits at Kodiak Launch Complex would cover the generators. Air quality impacts from the generators would be temporary and negligible offsite.

Since the State of Alaska requires emissions testing on cars and the proposed launch activities would not require an increase in the number of cars on the island, the program-related traffic emissions are not anticipated to have a noticeable impact on air quality.

Table 4-1 lists the solid propellant characteristics for the Strategic Target System vehicles. When the Strategic Target System vehicles are launched, the primary exhaust byproducts include hydrogen chloride, carbon monoxide, nitrogen oxides, and aluminum oxide. Hydrogen chloride and carbon monoxide emissions are gases; aluminum oxide is a particulate. The gaseous hydrogen chloride mixes with moisture in the atmosphere to form a hydrochloric acid aerosol. High humidity or precipitation results in the formation of more acidic aerosol. Two predictive air dispersion computer models, TRPUF and the Rocket Exhaust Effluent Dispersion Model, were used to estimate levels of pollutant emissions from Strategic Target System launches. The results indicate no significant ambient air quality impacts at Kodiak Launch Complex and Kodiak due to hydrochloric acid and aluminum oxide exhaust.

The boosters used in the Strategic Target System missiles are smaller than the Castor-120™ used in the air quality modeling presented in the Kodiak Launch Complex EA. As such, it is anticipated that the air quality impacts due to the launch of the Strategic Target System missile would be less than the worst-case conditions indicated in that EA. Under those worst-case meteorological conditions, the maximum downwind concentrations of aluminum oxide and hydrogen chloride could occur at an uninhabited area approximately 5 kilometers (3 miles) from the launch point. The elevated levels at this location would be due to a rise in the terrain that could cause it to intersect the plume cloud under the proper atmospheric conditions. Under typical conditions, the exhaust would be blown out to sea in a southeasterly direction. Table 4-2 shows the applicable air quality standards and the maximum, modeled concentrations of both aluminum oxide and hydrogen chloride. Even if the winds resulted in dispersion occurring over land, the concentrations presented in table 4-2 present no health hazard and no adverse air quality impacts would be anticipated due to the proposed missile launches at Kodiak Launch Complex.

Table 4-1: Solid Propellant Characteristics

Missile Propellant Information[1]			
Booster	**Motor**	**Propellant**	**Propellant Mass**
Polaris A3 Stage I	Mark V Mod 0 1PA3	ANP-2969 (nitroplasticized polyurethane)	9,422 kg (20,772 lb)
Polaris A3 Stage II	X260 A3 Mod 0	EJC (composite modified double base)	4,025 kg (8,874 lb)
Orbus-I	Orbus-1	UTP-19,687A (HTPB [Hydroxyl-terminated Polybutadiene])	414 kg (913 lb)

Missile Exhaust Information[2]						
Exhaust Component	**Stage I**		**Stage II**		**Orbus-1**	
Aluminum Oxide	3,555 kg	(7,837 lb)	3,065 kg	(6,757 lb)	156 kg	(344 lb)
Chlorine	19 kg	(42 lb)	<1 kg	(<2 lb)	<1 kg	(<2 lb)
Carbon Monoxide	2,354 kg	(5,190 lb)	1,344 kg	(2,963 lb)	93 kg	(205 lb)
Carbon Dioxide	192 kg	(424 lb)	43 kg	(95 lb)	9 kg	(20 lb)
Hydrogen	220 kg	(485 lb)	60 kg	(132 lb)	10 kg	(22 lb)
Water	598 kg	(1,318 lb)	253 kg	(558 lb)	23 kg	(51 lb)
Hydrogen Chloride	1,575 kg	(3,472 lb)	62 kg	(137 lb)	74 kg	(163 lb)
Nitrogen	874 kg	(1,927 lb)	741 kg	(1,634 lb)	48 kg	(106 lb)

[1] Source: U.S. Army Space and Strategic Defense Command, 1995a

[2] Source: U.S. Department of Energy, 1992

Table 4-2: Worst-case Modeling Results

Pollutant of Concern	Air Quality Standard	Maximum Concentration
Aluminum Oxide	150 micrograms per cubic meter[1]	146 microgram/ cubic meter
Hydrogen Chloride	10 parts per million (ceiling)[2]	8 parts per million

[1]Aluminum oxide is not considered to be a toxic pollutant. As such, the most applicable standard is the 24-hour PM-10 National Ambient Air Quality Standard.

[2]Hydrogen chloride is considered a Hazardous Air Pollutant. The applicable standard is the population exposure guideline established by the U.S. Air Force for space and missile launch operations.

Source: Federal Aviation Administration, 1996

As discussed in the Strategic Target System EIS (U.S. Army Strategic Defense Command, 1992), the Strategic Target System first-stage booster will reach the lower limit of the stratosphere at approximately 46 seconds after liftoff. During the trajectory through the stratosphere, the first- and second-stage boosters will release hydrogen chloride, water, hydrogen gas, and other substances that are considered ozone-depleting chemicals. Freon release is discussed in section 4.1.4 as part of the hazardous material and waste analysis.

A Strategic Target System will emit about 570 kilograms (1,257 pounds) of hydrogen chloride and 7 kilograms (15 pounds) of atomic chlorine or a total equivalent 560 kilograms (1,235 pounds) of inorganic chlorine. Assuming four launches per year, the Strategic Target System launches will release approximately 2,240 kilograms (4,938 pounds) of inorganic chlorine into the stratosphere per year. These calculations indicate that the launches would contribute 0.0001 percent to the annual global stratospheric chlorine burden that is contributed by chlorofluorocarbons. The annual Strategic Target System booster emissions of hydrogen into the stratosphere will be approximately 6.7×10^{-6} percent of the annual total global stratospheric hydrogen burden. (U.S. Army Strategic Defense Command, 1992)

Hydrogen gas, another booster emission, does not affect the photochemical destruction of ozone. Nitrogen oxide compounds, which are combustion products of some other chemical propulsion systems, are involved in ozone depletion. The Strategic Target System chemical propulsion system, however, is not reported to produce nitrogen oxide emissions. No other ozone-depleting species from the Strategic Target System fuel have been identified. (U.S. Army Strategic Defense Command, 1992)

4.1.1.1 Cumulative Impacts

Due to the limited industrialization of Kodiak Island and the surrounding environment, the potential cumulative impacts to air quality from four Strategic Target System launches per year, one QRLV launch per year, and one National Aeronautics and Space Administration (NASA) launch in 2001 would not be substantial. The Kodiak Launch Complex EA (Federal Aviation Administration, 1996) indicated no cumulative impact to air quality for nine launches annually. The Proposed Action, in conjunction with current planned or anticipated launches, would not exceed this level of activity and therefore, no substantial impact to air quality is anticipated at Kodiak Launch Complex.

4.1.2 AIRSPACE—KODIAK, ALASKA

Potential airspace impacts, that is interference with aeronautical operations in the navigable airspace, from implementation of the Proposed Action arise from two distinct effects: (1) the need to segregate nonparticipating aircraft from the launch hazard area and debris containment corridor in the event of a launch or in-flight mishap; and (2) the need to advise nonparticipating aircraft to avoid the tracking radar areas and the associated EMR emissions.

Special Use Airspace

There would be no impact on airspace from proposed program evacuations and clearances, or road closures, because they do not physically interfere with navigable airspace or affect airspace scheduling.

Close coordination with the FAA Anchorage ARTCC and Kodiak Air Traffic Control Tower by the launch operations manager would minimize the potential for any adverse impacts on airspace use in the vicinity of Kodiak Island. When the probability is less than 1×10^{-7} that

an aircraft would be in an unsafe proximity to the Strategic Target System missile, the Range Safety Office may establish segmented safety zones to allow for some unrestricted air routes under the flight path during the launch window. (Naval Air Warfare Center Weapons Division, 2001)

The use of the Kodiak Launch Complex for flight preparation and testing has been analyzed in the Kodiak Launch Complex EA (Federal Aviation Administration, 1996) and two Air Force documents (U.S. Department of the Air Force, 1997; 2001). These documents concluded that close coordination with the FAA would result in no adverse effects to airspace from missile flight tests.

The ROI located in international airspace has no formal airspace restrictions governing it. Before launching the target missile from Kodiak Launch Complex, NOTAMs would be sent in accordance with the conditions of the directive specified in Army Regulation 95-10, *Operations*. The U.S. NOTAM System, Sections 3-2n(1)(a) and (b) deal with operations/exercises over the high seas, host nation territory, international airspace, and bare-base locations, and specifies the International NOTAM office coordination requirements and procedures (Army Regulation 95-10, 1990).

To satisfy airspace safety requirements in accordance with Army Regulation 385-62, the responsible commander would obtain approval from the Administrator, FAA, through the appropriate Army airspace representative as required by Army Regulation 95-50. Provision would be made for surveillance of the affected airspace in accordance with Army Regulation 385-62 (1983). In addition, safety regulations dictate that launch operations would be suspended when it is known or suspected that any unauthorized aircraft have entered any part of the surface danger zone until the unauthorized entrant has been removed or a thorough check of the suspected area has been performed (Army Regulation 385-62, 1983).

Strategic Target System missile launches from Kodiak Launch Complex would not impact the special use airspace since it is not located within the proposed flight trajectories.

En Route Airways and Jet Routes

Coordination between the Kodiak Launch Complex and the controlling airspace agencies would result in no impacts to the commercial air corridors entering and exiting Kodiak Airport north of the Narrow Cape area.

Airports and Airfields

The Proposed Action would not restrict access to, nor affect the use of, existing airfields and airports in the ROI.

4.1.2.1 Cumulative Impacts

There is no airspace segregation method such as a warning or restricted area to ensure that international airspace would be cleared of nonparticipating aircraft. However, missile

launches are short-term, discrete events. The potential cumulative impacts to airspace from four Strategic Target System launches per year, one QRLV launch per year, and one NASA launch in 2001 would not be substantial. The Kodiak Launch Complex EA (Federal Aviation Administration, 1996) indicated no cumulative impact to airspace for nine launches annually. The Proposed Action, in conjunction with current planned or anticipated launches, would not exceed this level of activity and therefore, no substantial impact to airspace is anticipated at Kodiak Launch Complex. The use of the required scheduling and coordination process for international airspace and adherence to applicable DoD directives and Army regulations concerning issuance of NOTAMs and selection of missile firing areas and trajectories further reduce the potential for incremental, additive, cumulative impacts.

4.1.3 BIOLOGICAL RESOURCES—KODIAK, ALASKA

The biological resources analytical approach involved evaluating the potential impacts of the Proposed Action, such as preflight activities and target launches, on the vegetation, wildlife, threatened and endangered species, and sensitive habitat within the ROI. Impacts that could result from preflight activities include vegetation disturbance and removal and disturbance to wildlife from the accompanying noise and presence of personnel. Impacts could also result from launch-related activities such as noise, air emissions, debris impacts, and the use of radar equipment.

The primary proposed activities that may have a potential effect on the vegetation and wildlife of Kodiak Launch Complex include preflight activities, vehicle fueling, and launch of the target missile. All transportation of equipment and materials such as fuels would be conducted in accordance with U.S. DOT regulations. Standard Operating Procedures for spill prevention, containment, and control measures while transporting equipment and materials would preclude impacts to biological resources.

Vegetation

No new construction or other ground-disturbing activities that could remove or impact vegetation are anticipated. Standard Operating Procedures for spill prevention, containment, and control measures while transporting equipment and materials would preclude impacts to biological resources.

AADC recently obtained a permit from the U.S. Army Corps of Engineers for a realignment of part of Pasagshak Road near the Kodiak Launch Complex, of which 61 meters (200 feet) is in an area that includes saturated, emergent sedge-forb or sedge-forb moss meadows wetlands. The Kodiak Launch Complex was originally sited in upland meadows to avoid impacts to wetlands when possible. The following examples of Best Management Practices for soil erosion control that AADC applies during construction activities also further minimize impacts to wetlands:

- Site preparation—vegetation preservation and protection, topsoil preservation, dust control, and temporary gravel construction entrance and exit

- Surface stabilization—temporary and permanent seeding and use of mulches and fabric and gravel blankets
- Runoff control and conveyance measures—installation of diversions, dikes, grassed waterways, and temporary slope drains
- Sediment barriers—straw bale and rock barriers, sediment fences
- Sediment traps and basins
- Stream protection—temporary stream crossings and streambank stabilization
- Protection of soil and fill storage piles

(Federal Aviation Administration, 1996)

Vegetation near the launch pad could undergo temporary distress from the heat generated at launch, resulting in wilting of new growth. However, since vegetation is normally cleared from areas adjacent to the launch site and the duration of high temperatures would be less than 3 seconds (U.S. Army Strategic Missile Defense Command, 1992), no long-term adverse effects on vegetation are anticipated.

Impacts to vegetation could also occur from the deposition of Strategic Target System exhaust products. Launch exhaust products would include hydrogen chloride, aluminum oxide, carbon monoxide, nitrogen dioxide, carbon dioxide, water, and chlorine. Analysis of launch-related deposition of aluminum oxide has not shown it to be harmful to vegetation (Federal Aviation Administration, 1996). The greatest potential for impacts to vegetation comes from hydrogen chloride deposition. Direct effects could include discoloration, foliage loss, and changes in species composition.

Observation of plant communities at other launch sites such as the Kauai Test Facility, Cape Canaveral, and Vandenberg AFB indicate that vegetation continues to thrive in the immediate areas surrounding launch pads. Vegetation sampling conducted in the area near active launch pads at the Kauai Test Facility has not indicated that hydrogen chloride emissions from launches conducted during the last 20 years resulted in any lasting effects (U.S. Army Space and Strategic Defense Command, 1993a). Titan missiles launched from Vandenberg AFB generate approximately 132 metric tons (146 tons) of hydrogen chloride in exhaust emissions (Federal Aviation Administration, 1996). The Strategic Target System missile generates less than 2 metric tons (2 tons) of hydrogen chloride, less than 2 percent of the Titan emissions. In addition, the Titan missile systems add water to the exhaust products, which results in hydrochloric acid droplets being deposited directly upon adjacent plants (Federal Aviation Administration, 1996). Although hydrogen chloride is very soluble in water, it does not readily deposit onto dry surfaces when the relative humidity is below 100 percent (U.S. Department of the Air Force, 1998). Direct dry deposition of hydrogen chloride gas onto the ground from a Strategic Target System launch would be minimal compared to the Titan missile, and no long-term adverse effect to vegetation is anticipated.

Wildlife

Potential noise effects on wildlife can be categorized as auditory and non-auditory. Auditory effects would consist of direct physical changes, such as eardrum rupture or temporary threshold shift (TTS). Non-auditory effects could include stress, behavioral changes, and interference with mating or foraging success. The effects of noise on wildlife vary from serious to no effect in different species and situations. Behavioral responses to noise also vary from startling to retreat from favorable habitat. Animals can also be very sensitive to sounds in some situations and very insensitive to the same sounds in other situations. (Larkin, 1996) Informal observation at several launch facilities indicates the increased presence of personnel immediately before a launch tends to cause birds and other mobile species of wildlife to temporarily leave the area that would be subject to the highest level of launch noise. Therefore, no direct physical auditory changes are anticipated. Wildlife is known to exhibit a startle effect when exposed to short-term noise impacts, such as the launch of a target missile. Studies (Anderson et al., 1986; Anderson and Rongstad, 1989; Ellis et al., 1991; and Institute for Raptor Studies, 1981) indicate that birds usually show signs of disturbance, such as the fluttering of wings, when the noise occurs, but quickly return to normal behavior after the event. Video camera observations of a wood stork colony located 0.8 kilometer (0.5 mile) south of the Space Shuttle launch pad at Kennedy Space Center showed the birds flew south away from the noise source and started returning within 2 minutes, with a majority of individuals returning in 6 minutes (National Aeronautics and Space Administration, 1997).

A rookery at Kennedy Space Center used by wood storks and other species of wading birds is located approximately 750 meters (2,461 feet) from a Shuttle launch pad. This rookery continues to be used successfully, even though it has received peak noise levels of up to approximately 138 dB. (American Institute of Aeronautics and Astronautics, 1993) As mentioned above, monitoring studies of birds during the breeding season indicate that adults respond to Space Shuttle noise by flying away from the nest, but they return within 2 to 4 minutes. Birds within 250 meters (820 feet) of Titan launch complexes at Cape Canaveral Air Station have shown no mortality or reduction in habitat use. Titan IV vehicles produce noise levels of approximately 170 dB in the immediate vicinity of the launch pad. This attenuates to 125 dB at a distance of 3 kilometers (2 miles) within about 30 seconds following launch. (U.S. Department of the Air Force, 1990)

Launches would be infrequent, limited to a maximum of four per year over a period of 5 years. Disturbance to wildlife would be brief and is not expected to have a lasting impact nor a measurable negative effect on migratory bird populations. Wildlife such as waterfowl would quickly resume feeding and other normal behavior patterns after a launch is completed. Waterfowl driven from preferred feeding areas by aircraft or explosions usually return soon after the disturbance stops, as long as the disturbance is not severe or repeated (Federal Aviation Administration, 1996). Foraging shorebirds would be subjected to increased energy demands if flushed by the noise, but this should be a short-term, minimal effect. Waterfowl generally show a pronounced startle effect when exposed to noise levels of 95 to 105 dB. It is unlikely that the short-tailed albatross would be impacted by the missile in flight since the trajectory is almost vertical and the missile would reach an altitude of 3,048 meters (10,000 feet) while still over land, approximately 20 seconds after launch.

A-weighted sound exposure levels, a measure of the A-weighted acoustic energy in the launch noise, were analyzed in the Air Force EAs. Since the Strategic Target System predicted and measured noise levels were provided as maximum sound exposure levels (L_{max}), the L_{max} levels are used for all missile systems depicted in figures 4-1 through 4-4.

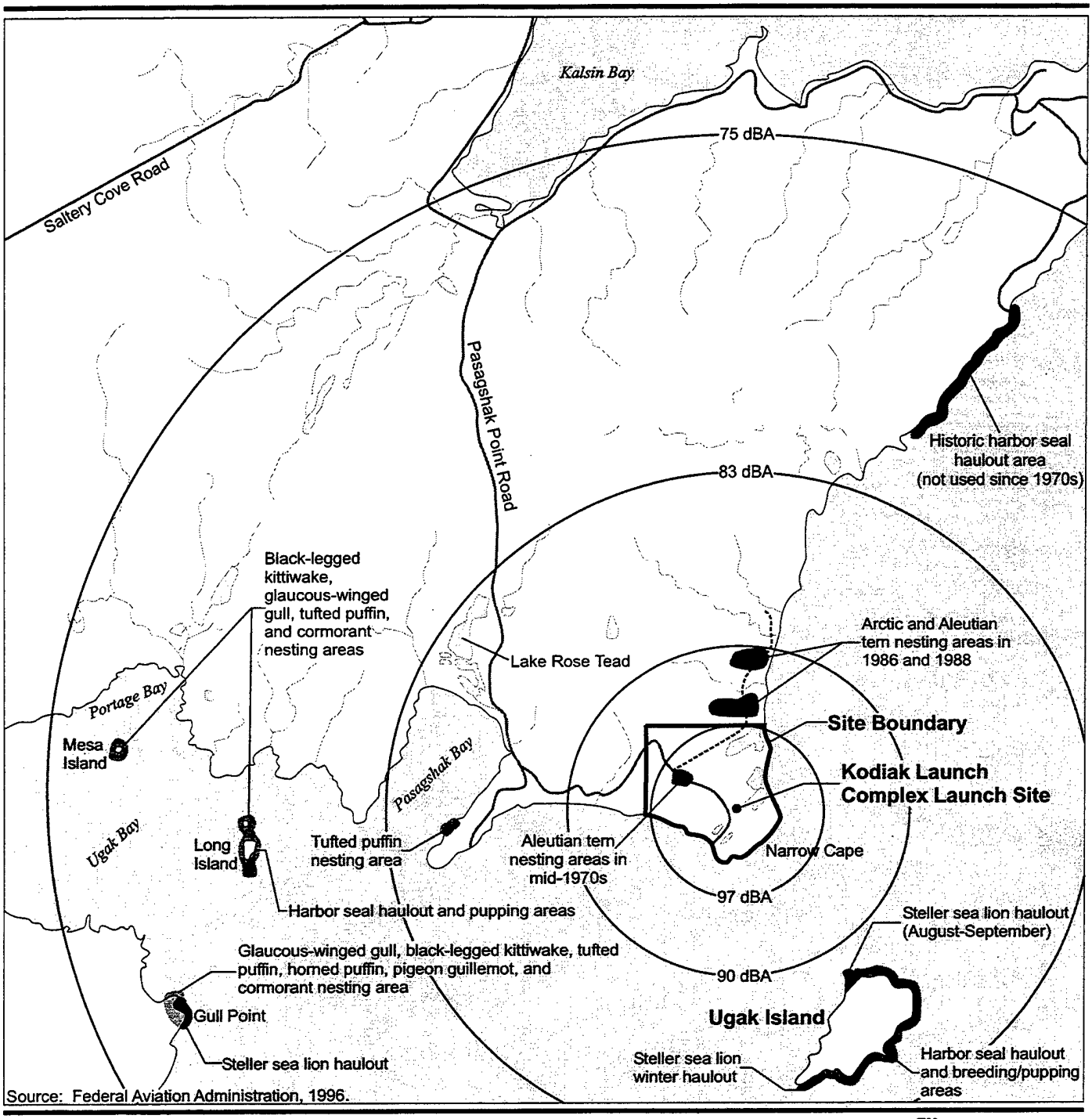
Using noise contours obtained from the monitoring of actual launches at PMRF and superimposing them on the launch site at Kodiak Island (shown in figure 4-4), a noise level of 54 dBA at 10,699 meters (35,000 feet) is projected. However, this information was obtained by noise monitoring in Hawaii (22 degrees North). Air temperature and humidity affect the propagation of noise. The rate of propagation depends on such factors as: distance attenuation, ground attenuation, atmospheric absorption, barrier attenuation, wind effects, and temperature gradient effects. For atmospheric absorption, frequency, relative humidity, temperature, and atmospheric pressure all affect the propagation of noise. Monthly and diurnal variations in relative humidity and temperature also introduce large variations in atmospheric absorption. Given atmospheric attenuation with correction for temperature and relative humidity, the actual noise impacts, particularly at the longer distances away from the launch site, might be quite different.

Although the actual data would vary, part of the Environmental Monitoring Plan is to monitor noise effects to sensitive species such as the Steller sea lion and Steller's eider. At the conclusion of five launches, National Marine Fisheries Service will evaluate data collected and, in conjunction with AADC, determine what future monitoring or other regulatory requirements would be necessary. The STPO would adhere to any monitoring or other requirements agreed upon by AADC and National Marine Fisheries Service.

Figures 4-1, 4-2, and 4-3 provide for comparison purposes the predicted L_{max} generated by the Castor-120™ and the predicted L_{max} versus measured L_{max} generated by ait missiles as analyzed in prior EAs (Federal Aviation Administration, 1996; U.S. Department of the Air Force, 1997). Figure 4-4 shows the predicted L_{max} generated by the Strategic Target System as well as those determined through monitoring at PMRF, Hawaii. The noise model used was done for potential noise levels from the Strategic Target System at PMRF. The terrain at PMRF is mountainous landward to the east and open ocean to the west. The terrain between the launch facility and noise receptors is flat. The terrain at PMRF is similar to that of Kodiak.

Pre- and post-launch aerial bald eagle surveys would be conducted as part of the survey requirements for the first five launches from Kodiak Launch Complex. Any indication of disturbance to eagle nesting or nesting behavior would be reported immediately to the AADC launch point of contact as specified in the Natural Resources Management Plan (Alaska Aerospace Development Corporation, 1998).

The Kodiak Launch Complex EA (Federal Aviation Administration, 1996) concluded that although birds within a 9.7-kilometer (6-mile) radius of the launch pad could be exposed to noise levels above 83 dBA, impacts to birds from launch-related noise would not be severe and would be limited to startle reactions. Peak noise levels in the vicinity of Narrow Cape would be nearly instantaneous, and the entire noise event would last less than 60 seconds.



Source: Federal Aviation Administration, 1996.

EXPLANATION

*The Castor-120™ is the loudest missile analyzed in the Kodiak Launch Complex EA.

Note: Data depicted are maximum peak sound levels (L_{max})

Castor-120™ Noise Levels*

Kodiak Launch Complex, Alaska

Figure 4-1

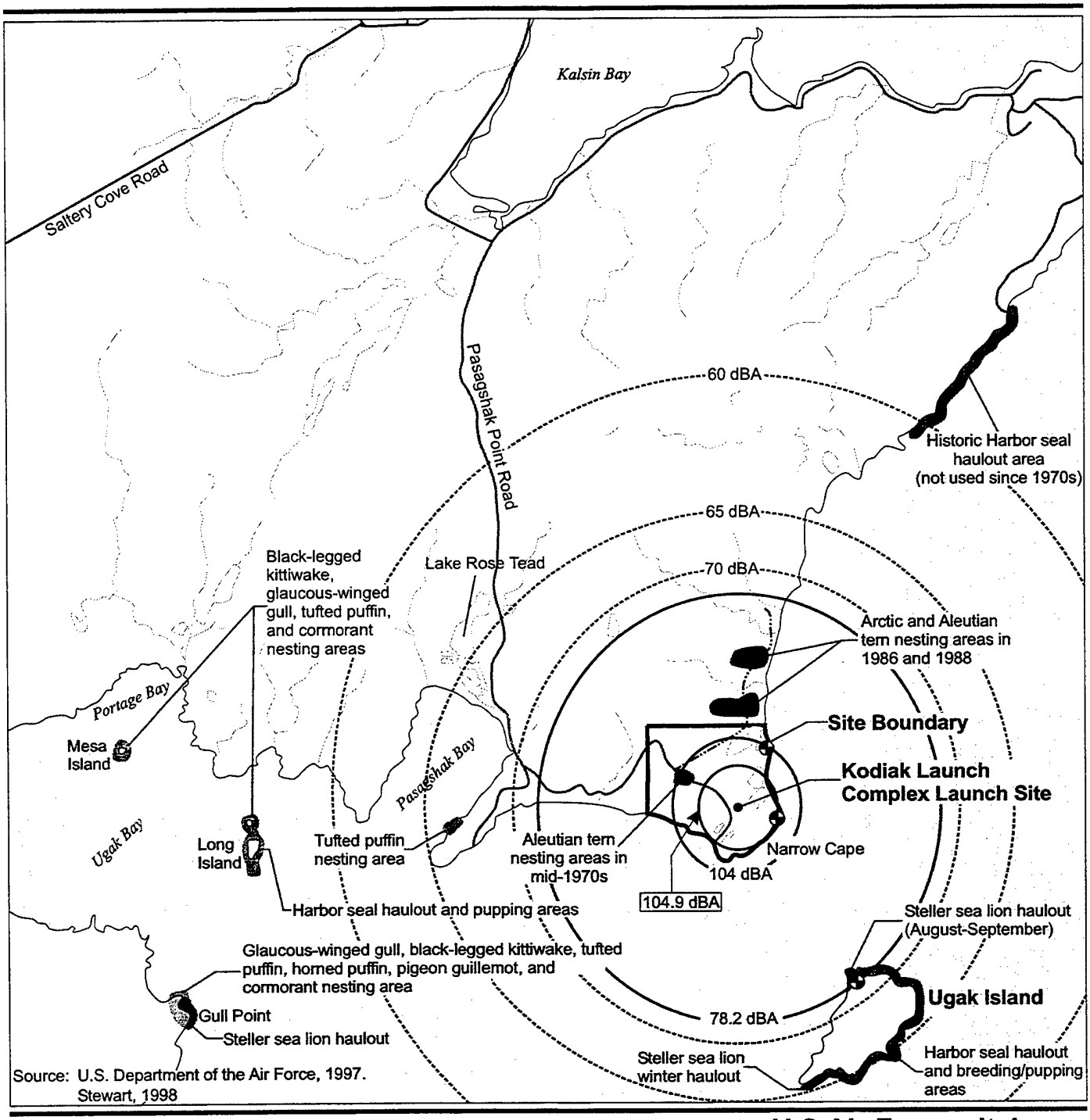
NORTH

Scale

0 2.2 4.3 kilometers

0 1.4 2.7 miles

03-29-01 4-1 Kodiak_noise_2



Source: U.S. Department of the Air Force, 1997.
Stewart, 1998

EXPLANATION

- Sound levels monitored during 5 November 1998 ait launch
- Sound levels predicted for ait using RNOISE model
- Noise Receptor: Azimuth Site
- Noise Receptor: N.E. Narrow Cape
- Noise Receptor: Ugak Island

Note: Data depicted are maximum peak sound levels (L_{max})

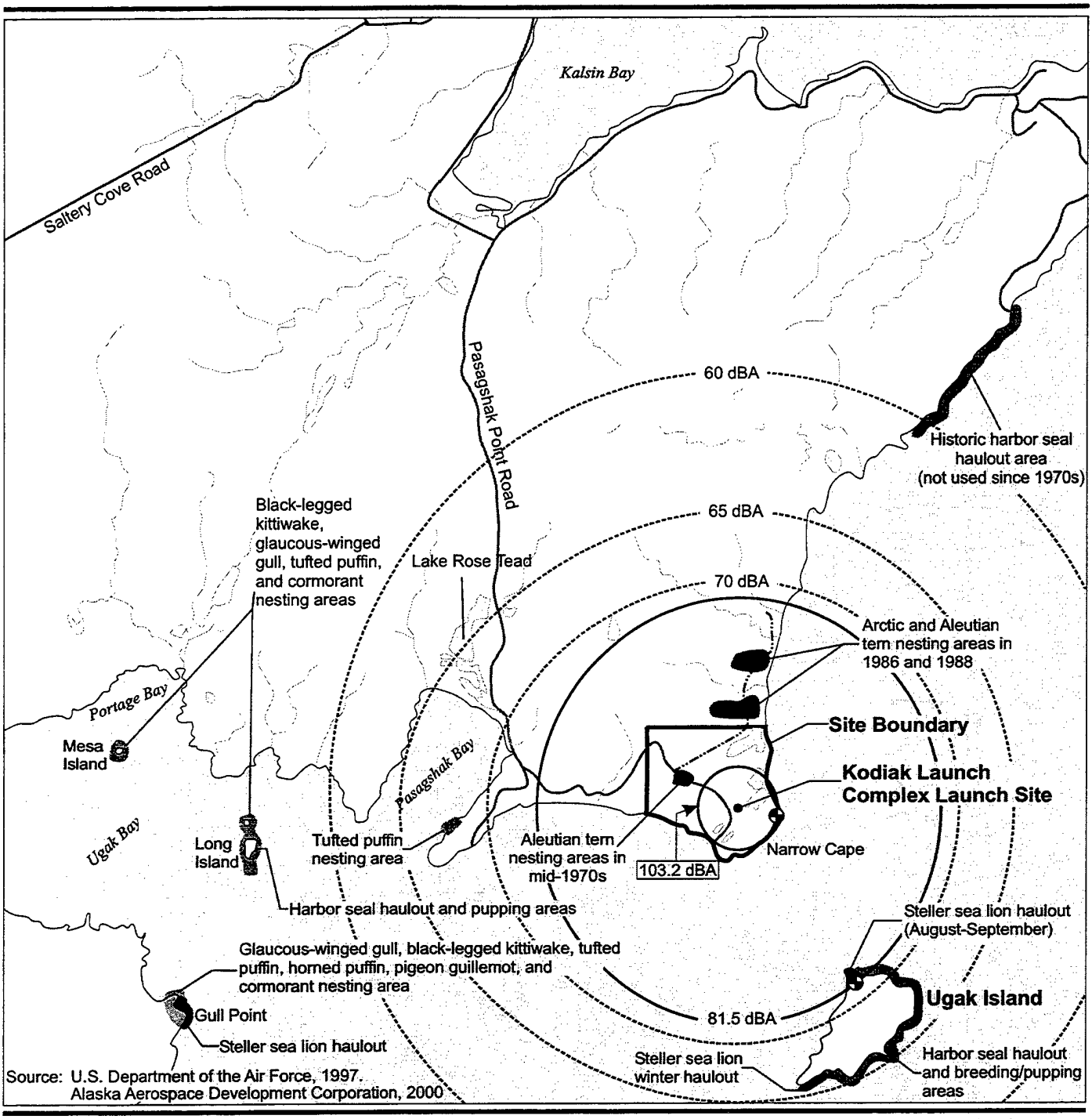
Scale
0 2.2 4.3 Kilometers
0 1.4 2.7 Miles
NORTH

03-31-01 4-2 Kodiak_noise_3

U.S Air Force ait-1 Noise Levels

Kodiak Launch Complex, Alaska

Figure 4-2



Source: U.S. Department of the Air Force, 1997.
Alaska Aerospace Development Corporation, 2000

EXPLANATION

——— Sound levels monitored during September 1999 ait-2 launch

------- Sound levels predicted for ait using RNOISE model

Noise Receptor: N.E. Narrow Cape

Noise Receptor: Ugak Island

Note: Data depicted are maximum peak sound levels (L_{max})

Scale

NORTH

0 2.2 4.3 Kilometers

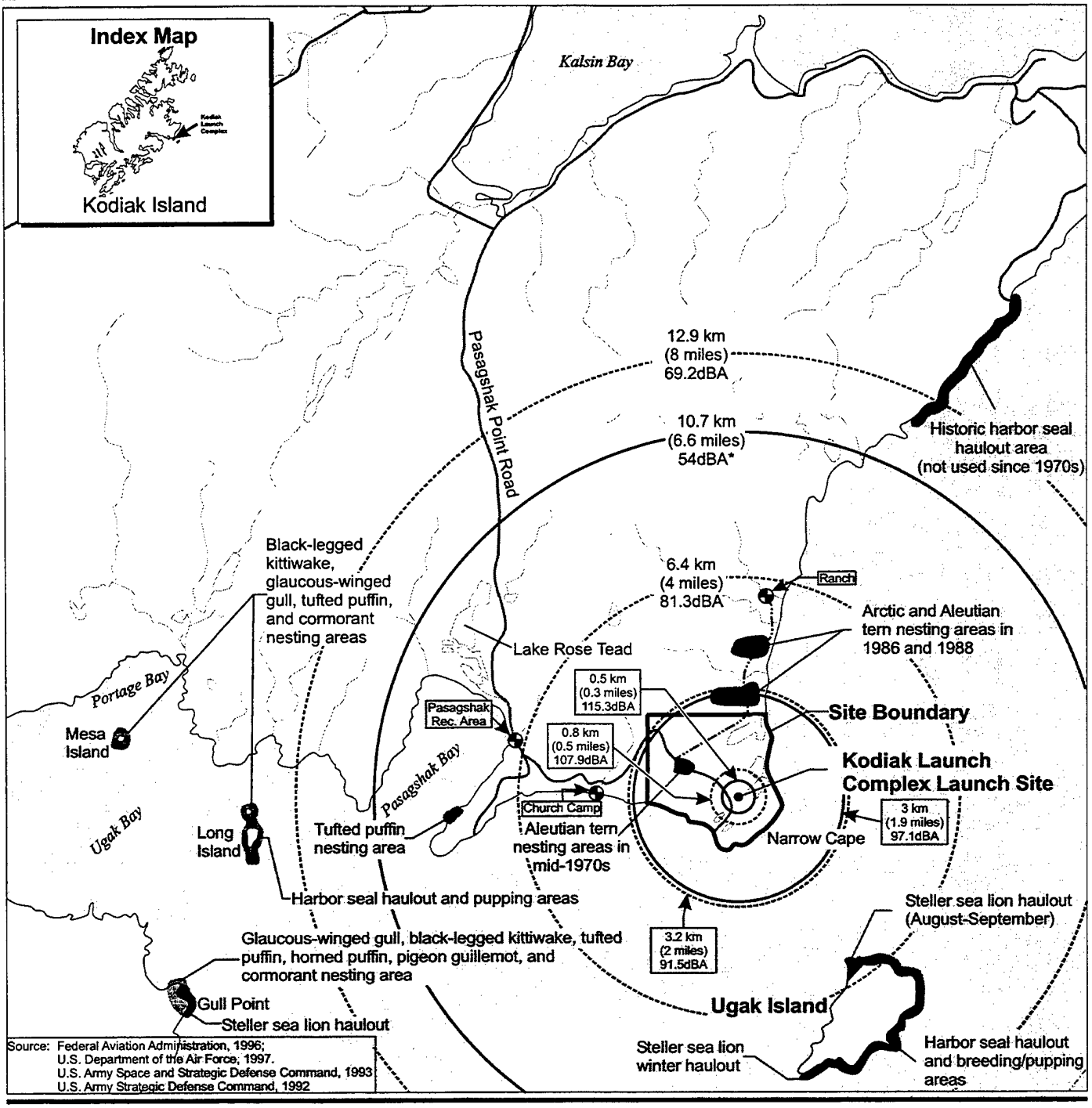
0 1.4 2.7 Miles

03-31-01 4-3 Kodiak_noise_3-2

U.S Air Force ait-2 Noise Levels

Kodiak Launch Complex, Alaska

Figure 4-3



EXPLANATION

*54 dBA sound levels may be low due to sound damping from buildings, walls, and environmental factors at the time of monitoring. (U.S. Army Space and Strategic Defense Command, 1993)

——— Sound levels monitored during 26 Feb 93 Strategic Target System launch at PMRF.

- - - - - - Sound levels predicted for Strategic Target System launch using NASA noise model.

Noise Receptor: Pasagshak Rec. Ctr.

Noise Receptor: Church Camp

Noise Receptor: Ranch

Note: Data depicted are maximum peak sound levels (L_{max})

Scale

0 2.2 4.3 Kilometers

0 1.4 2.7 Miles

NORTH

03-29-01 4-4 Kodiak noise 4

Strategic Target System Noise Levels

Kodiak Launch Complex, Alaska

Figure 4-4

Although Steller's eiders rafting off Narrow Cape may be disturbed by the Proposed Action, since they breed in Russia or northwest Alaska outside the ROI and the disturbance would be minor and infrequent, Strategic Target System launches from Kodiak Launch Complex are not expected to impact breeding or the nesting success of this species.

The closest Steller sea lion haulout sites are at Ugak Island, approximately 5 kilometers (3 miles) southeast of the Kodiak Launch Complex, and Gull Point, approximately 16 kilometers (10 miles) southwest of Kodiak Launch Complex. To date no major Steller sea lion rookeries near Kodiak Launch Complex have been identified. As addressed in the Kodiak Launch Complex EA (Federal Aviation Administration, 1996), studies have indicated that launches are likely to produce some level of alarm response in the sea lions using Ugak Island. These responses could range from a heightened state of alertness to total flight of all sea lions from the haulout site. As discussed in section 3.1.6, sound levels decrease as distance from the source increases. Using the noise levels modeled for the Strategic Target System launches at PMRF, the maximum noise levels at the haulout sites on Ugak Island would be approximately 81 dBA. This would be the equivalent of a bus at the curbside of a busy street. The monitored noise levels (shown in figure 4-4) indicate a level of 54 dBA at 10,668 meters (35,000 feet). This is significantly less than the 69 dBA indicated by modeling. As such, it is possible that actual sound levels at the haulouts would be less than those indicated by modeling.

No evidence has indicated that serious injuries would result, and no long-term adverse effects are anticipated. The brief noise peaks produced by the Strategic Target System are comparable to levels produced by close range thunder (120 dB to 140 dB peak), and there is no species known to be susceptible to hearing damage following exposure to this common noise source (U.S. Department of the Air Force, 2001).

According to the most recent EA done for the Kodiak Launch Complex, the U.S. Air Force's QRLV Program EA (U.S. Department of the Air Force, 2001): while it is expected that Steller sea lions hauled out on Ugak Island would react to a launch by entering the water, there is no biologically significant consequence of this behavior, unless it is determined by the National Marine Fisheries Service to constitute harassment, because sea lions routinely spend long hours in the water. Since the sea lions do not breed on Ugak Island, there will be no effect on mother–pup bonding. Noise from the QRLV is expected to be the same or less than that from launch of an ait-2, between 85 and 90 dBA. The National Marine Fisheries Service has concurred with the U.S. Air Force's opinion that predicted launch and overflight noise would have no significant impact on marine mammals. The USFWS also concurred that no adverse effects would occur to listed species in the region of influence of an ait-2 launch. The predicted launch noise level for the Strategic Target System of 81 dBA would be less than the level predicted and measured for the above systems and as such, no substantial adverse impacts to listed species are expected.

The Kodiak Launch Complex area has a high level of rainfall and short steep streams, and small amounts of deposition from launches would be quickly flushed from stream drainages. Long-term impacts to fish in streams or Essential Fish Habitat within the ROI are not expected. The potential impact to Essential Fish Habitat from nominal launch activities would mainly be from missile debris to waters off the coast. Although debris

could affect individuals close to the surface, overall species' population would not be substantially impacted. The Pasagshak River would not be affected by nominal launch activities and is outside the area likely to be affected by a launch anomaly. Anadromous and marine fisheries would not be affected by proposed launch activities.

Hydrogen chloride, which is emitted during missile launches, is known to affect wildlife. Birds flying through the exhaust plume may be exposed to concentrations that could irritate eye and respiratory systems (Federal Aviation Administration, 1996). However, results of a monitoring program conducted following a Strategic Target System launch from the Kauai Test Facility in Hawaii indicated little effect upon wildlife due to the low-level, short-term hydrogen chloride emissions (U.S. Army Space and Strategic Defense Command, 1993a). The program included marine surveys of representative birds and mammals for both prelaunch and postlaunch conditions. Studies on representative birds and mammals reviewed in the Final EIS for the Strategic Target System (U.S. Army Strategic Defense Command, 1992) also indicated that low-level, short-term exposure to hydrogen chloride would not adversely affect threatened or endangered species or other wildlife. Aluminum oxide and hydrogen chloride do not bioaccumulate; therefore, no indirect effects to the food chain are anticipated.

Debris impact and booster drops in the BOA are not expected to adversely affect marine mammal species protected by the Marine Mammal Protection Act of 1972. An early flight termination or mishap could result in debris impact along the flight corridor. Sensitive marine species are widely scattered and occupy relatively small surface areas, and the probability of debris striking a threatened or endangered species is considered remote. In the event of a launch pad failure, it is unlikely that the Steller's eider would ingest pieces of unspent propellant due in part to the fact that debris would be mainly on land. The surface-feeding, short-tailed albatross is rare to the area and is unlikely to encounter pieces of toxic debris since they would sink to the bottom.

A Biological Assessment (Federal Aviation Administration, 1998) prepared for the FAA as part of the construction and operation EA determined that launches from the Kodiak Launch Complex are not likely to adversely affect listed species, such as the Steller's eider and short-tailed albatross, or critical habitat. Four launches of the Strategic Target System would fall within the parameters analyzed for the Kodiak Launch Complex and are also not likely to adversely affect listed species.

Compliance with an Environmental Monitoring Plan (EMP) (appendix C) is part of the AADC launch license for Kodiak Launch Complex. Monitoring has been conducted to date (for ait-1, ait-2, and QRLV) by the University of Alaska, Anchorage, Environment and Natural Resources Institute as a requirement of the license. The FAA has notified the AADC that requirements of the EMP may change in the future. As necessary, the STPO would adjust its program to comply with potential changes to the EMP. The EMP calls for surveys of the Steller sea lion, surveys of Steller's eider (and/or their surrogate species, the harlequin duck) for launches during October through March, rocket motor noise measurements, bald eagle nest monitoring during the period of nest occupancy, and environmental quality measuring. Steller sea lion surveys follow National Marine Fisheries Service protocols, which were established in the Environmental Monitoring Plan for Kodiak Launch Complex.

This plan was prepared in full cooperation with applicable agencies and accurately reflects their desires. Access to Ugak Island is provided by helicopter with National Marine Fisheries Service approval, as shallow water reefs preclude safe year-round landings via the sea. The island is approached from the southwest out of view of the haulout. To date no indications of disturbance to the sea lions from activities, which are done in full view of beached sea lions, have been identified. Safety crews and other personnel are briefed on the survey procedures as well as harassment guidelines established by the National Marine Fisheries Service to minimize harassment.

An assessment will be performed after the first five launches have been monitored to decide on the need for future monitoring, if necessary, or other recommendations for environmental protection. (Stewart, 1998) The North Pacific Targets program would adhere to the terms and conditions imposed on AADC by these future National Marine Fisheries Service recommendations.

4.1.3.1 Cumulative Impacts

The potential cumulative impacts to biological resources from four Strategic Target System launches per year, one QRLV launch per year, and one NASA launch in 2001 would not be substantial. The Kodiak Launch Complex EA (Federal Aviation Administration, 1996) indicated no cumulative impact to biological resources for nine launches annually. The Proposed Action, in conjunction with current planned or anticipated launches, would not exceed this level of activity and therefore, no substantial impact to biological resources is anticipated at Kodiak Launch Complex.

4.1.4 HAZARDOUS MATERIALS AND WASTE—KODIAK, ALASKA

Hazardous Materials

Potential hazardous materials issues include the transportation, storage, and use of hazardous materials. Use of hazardous materials would be minimized in accordance with the U.S. Army Hazardous Waste Minimization Program. Transportation, storage, and use of hazardous materials would be conducted according to U.S. DOT and U.S. Army regulations and established project and launch complex Standard Safety Operating Plans.

Potential hazardous waste issues are related to the generation, accumulation, transportation, and disposal of hazardous wastes used or created in program activities. Impacts relative to hazardous materials and waste are considered significant if they will:
(1) exceed published Federal, state, or local standards relating to waste control; or
(2) substantially increase the amount of hazardous waste disposed of from Kodiak Launch Complex.

The use of alternative fluids for the halon 2402, which is used in the thrust vector control system, has been investigated. No practical substitute has been found to date. Since the freon used has already been manufactured, the Montreal Protocol, which concerns the production of ozone depleting substances, is not being violated. (U.S. Army Strategic Defense Command, 1992)

Handling of all hazardous materials would be conducted according to Standard Operating Procedures, which would be designed to minimize hazardous materials impacts to personnel and the environment.

Transportation of hazardous materials to and from the launch site would be conducted in accordance with U.S. DOT regulations and would not be a hazardous materials or hazardous waste impact.

Hazardous Waste

In a nominal flight, no impacts would occur with regard to hazardous wastes and materials. In the event of a catastrophic failure of the Strategic Target System vehicle, the North Pacific Targets program would coordinate with a trained pre-flight preparedness team for hazardous waste clean-up procedures. In addition, all personnel at the debris field site would utilize badges containing film capable of recording radiation exposure. The personal protective equipment is largely based on the requirements for friable asbestos, but does cover the requirements for clean-up procedures for magnesium-thorium debris.

In the event of vehicle failure or off-nominal flight, an asbestos and magnesium-thorium recovery and disposal process has been established. The asbestos cloth would remain relatively non-friable, and the interstage section containing the magnesium-thorium is expected to remain relatively intact. In case of a flight termination over land, the debris recovery team would be transported by helicopter, if land transportation is not feasible, to the debris field as determined by the Range Safety group (using debris modeling). The debris field would be plotted with a grid field to enable referencing locations for each piece of debris. After cooling, all pieces of debris would be removed, containerized, and transported back to the launch site. All grid fields would be scanned with a radiac and a pancake probe (instruments that detect radiation exposure), to ensure total recovery. The team's personal protective equipment, assumed to be contaminated by asbestos, would also be placed in containers and processed as hazardous waste. The debris would then be transported to a fixed wing air base (Kodiak Airport), manifested, loaded into a transport aircraft, and flown to Point Mugu, California for non-destructive engineering analysis. After the analysis, the asbestos would be separated from the magnesium-thorium, manifested, and disposed of in a licensed landfill. The magnesium-thorium would be disposed of utilizing an Army disposal contract for low-level radioactive materials.

All waste materials and chemicals used in nominal and off-nominal flight preparations, such as cleaning rags, solvents, and lubricants, would be handled and disposed of according to all applicable Federal and state regulations.

The Strategic Target System boosters would be transported to Kodiak Island using military aircraft. Use of the Kodiak joint tenant airport shared by commercial and Alaska Coast Guard would be required to support transportation of cargo and personnel. Transportation of the boosters from Redstone Arsenal would also be conducted in accordance with U.S. DOT regulations and would not be a hazardous materials or hazardous waste impact.

Freon release was analyzed in the Strategic Target System EIS (U.S. Army Strategic Defense Command, 1992). According to this analysis four launches of the Strategic Target System would release approximately 360 kilograms (792 pounds) of Freon 114B2, also known as halon 2402, between altitudes of 29 kilometers (18 miles) and 168 kilometers (104 miles). While halon 2402 is listed as a Class I ozone-depleting chemical, 360 kilograms (792 pounds) would represent approximately 0.0004 percent of the annual total global stratospheric chlorofluorocarbon burden per year. The release of halon 2402 by the Proposed Action is not anticipated by itself to substantially affect stratospheric ozone levels. (U.S. Army Strategic Defense Command, 1992)

The amount of hazardous waste generated by the North Pacific Targets program would be similar to those wastes generated by the three missiles previously launched from Kodiak Launch Complex.

4.1.4.1 Cumulative Impacts

Because the Proposed Action would not result in a substantial increase in the amount of hazardous waste handled at the facility, the potential cumulative impact to hazardous waste from four Strategic Target System launches per year, one QRLV launch per year, and one NASA launch in 2001 would be minimal. The Kodiak Launch Complex EA (Federal Aviation Administration, 1996) indicated no cumulative impact to hazardous waste for nine launches annually. The Proposed Action, in conjunction with current planned or anticipated launches, would not exceed this level of activity and therefore, no substantial impact to hazardous waste is anticipated at Kodiak Launch Complex.

4.1.5 HEALTH AND SAFETY—KODIAK, ALASKA

Potential issues related to health and safety include the transportation of missile components, reliability of boosters, and the establishment of explosive safety zones and GHAs. Public exposure guidelines developed by the National Research Council (1987) for hydrogen chloride are also used as significance criteria for evaluating public health and safety impacts.

Proposed activities at Kodiak Launch Complex would consist of prelaunch and launch activities. Prelaunch activities included flight preparation, transportation of the booster and solid propellants, propellant loading operations, booster and payload preparation, and assembly and integration testing. Launch activities include booster launch/flight, as well as, launch/flight/data collection and data analysis for the experimental payload. All Strategic Target System launch activities would be in compliance with Federal, state, and local health and safety requirements outlined in the SNL and Kodiak Launch Complex health and safety plans. Health and safety plans would provide guidance in meeting Federal, state, and local health and safety requirements, such as OSHA, DoD, Department of Energy, and transportation regulations.

Prelaunch Activities

Flight Preparation

Flight preparation consists of all activities required to transport the Strategic Target System boosters and support equipment to Kodiak Launch complex and to assemble the major Strategic Target Systems components before flight. All pre-flight hazardous operations would be conducted in accordance with appropriate safety regulations in order to minimize potential risks to mission personnel and the general population.

Transportation

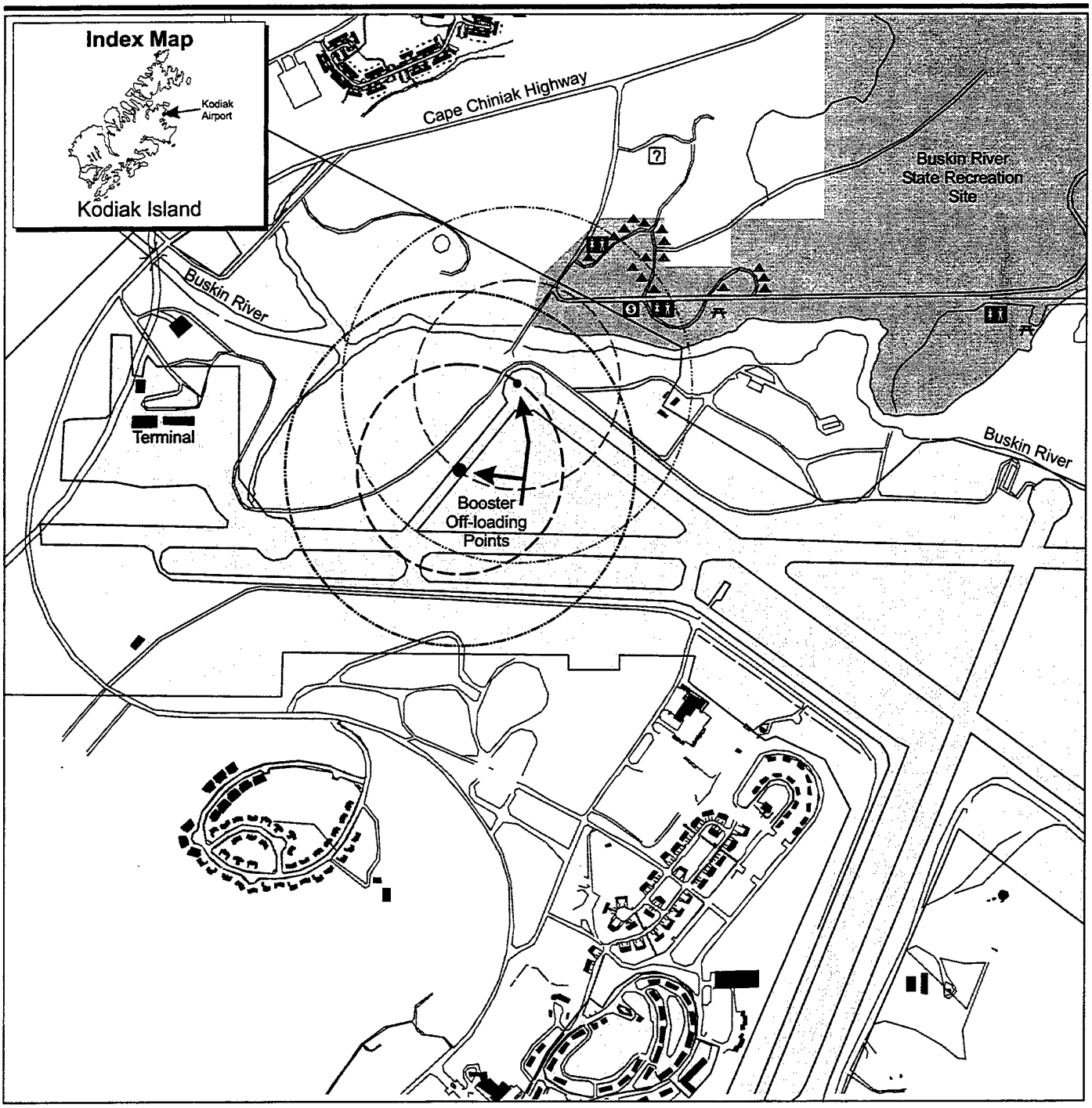
As noted in chapter 2, Strategic Target System payloads and boosters would be transported to Kodiak Island on military aircraft in accordance with applicable transportation regulations. Applicable safety measures would be instituted at Kodiak Airport in order to ensure the safety of the general public, Coast Guard personnel, and mission personnel. These safety measures include specified parking areas, establishment (and enforcement) of applicable ESQDs, restricting handling and transportation of missile components to properly-trained personnel, and using established and permitted transportation routes from Kodiak Airport to Kodiak Launch Complex. Transportation of the boosters is not anticipated to be a hazard to homes along the route, including Coast Guard housing. In the event of a search and rescue operation, hazardous activities at the airport would stop or move to allow the Coast Guard to proceed and would resume after an all clear is provided. Therefore, there should be no effect to Air Station operations.

If the alternate parking area proposed for the military transport aircraft is utilized, coordination would be initiated with the Alaska State Parks, Kodiak Division at least 30 days before the missile's arrival in order to ensure campsites within the ESQD at the Buskin River State Recreation Site (figure 4-5) would be vacated before the arrival of the aircraft. Once the boosters have been removed from the area, the ESQD would no longer be in effect and the campsites would again be accessible.

While the Strategic Target System components are at Kodiak Launch Complex, the following ESQDs would be established and enforced (figures 4-6, and 4-7):

- 399 meters (1,310 feet) to inhabited buildings
- 239 meters (785 feet) to public traffic routes

The Pasagshak Point Road realignment by AADC will ensure that public traffic remains outside the 239-meter (785-foot) ESQD in effect while the Strategic Target System is in the Integration and Processing Facility or on the launch pad. The realignment will also allow other programs to operate while providing public access to Fossil Beach without exposing the public to unacceptable risk.



EXPLANATION

- State Park Property
- Restroom
- Picnic Shelter
- Campsite
- Fee Station
- Visitors Center
- Class 1 Explosive, Division 1.1 Inhabited Building ESQD 399 meter (1,310 feet)
- Class 1 Explosive, Division 1.1 Public Transit ESQD 239 meter (785 feet)
- Proposed Booster Off-loading Point
- Previously Used Booster Off-loading Point

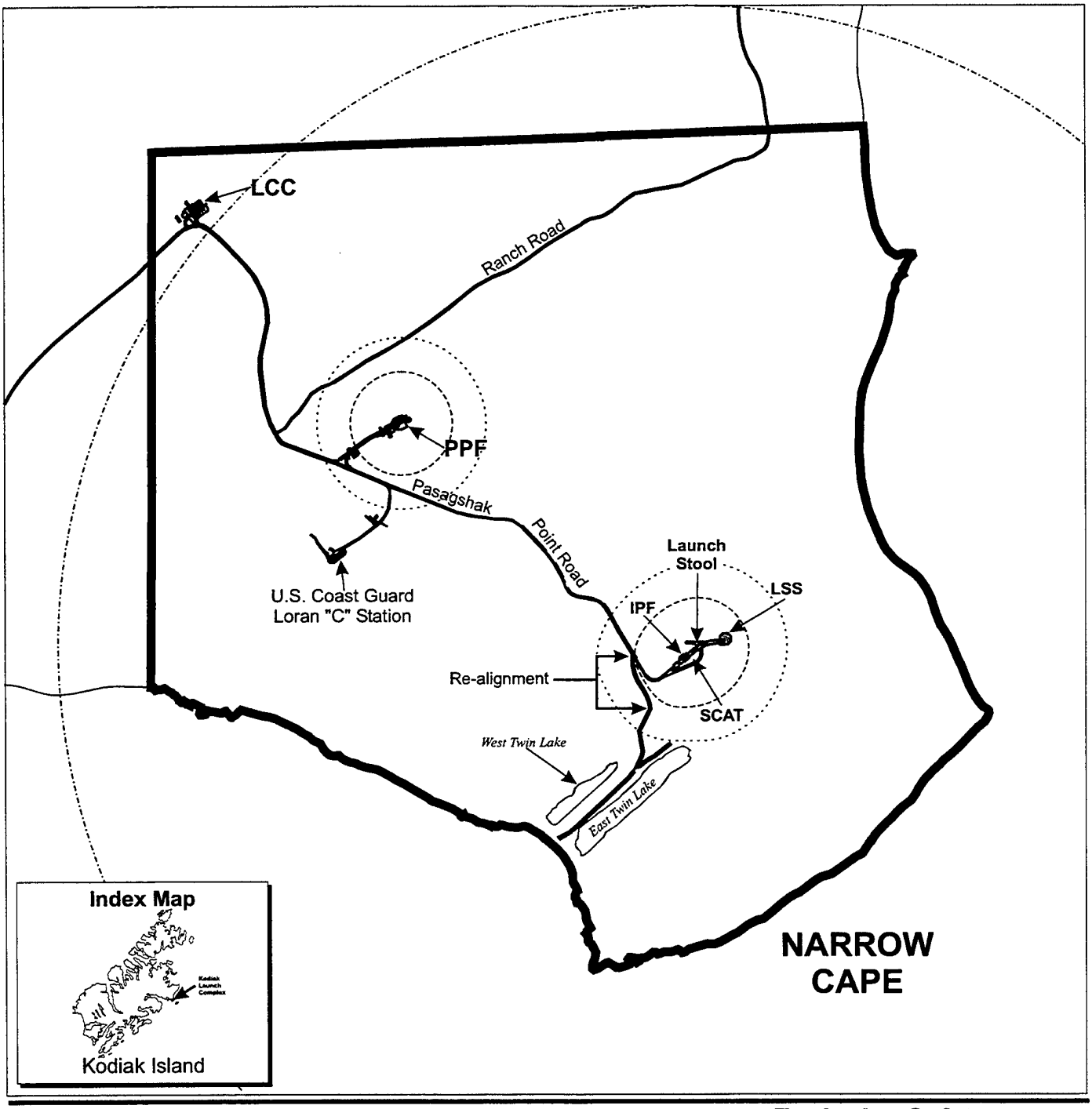
Scale
0 167 334 Meters
0 548 1,095 Feet
NORTH

Kodiak Airport and Buskin River State Recreation Site

Kodiak, Alaska

Figure 4-5

03-29-01 4-5 Kodiak_airport_rec



EXPLANATION

IPF = Integration and Processing Facility
LCC = Launch Control and Management Center
LSS = Launch Service System
PPF = Payload Processing Facility
SCAT = Spacecraft Assemblies Transfer

----- Public Transit ESQD
239 meters (785 feet)

..... Inhabited Building ESQD
399 meters (1,310 feet)

-·-·- Ground Hazard Area
2,897 meters (9,800 feet)

▬ Kodiak Launch Complex
Site Boundary

NORTH

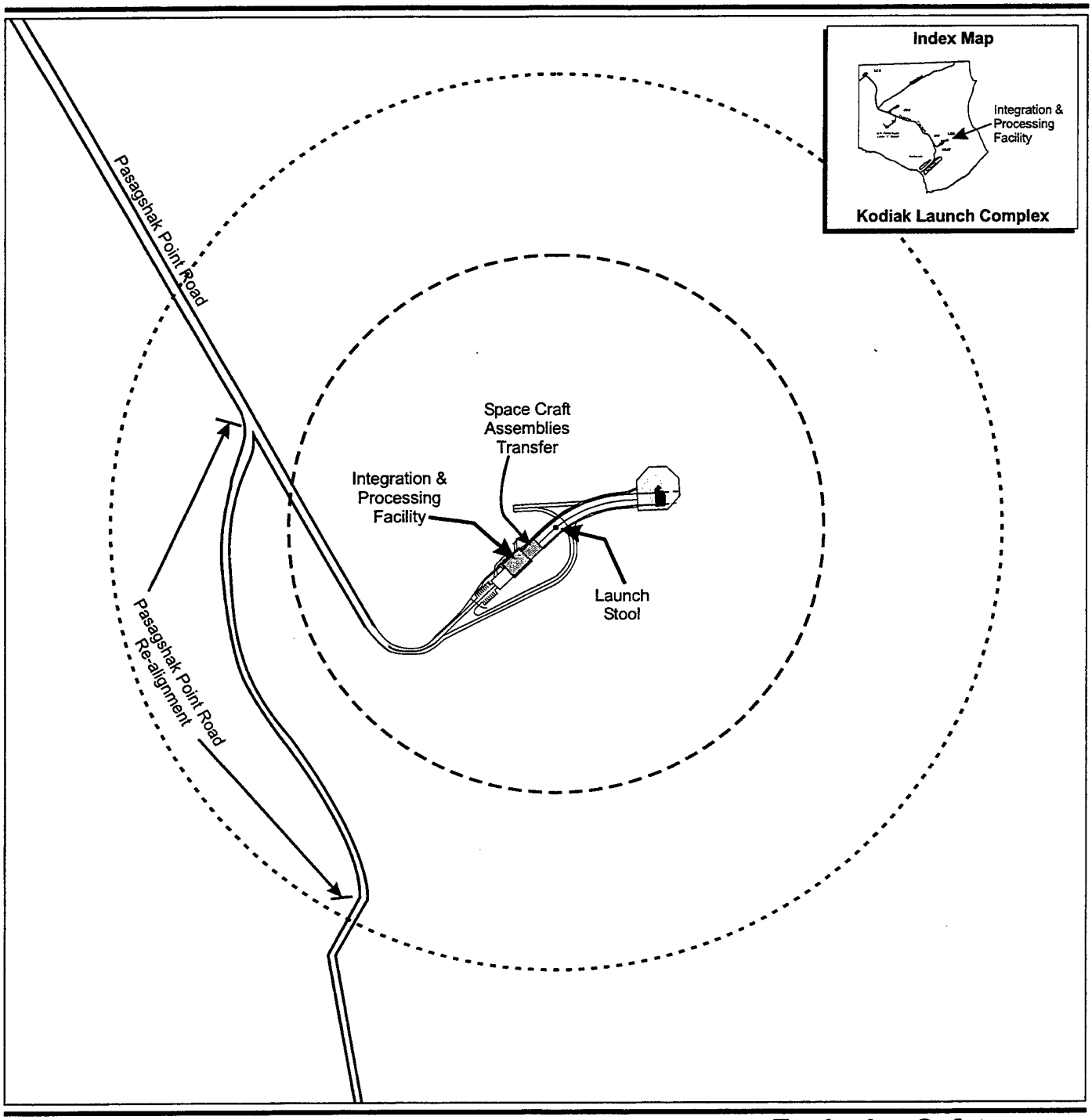
Scale
0 352 704 Meters
0 1,155 2,310 Feet

03-29-01 4-6 KLC PPF ESQD

Explosive Safety Quantity Distances from the Payload Processing Facility, Integration and Processing Facility, and Launch Stool

Kodiak Launch Complex, Alaska

Figure 4-6



EXPLANATION

- – – Public Transit ESQD 239 meters (785 feet)
- - - - Inhabited Building ESQD 399 meters (1,310 feet)

Scale
0 67 134 Meters
0 220 439 Feet

NORTH

03-29-01 4-8 launch stool_2

Explosive Safety Quantity Distances from the Launch Stool

Kodiak Launch Complex, Alaska

Figure 4-7

Propellant Loading Operations

The solid booster propellant used in the launch vehicle is very stable in the absence of an ignition source. The boosters are grounded to help protect against lightning and static electricity. Electrostatic discharge ignition of boosters has been associated with low atmospheric moisture levels. Based on the atmospheric conditions in Kodiak, high-moisture, it is unlikely that an electrostatic discharge could cause a problem. In order to prevent a premature activation of the igniters or the flight termination system, the boosters are not armed until just before launch.

Booster and Payload Preparation

The boosters would be processed and prepared for launch in the same manner as previous Strategic Target System flights from Kauai Test Facility. The major system components (including boosters, in-flight destruct package, range safety equipment, and missile instrumentation) would be assembled and tested at the Integration and Processing Facility. Ground and flight system checks would be conducted while the missile system is on the missile transporter/erector trailer. All preparation activities would be conducted in accordance with applicable safety regulations and operations plans.

Typical test payloads would be developed by SNL. All payload preparation activities at Kodiak Launch Complex would take place at the Payload Processing Facility in accordance with applicable safety regulations and operation plans.

Assembly and Integration Testing

The Integrated Processing Facility would be used for vehicle component integration. The transporter/erector trailer with the assembled flight vehicle would be towed to the launch pad. The missile would remain on the launch pad for an average of 14 days during final booster/payload integration and system checkout operations. All pre-flight hazardous operations would be conducted in accordance with appropriate SNL and Kodiak Launch Complex regulations.

Due to the establishment of and enforcement of ESQDs, no health and safety impacts are anticipated for the general public. Adherence to appropriate safety regulations and operating plans will serve to maintain mission personnel health risks within acceptable levels.

Launch Activities

Booster Launch/Flight

Before each launch at Kodiak Launch Complex, NAWCWD would define a safety exclusion zone, GHA, and flight termination lines. Range Safety calls for a safety zone (warning area as shown in figure 2-7) of 37 kilometers (20 nautical miles) on either side of the nominal flight trajectory. The FAA adds 93 kilometers (50 nautical miles) separation to each side of this safety zone. (Naval Air Warfare Center Weapons Division, 2001) To protect persons on Kodiak Island before and during each launch, nonparticipants would be excluded from the safety exclusion zone. NAWCWD would establish the exclusion zone

around the launch site and along the missile flight path no less than 4 hours before each launch. They would then ensure the safety exclusion zone is verified clear of non-mission essential personnel and vessels out to the territorial limit approximately 20 minutes before launch. All site personnel would be relocated to the Launch Control and Management Center for the actual launch. (Federal Aviation Administration, 1996)

NAWCWD Point Mugu conducted a Hazards of Electromagnetic Radiation to Ordnance (HERO) study for an Air Force C-5 and a C-130 aircraft. The tests that were done included determining the shielding effectiveness of each aircraft and then determining the worst-case electromagnetic power that would be encountered on Kodiak Island. The results of those studies along with the data determined on previous Strategic Target System flights indicate that the Strategic Target System vehicles are safe from HERO hazards during transportation. Based on this study, the risk of detonation of the vehicle by activity at the Coast Guard Communication Station is negligible. Therefore, there should be no effect on human safety and health for electromagnetic radiation exposure of the Strategic Target System vehicle.

Launch/Flight Data Collection

The Strategic Target System launch/flight/data collection involves the collection of booster and payload data. Booster data would include normal vehicle condition and communication status downlinks. Data collection and analysis for the payload would be dependent on the specific payload function and design. These activities would not impact the health and safety of the general public or mission personnel.

4.1.5.1 Cumulative Impacts

The Proposed Action would add cumulatively to the public health and safety impacts from operations at Kodiak Launch Complex. Implementation of appropriate safety measures, specifically ESQDs during transportation and preparation, and GHA/exclusion zones during launch would minimize the health and safety impacts on the public. NOTAMs and NOTMARs issued before launch, in conjunction with missile flight termination procedures, serve to minimize hazards to international air or water activities. The potential cumulative impacts to health and safety from four Strategic Target System launches per year, one QRLV launch per year, and one NASA launch in 2001 would not be substantial. The Kodiak Launch Complex EA (Federal Aviation Administration, 1996) indicated no cumulative impact to health and safety for nine launches annually. The Proposed Action, in conjunction with current planned or anticipated launches, would not exceed this level of activity and therefore, no substantial impact to health and safety is anticipated at Kodiak Launch Complex.

4.1.6 NOISE—KODIAK, ALASKA

Potential noise issues from proposed launch activities at Kodiak Launch Complex are based on missile launch-associated noise levels and their potential impacts on mission personnel, general public, and wildlife. The ROI encompasses several buildings beyond the borders of Kodiak Launch Complex. The closest human noise receptors are located at Kodiak Ranch (3 kilometers [2 miles] away from the Kodiak Launch Complex), Church Camp

(5 kilometers [3 miles] away), and at Pasagshak State Recreation Area (10 kilometers [6 miles] away) (figure 4-4).

The launch vehicle boosters are the major source of operational noise. Based on the duration of the launch, an A-weighted scale is used and dBA measurement units are used to adequately characterize the operational noise. Although no standards exist for single-event noise exposure, a time-weighted average of 90 dBA is established as the limit for an 8-hour exposure. The limit for 15 minutes or less exposure is slightly higher at 115 dBA. Noise control mitigation at the launch site is in accordance with OSHA standards.

All public, civilian, and nonessential personnel would be required to be outside of the GHA where the expected noise levels would be below the 115 dBA limit for short timeframe exposure. The Strategic Target System vehicle launches would be infrequent and would be audible only for a short time and would not be expected to interfere with the area's fishing, camping, or other recreational uses (U.S. Department of the Air Force, 2001). Personal noise protection equipment would be adequate as well as moving launch essential personnel inside shelters.

The Church Camp has not been utilized recently. The noise level would be below 81 dBA at the Pasagshak Recreation Site and approximately 91 dBA at the Kodiak Ranch. The noise events would be discrete and episodic (up to four times a year), only audible for a short period of time, and similar to that of previous missile launches. Strategic Target System launch noise is not expected to interfere with fishing, camping, or other recreational uses of the ROI.

Noise impacts to wildlife are addressed in section 4.1.3.

4.1.6.1 Cumulative Impacts

Cumulative impacts from the Strategic Target System launches would have the potential to increase the frequency of noise events. However, since the sound level generated by each launch is a short, discrete event, the potential cumulative impacts to noise from four Strategic Target System launches per year, one QRLV launch per year, and one NASA launch in 2001 would not be substantial. The Kodiak Launch Complex EA (Federal Aviation Administration, 1996) indicated no cumulative impact to noise for nine launches annually. The Proposed Action, in conjunction with current planned or anticipated launches, would not exceed this level of activity and therefore, no substantial impact to noise is anticipated at Kodiak Launch Complex.

4.1.7 SOCIOECONOMICS—KODIAK, ALASKA

The analytical approach adopted for the socioeconomic resource begins by recognizing that the action can be broken down into a series of simply defined activities. Each activity has the potential to generate three broad areas of economic impact. First, general socioeconomic impacts resulting from the action can lead to an economic gain or loss for the community. Second, the action may affect the quality of life of individuals in the

community by changing the social and natural environment. Third, the action may exclude or displace residents, tourists, and commercial fishermen from areas to which they have traditionally had access.

The North Pacific Targets program Proposed Action would involve the temporary transition of approximately 65 launch customer personnel to provide support at the Kodiak Launch Complex. Economic benefits from the additional population are expected to be short-term and primarily in the form of lodging, retail, and possible tourist activities. Additionally, no population impacts are expected from the Proposed Action since the launch staff would only be in the area temporarily.

Local labor would be hired for trucking and transportation, as well as for any facility modifications necessary to the North Pacific Targets program, such as electrical or welding, if required at the Kodiak Launch Complex. Shop materials and hardware would be purchased at local stores.

The proposed location for the aircraft shown in figure 4-5 would not impact camping or other uses of the Buskin River State Recreation Site. The use of the alternate offloading location at the airport, which has been used for previous Air Force launches would result in the loss of one night's camping four times a year; however, this would not represent a substantial economic impact and AADC would provide 30-day advance notice to Alaska State Parks.

The Proposed Action is not expected to place economic hardship on the fishing industry since minimal interference with fishing vessels is expected. The extent of the inference may include exclusion of fishing vessels from the prescribed safety exclusion zones established before launch activities. Although the exclusion timeframe of approximately 4 hours may vary depending on unexpected launch delays, this period is not expected to cause economic hardship or interfere with annual Whale Fest activities. Because commercial air lanes are to the north of Kodiak Launch Complex, there are no adverse socioeconomic impacts from launches to commercial air traffic to and from Kodiak State Airport. In addition, launches from Kodiak would have no interaction with U.S. Air Force training exercises. Socioeconomic impacts to commercial fishing and commercial shipping would be minimal since there would be short-termed exclusion from safety areas during launch activities and there are no restricted areas (Federal Aviation Administration, 1996).

Coast Guard assistance may be utilized on an "as available" non-interference basis and would be funded for services provided. Coast Guard assistance would only be requested in an emergency or if advance notification could be provided with no impact to assets allocated to the Coast Guard's primary mission.

In the event that a search and rescue mission is required, those Coast Guard assets involved in launch support would be diverted for the mission. Launch operations would be suspended should this occur if STPO could not find other non-Coast Guard assets to perform the functions.

4.1.7.1 Cumulative Impacts

The potential cumulative impacts to socioeconomics from four Strategic Target System launches per year, one QRLV launch per year, and one NASA launch in 2001 would not be substantial. The Kodiak Launch Complex EA (Federal Aviation Administration, 1996) indicated no cumulative impact to socioeconomics for nine launches annually. The Proposed Action, in conjunction with current planned or anticipated launches, would not exceed this level of activity and therefore, no substantial impact to socioeconomics is anticipated at Kodiak Launch Complex.

4.2 PACIFIC MISSILE RANGE FACILITY, HAWAII

4.2.1 AIRSPACE—PMRF

Special Use Airspace

Proposed missile launches from Kauai Test Facility would not alter existing controlled and uncontrolled airspace in the PMRF ROI. Strategic Target System missiles launched from Kauai Test Facility would be well above Flight Level (FL) 600 (18,288 meters [60,000 feet]) and still be within the R-101 Restricted Area, which covers the surface to unlimited altitude, within 1 minute of the rocket motor firing. Aircraft are routinely excluded from the restricted area during missile launches. All other local flight activities would occur at sufficient distance and altitude that the target missile launches would have not require changes to or create a hazard to these flight activities.

Missile launches from Kauai Test Facility would be conducted within the existing Special Use Airspace in Restricted Area R-3101 and extend into the adjacent W-188 Warning Area controlled by PMRF, and would not represent a direct Special Use Airspace impact. The target missile launches represent precisely the kinds of activities for which Special Use Airspace was created: to accommodate national security and necessary military activities, and to confine or segregate activities considered to be hazardous to non-participating aircraft.

En Route Airways Jet Routes

Two en route low altitude airways, V-15 and V-16, have the potential to be impacted by the target missile launches out of Kauai Test Facility (see figure 3-7); however, local flight activities would occur at sufficient distance and altitude that the target missile launches would be little noticed. Moreover, for target missiles launched from Kauai Test Facility, implementation of the altitude reservation (ALTRV) procedures would have minimal impact on the two en route low altitude airways. There are no high altitude jet routes in the PMRF ROI.

Proposed flight tests would also use Warning Area W-188, which is in continuous use from the surface to unlimited altitude. Whenever hazardous activities take place within W-188, Honolulu ARTCC would reroute instrument flight rules aircraft using the V-15 low altitude airway that passes through its southern part. However, this is done routinely through daily

coordination between PMRF and the controlling airspace agencies, resulting in the smooth transition of aircraft through the area with no adverse impact on en route airways or jet routes.

Airports and Airfields

The Proposed Action would not restrict access to, nor affect the use of, existing airfields and airports in the ROI. Operations at the PMRF airfield would continue unhindered. Similarly, the existing airfield or airport arrival and departure traffic flows would not be affected. Access to the PMRF airfield would not be curtailed. With all arriving and departing aircraft, and all participating military aircraft under the control of PMRF Radar Control Facility, there would be no airfield or airport conflicts in the ROI under the Proposed Action, and thus no impact.

4.2.1.1 Cumulative Impacts

No incremental, additive cumulative impacts have been identified.

4.2.2 BIOLOGICAL RESOURCES—PMRF

Potential impacts of missile launches on terrestrial and marine biological resources within the ROI of Kauai Test Facility have been addressed in detail in the Strategic Target System EIS, the PMRF Enhanced Capability EIS, and several program-specific EAs.

Vegetation

The analyses have concluded that vegetation near the launch pad could have temporary distress from the heat generated at launch and from hydrogen chloride emissions. However, there has been no evidence of any long-term adverse effect on vegetation from two decades of launches at PMRF. The continued presence of the adder's tongue, a species recently removed from the list of Federal Candidate species, indicates that emissions from Strategic Target System missiles have not had a significant impact on sensitive vegetative species. Based on these analyses, the potential effects to vegetation from the Proposed Action are expected to be minimal.

Additional measures proposed in the PMRF Enhanced Capability EIS could further reduce the potential for impacts to vegetation. Installation of a portable blast deflector on the launch pad could protect vegetation on adjacent dunes. Continued irrigation of vegetation adjacent to the launch pad would reduce the risk of fire. The potential for fire would be further reduced by removing dry vegetation from around the launch pad.

Wildlife

It has been determined that while noise from launches may temporarily startle nearby wildlife, this impact is considered minimal due to the infrequency and short duration of launch events. The potential for an object or objects dropping from the air to affect marine mammals or other marine biological resources is less than 10^6 (1 in 1 million).

The incremental increase in target launch noise as part of the Proposed Action would not increase the magnitude of the impacts over those discussed in the PMRF Enhanced Capability EIS, because each launch is a discrete event. No adverse impacts to threatened or endangered species are expected as a result of the expanded activities included in the Proposed Action. Potential impacts to biological resources in the open ocean are addressed in section 4.3.2.

4.2.2.1 Cumulative Impacts

The activities proposed as part of the Proposed Action should have negligible cumulative impacts on biological resources. Activities related to missile launches are discrete intermittent activities that do not interact in a cumulative manner. Some programs may require increased personnel to be present over what had been estimated for the Strategic Target System and other launches evaluated as part of the ongoing activities at PMRF. However, this increase is expected to be minor and result in negligible impacts to biological resources.

4.2.3 HEALTH AND SAFETY—PMRF

Potential issues related to public health and safety at PMRF include assembly and integration activities, booster flight preparation, and booster launch/flight.

Assembly and Integration

Assembly and integration testing of the first- and second-stage Polaris boosters and the third-stage Orbus-1 booster at Kauai Test Facility would be a continuation of Strategic Target System activities at Kauai Test Facility. The Strategic Target System boosters would be processed and prepared for launch in the same manner, as previous flights with the exception of one minor change—newer A3R first-and second-stage motors would be used instead of the older A3P motors. These newer motors would have the same propellants and emission characteristics as the A3P motors.

Missile assembly and integration testing would take place at the MAB with the same mitigation procedures described in the Strategic Target System EA. Established safety procedures require that a 381-meter (1,250-foot) radius ESQD be cleared of public and non-mission essential personnel when the missile is in the MAB or on the launch pad. Current mitigation procedures including elimination of ignition sources near the MAB and the launch pad and arming the boosters just prior to launch are sufficient to prevent health and safety hazards to mission personnel and the general public.

Flight Preparation

Booster Flight Preparation

The Strategic Target System boosters would be transported to Kauai Test Facility using military aircraft. After arrival, the boosters would be transported along existing safety routes to the MAB on Kauai Test Facility. All pre-flight hazardous operations would be conducted in accordance with appropriate SNL/Kauai Test Facility safety regulations.

Overall, impacts from transportation and storage of the boosters are minimized by limiting the handling of the solid rocket booster by using the same trailer for air shipment and ground transportation, and by ensuring all personnel involved in these activities follow established regulations.

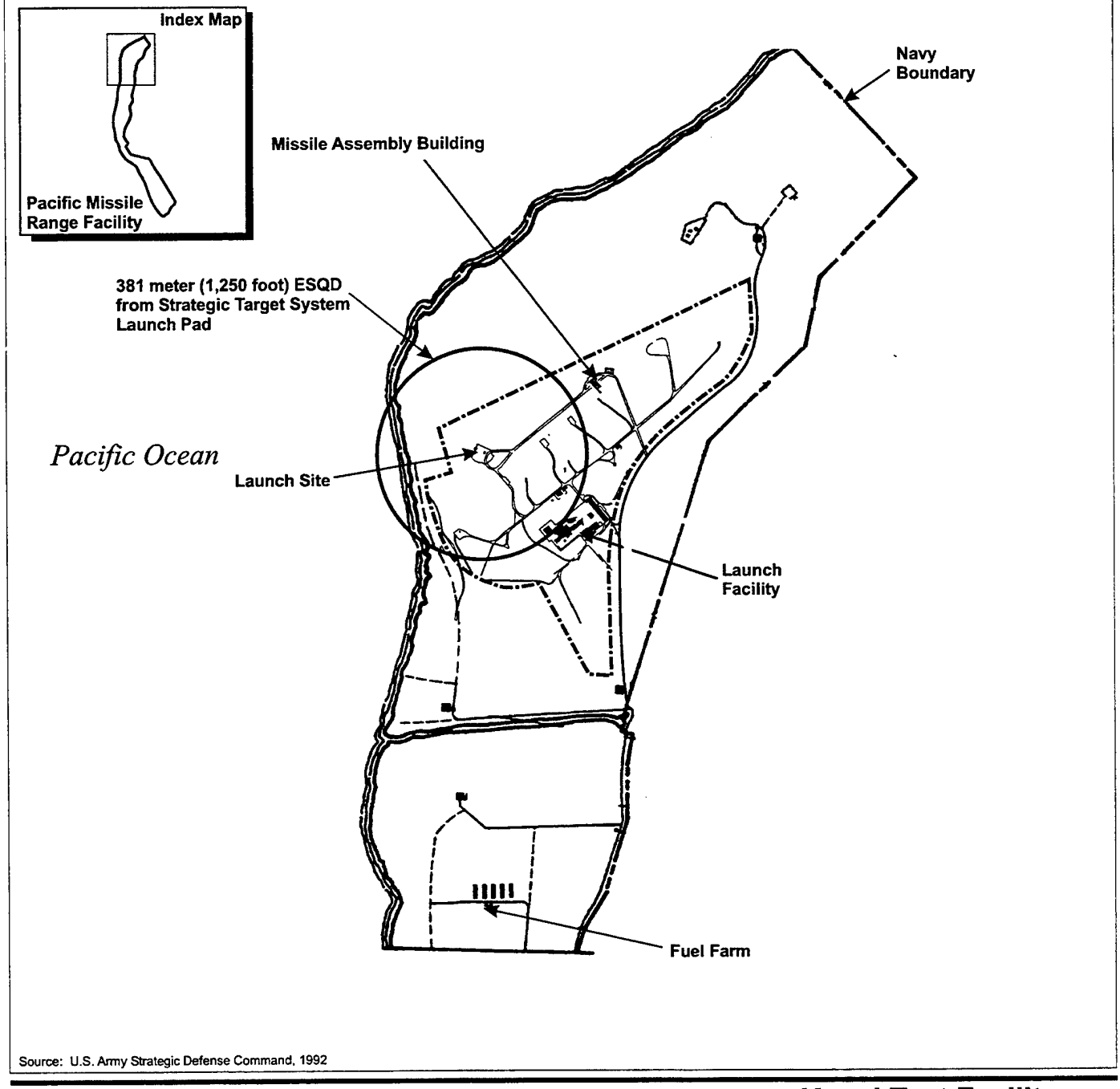
The PMRF ESQD for explosive hazards from the Strategic Target System boosters with the destruct charge is an area with a radius of 381 meters (1,250 feet) centered on the site of the hazardous operation, the launch pad (figure 4-8), and the MAB where explosives handling and storage would take place. The hazard zones are established in accordance with DoD *Ammunitions and Explosive Safety Standards* (DoD 6055.9) and with the U.S. Navy *Ammunitions and Explosives Ashore Manual* (NAVSEA OP-5). The launch pad is about 262 meters (800 feet) from the high tide line. Approximately 688 meters (2,256 feet) of public access area along the coastline of PMRF are within this ESQD. To ensure public safety, public access to this area would be restricted for the length of time the booster is on the launch pad; 24-hour security would be provided during this time to ensure that the safety distance criterion is met. This area would be closed for an average of 14 days per launch (56 days per year).

Launch/Flight/Data Collection

Booster Launch/Flight

To ensure public safety during launches at Kauai Test Facility, a GHA and a Flight Termination Line would be established (similar to that described in section 4.1.5.2). In addition, a launch hazard area with a radius of 3,048 meters (10,000 feet) would be implemented as part of the current restrictive easement that PMRF has established with the State of Hawaii. The launch hazard area is defined as the area within which any dangerous debris from the destruction of the missile (should flight termination be required) would fall. The Missile Flight Safety Officer, as part of the flight safety operating procedures, may destroy the missile if any guidance systems failure is detected during the initial launch that would allow destruct debris to fall outside this area. (U.S. Army Strategic Defense Command, 1990)

The current restrictive easement would be used to set up the launch hazard area to ensure public safety during launch. The use of the restrictive easement until 2030 was analyzed in the PMRF Enhanced Capability EIS. To minimize safety risk to the public in these areas, PMRF security forces on the ground, in boats, and in helicopters (if necessary), would use sweep and search measures to ensure that all areas within the launch hazard area are determined clear of people by 10 minutes before launch. In addition, security forces would set up control points along the road into the launch hazard area to monitor and clear traffic during launch operations. There are no public buildings within this off-base area. All nonessential personnel on the installation would be cleared from the launch hazard area, and launch personnel within the launch hazard area would be provided personal protection equipment. Immediately after a successful launch, security forces would give the all clear signal, and the public would be allowed to re-enter the area. Evacuation procedures have been established for other launches at PMRF. (Pacific Missile Range Facility, Barking Sands, 1998)



Source: U.S. Army Strategic Defense Command, 1992

EXPLANATION

-·-·-· Kauai Test Facility Boundary

Kauai Test Facility 381-Meter (1,250-foot) Explosive Safety Quantity Distance

Kauai, Hawaii

Scale
0 277 554 Meters
0 909 1,818 Feet

NORTH

Figure 4-8

Commercial and private aircraft and ocean vessels would be notified in advance of launch activities by the NAWCWD and the PMRF as part of their routine operations through NOTAM by the FAA and NOTMAR, respectively. Thus, commercial and private craft would be able to reschedule or choose alternate routes before the flight experiments.

4.2.3.1 Cumulative Impacts

No cumulative health and safety impacts have been identified at Kauai Test Facility.

4.2.4 NOISE—PMRF

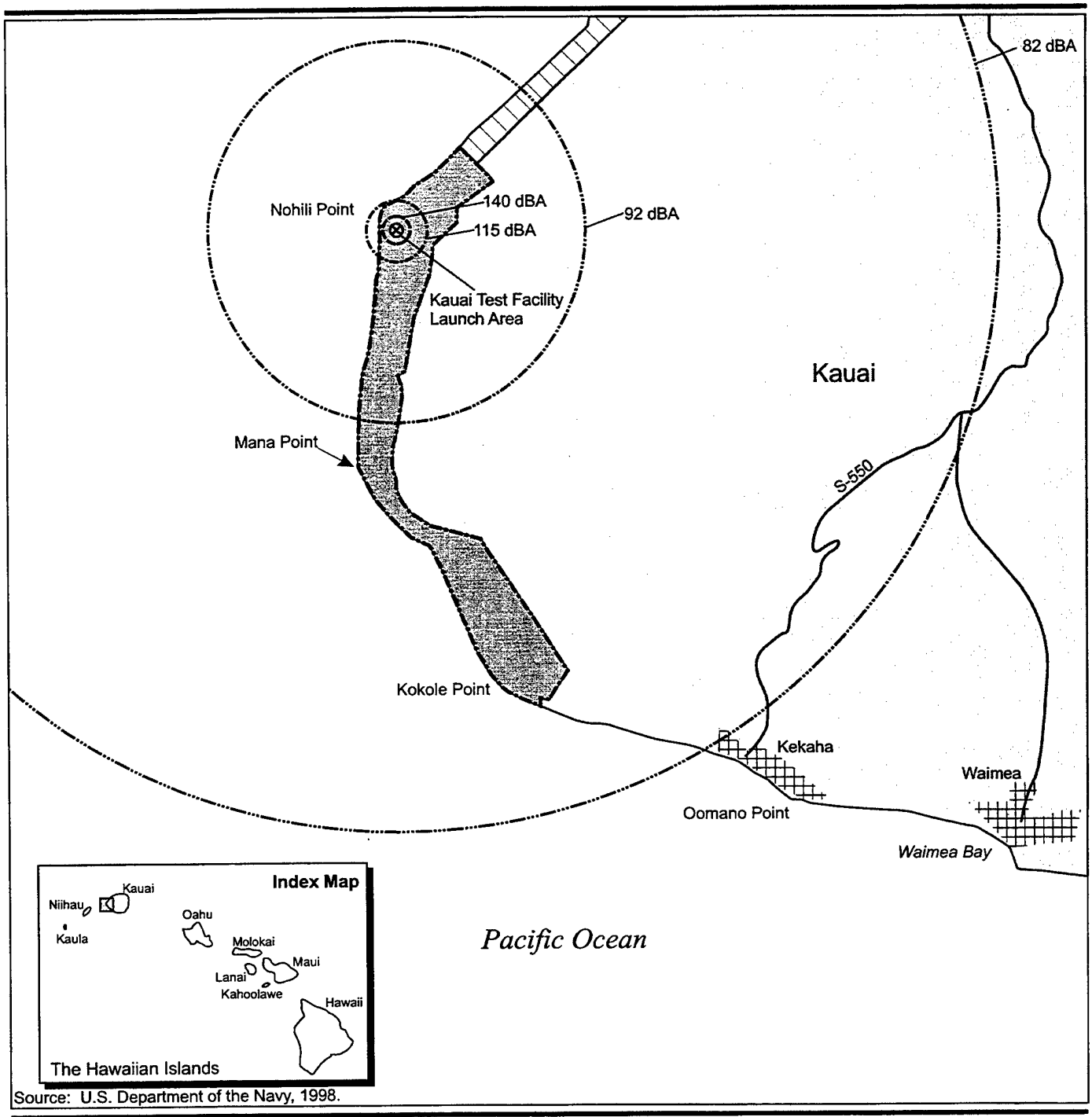
Under the Proposed Action, the existing noise levels would continue, including those associated with Strategic Target System missile launches. Noise generated during the launches would be anticipated to have minimal impact on off-base areas and would not affect the noise levels estimated in the current PMRF Air Installation Compatible Use Zone report.

Limits have been set by both DoD and OSHA to prevent damage to human hearing. Generally, noise levels above 140 dBA should not be exceeded at any time. A time-weighted limit for a 15-minute (or less) exposure is 115 dBA. In areas where these noise levels would be exceeded, personnel are required to wear hearing protection. Figures 4-9 and 4-10 depict estimated and measured noise levels generated by the Strategic Target System missile. Launch of this missile has been previously analyzed and determined not to have a significant impact within the PMRF ROI. (U.S. Army Strategic Defense Command, 1992; U.S. Department of Energy, 1992; Strategic Defense Initiative Organization, 1991)

None of the noise levels outside of the GHA boundary for the proposed launch areas where non-essential personnel and the public are excluded would exceed either DoD or OSHA safety requirements. Personnel within the GHA wear hearing protection devices. Personnel and the public outside of the GHA may be startled, awakened, or distracted by the launch noise, especially those in Polihale State Park. Launches from the Kauai Test Facility would not be expected to affect the residential areas in Kekaha.

4.2.5 SOCIOECONOMICS—PMRF

The analytical approach adopted for the socioeconomic resource begins by recognizing that the action can be broken down into a series of simply defined activities. Each activity has the potential to generate three broad areas of economic impact. First, general socioeconomic impacts resulting from the action can lead to an economic gain or loss for the community. Second, the action may affect the quality of life of individuals in the community by changing the social and natural environment. Third, the action may exclude or displace residents, tourists, and commercial fishermen from areas to which they have traditionally had access.



Source: U.S. Department of the Navy, 1998.

EXPLANATION

- Pacific Missile Range Facility
- Polihale State Park
- City
- dBA = A-weighted Decibel
- 82 dBA (11,685 meters)
- 92 dBA (3,695 meters)
- 115 dBA (594 meters)
- 140 dBA (201 meters)
- Launch Site

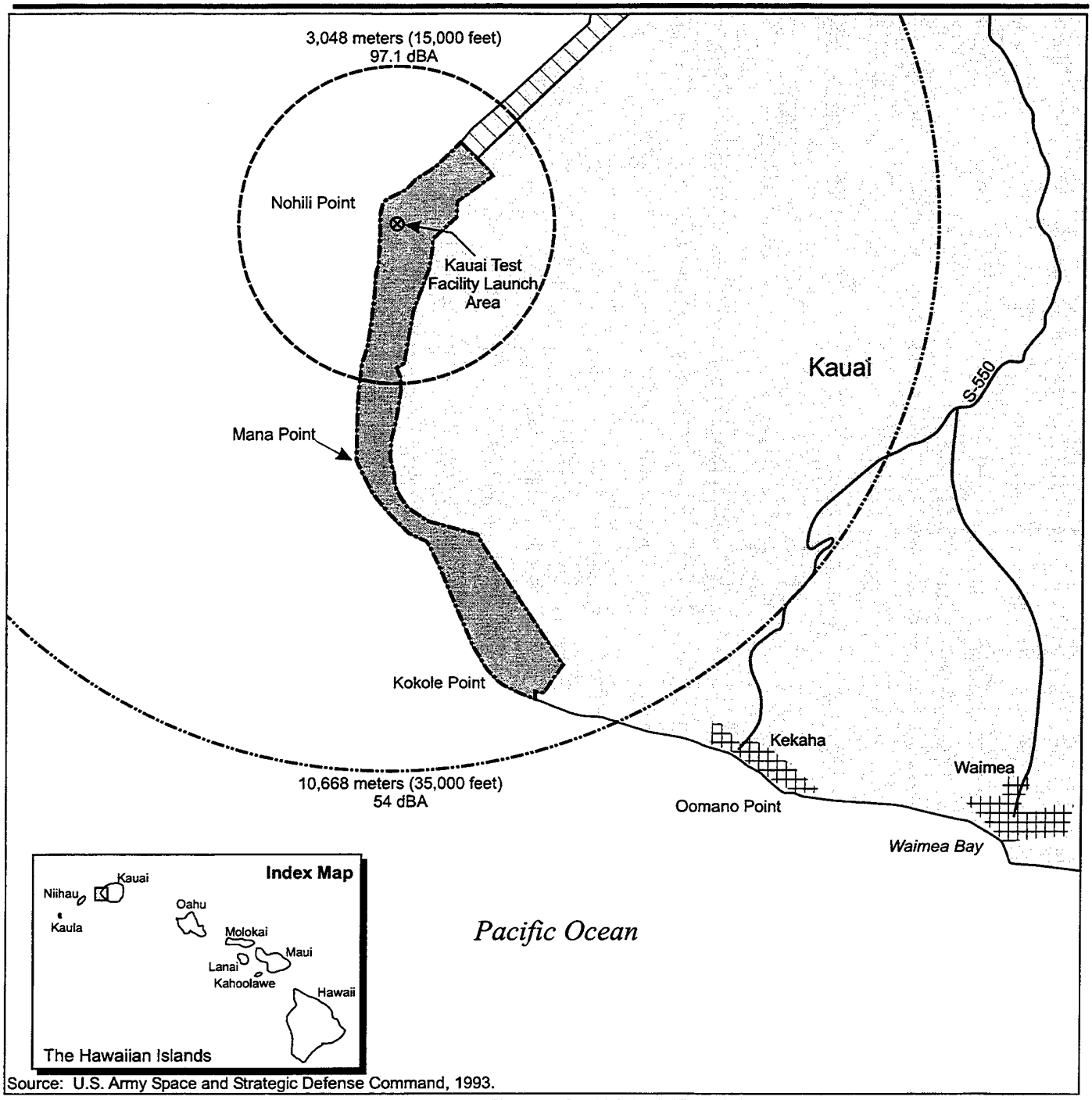
Scale
0 1.5 3 Kilometers
0 0.9 1.8 Miles
NORTH

4-01-01 4-9 pmrf_ns_05

Maximum Expected Strategic Target System Noise Levels

Kauai Test Facility, Hawaii

Figure 4-9



Source: U.S. Army Space and Strategic Defense Command, 1993.

EXPLANATION

- Pacific Missile Range Facility
- Polihale State Park
- City
- 97.1 dBA 3,048 meters (10,000 feet)
- 54 dBA 10,668 meters (35,000 feet)
- Launch Site

dBA = A-weighted Decibel

Maximum Measured Strategic Target System Noise Levels

Kauai Test Facility, Hawaii

Figure 4-10

NORTH

Scale

0 1.5 3 Kilometers

0 0.9 1.8 Miles

Population and Income

The action would have little impact on the economy and population of Kauai, as the number of personnel involved in pre-launch and launch activities is limited to an average of 30 per day, with 65 peak personnel. This small contingent would mostly be transient, using local hotel and lodging facilities. The positive impacts of flight testing include spending in the local economy on lodging and subsistence.

Housing

The action would have minimal or no impact on the local housing market, which at present has an excess of supply. Rental housing may prove to be in shorter supply, but it has been assumed that the majority of visiting personnel would stay in local hotels, where the supply of rooms also exceeds demand.

Employment

The increase in activity at PMRF, though limited in scale, would increase employment opportunities and stabilize the existing PMRF workplace. Construction labor during the pre-launch phase is likely to be sourced locally. Launch personnel, by spending money in the local economy, would help protect existing jobs or generate new jobs. The overall impact, however, would be slight. The pre-launch and launch activities would have no impact on the agricultural sector of the Kauai economy.

Tourism and Commercial Fishing

During launches, some individuals and groups would be excluded from the waters in the launch hazard area. Some of the activity restricted by the launch would be displaced to other locations. For the purposes of this analysis, it is assumed that three main groups would be excluded from the waters surrounding Kauai Test Facility: residents, tourists, and commercial fishermen. Each test would exclude these potential visitors for approximately 4 hours. There would be up to four tests per year. If the majority of residents and visitors that use the waters within the launch hazard area do so between 10:00 a.m. and 4:00 p.m., then the average access time available in a year is approximately 2,190 hours. The action, therefore, would exclude individuals for 16 hours, or less than 1 percent of the total access time. Even in the event that none of those residents and visitors excluded from the launch hazard area are prepared to accept as a substitute other areas outside the launch hazard area, this percentage is so small as to suggest no adverse impact.

The exclusion of fishing vessels from the waters surrounding PMRF is carefully planned, with sufficient warning and access to a hotline information system, to allow fishermen to visit alternative waters. The short periods of exclusion caused by this action, therefore, would have no adverse impact on the commercial fishing industry.

4.2.5.1 Cumulative Impacts

In terms of cumulative impacts, it is possible that the exclusion of commercial fishing vessels from the waters around PMRF could add to seasonal and permanent dislocation of

the commercial fishing industry, caused by dwindling fishing stocks. The counter-argument, however, states that the exclusion of commercial fishing vessels would help conserve fishing stocks and lead to long-term benefits for the industry. Visitors to Kauai, as a result of this action, would help support the tourist industry, which has been targeted as an economic priority.

4.3 PROPOSED ACTION—OPEN OCEAN (OUTSIDE U.S. TERRITORY)

4.3.1 AIRSPACE USE—OPEN OCEAN

Only the proposed test flight operations have the potential for impacts to airspace use in the ocean environment. Typically, a target missile would be at very high altitudes passing through FL 600 in just a matter of minutes after launch, and thus well above the airspace subject to the rules and regulations of the ICAO Convention. However, the designation and activation of booster drop areas in the launch corridor could have airspace use impacts that would be essentially the same for each of the target missile launch options.

Special Use Airspace

The airspace in the ROI outside territorial limits lies in international airspace and, consequently, is not part of the National Airspace System. Because the area is in international airspace, the procedures of ICAO, outlined in ICAO Document 444, *Rules of the Air and Air Traffic Services*, are followed. ICAO Document 444 is the equivalent air traffic control manual to FAA Handbook 7110.65, *Air Traffic Control*. The FAA acts as the U.S. agent for aeronautical information to the ICAO, and air traffic in the over-water ROI is managed by the Honolulu and Oakland ARTCCs.

After launch, typically the target missiles would be above FL 600 within minutes of the rocket motor firing. As such, all other local flight activities would occur at sufficient distance and altitude that the target missile and interceptor missiles would be little noticed. However, activation of the proposed stationary ALTRV procedures, where the FAA provides separation between non-participating aircraft and the missile flight test activities in the Temporary Operations Area, would impact the controlled airspace available for use by non-participating aircraft for the duration of the ALTRV—usually for a matter of a few hours, with a backup day reserved for the same hours. Because the airspace in the Temporary Operating Area is not heavily used by commercial aircraft, and is far removed from the en route airways and jet routes crossing the North Pacific, the impacts to controlled/uncontrolled airspace would be minimal.

Although the nature and intensity of utilization varies over time and by individual Special Use Airspace area, the Proposed Action would not represent a direct Special Use Airspace impact. Warning Areas consist of airspace over international waters in which hazardous activity may be conducted. This designation corresponds to the Danger Area designation of ICAO. Similarly, the use of ALTRV procedures as authorized by the Central Altitude Reservation Function, an air traffic service facility, or appropriate ARTCC (in this case the Oakland ARTCC) for airspace utilization under prescribed conditions in the Temporary

Operations Area would not impact Special Use Airspace. According to the FAA Handbook, 7610.44, ALTRVs may encompass certain rocket and missile activities and other special operations that may be authorized by FAA approval procedures.

PMRF and AADC would coordinate with the Oakland ARTCC military operations specialist assigned to handle such matters, and the airspace coordinator at the Honolulu Center Radar Approach using ALTRV request procedures. After receiving the proper information on each test flight, a hazard pattern that would not encroach on any landmass would be constructed and superimposed on a chart depicting the area of operations. This plotted area is then faxed to the military operations specialist at Oakland ARTCC requesting airspace. When approval of the request of the airspace is received from the military operations specialist at Oakland ARTCC, PMRF would submit an ALTRV request to Central Altitude Reservation Function who publishes the ALTRV 72 hours before the flight test.

En Route Airways and Jet Routes

The airways and jet routes that crisscross the Ocean Area airspace use ROI have the potential to be affected by the Proposed Action. However, target missile launches would be conducted in compliance with DoD Directive 4540.1 that specifies procedures for conducting missile and projectile firing, namely "firing areas shall be selected so that trajectories are clear of established oceanic air routes or areas of known surface or air activity."

Before conducting a missile launch, NOTAMs would be sent in accordance with the conditions of the directive specified in OPNAVINST 3721.20. In addition, to satisfy airspace safety requirements, the responsible commander would obtain approval from the Administrator, FAA, through the appropriate U.S. Navy airspace representative. Provision is made for surveillance of the affected airspace either by radar or patrol aircraft. Safety regulations also dictate that hazardous operations be suspended when it is known that any non-participating aircraft has entered any part of the danger zone until the non-participating entrant has left the area, or a thorough check of the suspected area has been performed.

In addition to the reasons cited above, no adverse impacts to the ROI's over-water airways and jet routes are identified because of the required coordination with the FAA. There is a scheduling agency identified for each piece of Special Use Airspace that would be utilized. The procedures for scheduling each piece of airspace are performed in accordance with letters of agreements with the controlling FAA facility, and the Honolulu and Oakland ARTCCs. Schedules are provided to the FAA facility as agreed between the agencies involved. Aircraft transiting the Open Ocean ROI on one of the low-altitude airways and/or high-altitude jet routes that would be affected by flight test activities, would be notified of any necessary rerouting before departing their originating airport and would therefore be able to take on additional fuel before takeoff. Real-time airspace management involves the release of airspace to the FAA when the airspace is not in use or when extraordinary events occur that require drastic action, such as weather requiring additional airspace.

The FAA ARTCCs are responsible for air traffic flow control or management to transition air traffic. The ARTCCs provide separation services to aircraft operating on instrument

flight rules flight plans and principally during the en route phases of the flight. They also provide traffic and weather advisories to airborne aircraft. By appropriately containing hazardous military activities within the over-water Warning Areas or by using ALTRV procedures in the Temporary Operations Area, non-participating traffic is advised or separated accordingly, thus avoiding substantial adverse impacts to the low altitude airways and high altitude jet routes in the ROI.

Airports and Airfields

There are no airports or airfields in the Ocean Area airspace use ROI. Consequently, there would be no impacts to airports and airfields.

4.3.1.1 Cumulative Impacts

In terms of the potential for cumulative impacts, the required scheduling process for the use of airspace in the ROI would obviate the potential for adverse cumulative impacts.

4.3.2 BIOLOGICAL RESOURCES—OPEN OCEAN

The proposed flight test operations would have no discernible or measurable effect on the ocean's overall physical and chemical properties, and thus would have no impacts to the overall marine biology of the Ocean Area ROI. Moreover, the proposed test flight operations would have no discernible effect on the biological diversity of either the pelagic or benthic marine environments. The proposed activities would take place far removed from land, in the open ocean, or pelagic zone, which contains approximately 2 percent of marine species.

NASA conducted a thorough evaluation of the effects of missile systems that are deposited in seawater (Federal Aviation Administration, 1996). It concluded that the release of hazardous materials aboard missiles into seawater would not be significant. Materials would be rapidly diluted and, except for the immediate vicinity of the debris, would not be found at concentrations identified as producing any adverse effects. The Pacific Ocean depth in the vicinity of the launch area is thousands of feet deep, and consequently impact from the fuel is expected to be minimal. Any area affected by the slow dissolution of the propellant would be relatively small due to the size of the rocket motor or propellant pieces relative to the quantity of seawater.

While the Proposed Action would have no discernible or measurable impact on phytoplankton or zooplankton in the pelagic zone, the potential exists for impacts to nekton organisms, since most species of nektonic animals live near the sea surface. Of particular concern is the potential for impacts to marine mammals, from both acoustic and non-acoustic effects. Potential acoustic effects include behavioral disturbance (including displacement), acoustic masking (elevated noise levels that drown out other noise sources), and (with very strong sounds) temporary or permanent hearing impairment. Potential non-acoustic effects include physical impact by falling debris, entanglement in debris, and contact with or ingestion of debris or hazardous materials. Injury by the shock wave resulting from impact of a large, fast-moving object (such as a missile booster or

target vehicle) with the water surface could be considered either an acoustic or non-acoustic effect. In particular, the Navy acknowledges that acoustic emissions from various products and activities could be interacting with marine mammals' hearing. Federal regulations promulgated under the Marine Mammal Protection Act have recognized that some criterion of measurement is necessary. Furthermore, the National Marine Fisheries Service considers TTS a reversible decrease in hearing sensitivities that result from exposure to loud sound, as a potential measure for evaluating impacts of sound emissions.

TTS is used as a measure of temporary reduction in hearing sensitivity. For sound levels at or somewhat above the TTS threshold, hearing sensitivity recovers rapidly after exposure to the noise ends. Much greater single noise exposures would be required to result in permanent hearing damage, while lesser noise levels would involve only minor behavioral responses with no effect on hearing sensitivity.

The potential for impacts exists from the target missile booster's fall to the ocean surface and from the target payload fall to the ocean surface. Potential adverse effects could occur from sonic boom overpressures, shock wave impact or direct contact, ingestion of toxic solutions generated from the unburned propellant mixed with seawater, and ingestion of pieces of unburned propellant.

Large pieces of falling debris from targets may strike and injure or kill marine mammals. As a general guideline, pieces of debris with an impact kinetic energy of 15 joules (11 foot-pounds) or higher are hazardous to humans (Pacific Missile Range Facility, Barking Sands, 1998).

Sonic Boom Overpressure Impacts

The Strategic Target System missile could generate a sonic boom on reentry. Each missile would propagate a unique sonic boom contour depending upon its mass, shape, velocity, and reentry angle, among other variables. The location of the possible impact point would vary depending upon the particular flight test profile. It is therefore difficult to produce the specific location, extent, duration, or intensity of sonic boom impacts upon marine life. These noise levels would be of very short duration.

The noise level thresholds of impact to marine life in general, and marine mammals in particular, are currently the subject of scientific analysis. There is the possibility that underwater noise levels resulting from missile reentry sonic booms could affect some marine mammals or sea turtles in the open ocean. In addition, since different species of marine mammals have varying sensitivity to different sound frequencies and may be found at different locations and depths in the ocean, it is difficult to generalize sound impacts to marine mammals from missile impacts in the BOA. Should consensus emerge from the scientific analysis about the effects of underwater noise upon marine mammals, it would then be possible to predict the consequences of a particular sonic boom contour upon marine mammals in the vicinity.

Shock Wave Impact or Direct Contact

The first, second, and third-stage target missile boosters and the target vehicle's payload, which all fall to the ocean surface, would impart a considerable amount of kinetic energy to the ocean water upon impact. Missiles and targets would hit the water with speeds of 91 to 914 meters (300 to 3,000 feet) per second. It is assumed that the shock wave from their impact with the water would be similar to that produced by explosives. At close ranges, injuries to internal organs and tissues would likely result. However, injury to any marine mammal by direct impact or shock wave impact would be extremely remote (less than 0.0006 marine mammals exposed per year). The splashdown of the target missile boosters and payload is planned to occur in open ocean waters thousands of feet deep at considerable distance from the nearest land.

Analysis (Naval Air Warfare Center Weapons Division Point Mugu, 1998) has determined that there is a very low probability that a marine mammal would be killed by falling missile boosters, targets, or debris as a result of tests at the Point Mugu Sea Range (less than 0.0149 marine mammals exposed per year). This probability calculation was based on the size of the area studied and the density of the marine mammal population in that area. The analysis concluded that the effect of missile debris and intact missiles coming down in the open ocean would be neglible.

Standard range warning and checking procedures would check for visible large concentrations of marine mammals in the area of the target launch, trajectory, and first stage impact area. Patrol and surveillance aircraft would be dispatched before launch to search the water surface. If contacts are made and confirmed, the Flight Safety officer would determine whether to continue on schedule, delay the test flight, or postpone it until another day.

Ingestion of Pieces of Unburned Propellant

The concentration and toxicity of dissolved solid rocket motor fuel in the ocean, from the unexpended rocket motor, or portions of it, is expected to be negligible and without any substantial effect.

The parts of solid rocket motor propellant expelled from a destroyed or exploded rocket motor that fall into the ocean would most likely sink to the ocean floor at depths of thousands of feet. At such depths the propellant parts would be out of the way of feeding marine mammals.

4.3.2.1 Cumulative Impacts

In terms of the potential for cumulative impacts, no other test flight operations are currently anticipated which would overlap with the Proposed Action; hence, there would be no potential for incremental, additive, cumulative impacts.

4.3.3 HEALTH AND SAFETY—OPEN OCEAN

Every reasonable precaution is taken during the planning and execution of test and development activities to prevent injury to human life or property. PMRF conducts missile flight safety, which includes analysis of missile performance capabilities and limitations, of hazards inherent in missile operations and destruct systems, and of the electronic characteristics of missiles and instrumentation. It also includes computation and review of missile trajectories and hazard area dimensions, review and approval of destruct systems proposals, and preparation of the Range Safety Approval and Range Safety Operational Plans required of all programs at PMRF.

Impact zones in the open ocean area would be delineated. The location and dimensions of the impact zones would vary for each test flight scenario. Impact zones for each test flight would be determined by range safety personnel based on detailed launch planning and trajectory modeling. This planning and modeling would include analysis and identification of a flight corridor. Flights would be conducted when trajectory modeling verifies that flight vehicles and debris would be contained within predetermined areas, all of which would be over the open ocean and far removed from land and populated areas. Appropriate NOTMARs and NOTAMs would be issued before proceeding with a launch. Consequently, the Proposed Action would have no adverse impacts to public health and safety in the open ocean area.

Furthermore, prior warning of flight testing and training would enable commercial shipping to follow alternative routes away from test areas

4.3.3.1 Cumulative Impacts

The Proposed Action would result in up to four missile launches per year from each launch site. Each of these launches would result in the impact of up to three boosters and the payload into the open ocean. This would be an increase in missile activities in the open ocean area. As such, there would be a cumulative impact to health and safety in the open ocean area. However, the Proposed Action also requires the administration of NOTAMs and NOTMARs to warn aircraft and surface vessels of the potentially hazardous areas and allows them ample time to avoid the hazards. As such, any cumulative impact in the open ocean area due to the Proposed Action would be minimal.

4.4 ENVIRONMENTAL EFFECTS OF THE NO-ACTION ALTERNATIVE

If the No-action Alternative is selected, no environmental consequences associated with the North Pacific Targets program are anticipated. Present activities would continue with no change in current operations. The capability for Kodiak Launch Complex to provide launches of Strategic Target System missiles would not be further developed or tested.

4.5 ADVERSE ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED

Adverse environmental effects that cannot be avoided include the release of small amounts of pollutants into the atmosphere and ocean; minor noise impacts on wildlife; short-term impact to vegetation from exhaust products; minor increased generation of hazardous materials; and increased noise levels at program-related sites. However, through implementation of the program actions described within this document, these effects would be minimized.

4.6 CONFLICTS WITH FEDERAL, STATE, AND LOCAL LAND USE PLANS, POLICIES, AND CONTROLS FOR THE AREA CONCERNED

All of the proposed program activities would take place in existing facilities or locations. These activities would not alter the uses of the sites, which were in the past or currently are to support missile and rocket testing. Any potential conflicts with land use plans, policies, and controls would be a primary focus of agreements that would be negotiated with all affected Federal, state, regional, and local agencies before implementation of the Proposed Action. Closure of state recreation areas would be short-term, episodic events.

4.7 ENERGY REQUIREMENTS AND CONSERVATION POTENTIAL

Anticipated energy requirements of the Northern Pacific Targets program would be well within the energy supply capacity of all facilities. Energy requirements would be subject to any established energy conservation practices at each facility.

4.8 IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES

The Proposed Action would result in no loss of habitat for plants or animals, no loss or impact on threatened or endangered species, and no loss of cultural resources, such as archaeological or historic sites. Moreover, there would be no changes in land use nor preclusion of development of underground mineral resources that were not already precluded.

The amount of materials required for any program-related activities and energy used during the project would be small. Although the proposed activities would result in some irreversible or irretrievable commitment of resources such as various metallic materials, minerals, and labor, this commitment of resources is not significantly different from that necessary for many other defense research and development programs carried out over the past several years. Proposed activities would not commit natural resources in significant quantities.

4.9 RELATIONSHIP BETWEEN SHORT-TERM USE OF THE HUMAN ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Proposed North Pacific Targets program activities would take advantage of existing facilities and infrastructure. The upgrades to some of these facilities or locations would not alter the uses of the sites, which were or are to support missile and rocket launches. Therefore, the Proposed Action does not eliminate any options for future use of the environment for the locations under consideration.

4.10 NATURAL OR DEPLETABLE RESOURCE REQUIREMENTS AND CONSERVATION POTENTIAL

Other than various structural materials and fuels, no significant natural or depletable resources would be required by the program.

4.11 FEDERAL ACTIONS TO ADDRESS ENVIRONMENTAL JUSTICE IN MINORITY POPULATIONS AND LOW-INCOME POPULATIONS (EXECUTIVE ORDER 12898)

North Pacific Targets program activities would be conducted in a manner that would not substantially affect human health and the environment. The EA has identified no effects that would result in disproportionately high or adverse effect on minority or low-income populations in the area. The activities would also be conducted in a manner that would not exclude persons from participating in, deny persons the benefits of, or subject persons to discrimination under the North Pacific Targets program because of their race, color, national origin, or socioeconomic status.

4.12 FEDERAL ACTIONS TO ADDRESS PROTECTION OF CHILDREN FROM ENVIRONMENTAL HEALTH RISKS AND SAFETY RISKS (EXECUTIVE ORDER 13045)

This EA has not identified any environmental health and safety risks that may disproportionately affect children, in compliance with EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*.

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6.0
LIST OF PREPARERS

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Government Preparers

Thomas M. Craven, Environmental Protection Specialist
U.S. Army Space and Missile Defense Command
M.S., 1974, Biology, University of Alabama, Tuscaloosa
Years of Experience: 26

Dennis R. Gallien, Environmental Engineer,
U.S. Army Space and Strategic Defense Command
B.S., 1979, Industrial Chemistry, University of North Alabama
Years of Experience: 22

Contractor Preparers

Mike Carstensen, Environmental Specialist, EDAW, Inc.
B.S., Computer Science, in progress, Athens State University
Years of Experience: 3

Amy Fenton-McEniry, Technical Editor, EDAW, Inc.
B.S., 1988, Biology, University of Alabama in Huntsville
Years of Experience: 12

Rachel Y. Jordan, Environmental Scientist, EDAW, Inc.
B.S., 1972, Biology, Christopher Newport College, Virginia
Years of Experience: 12

Edd V. Joy, Manager, EDAW, Inc.
B.A., 1974, Geography, California State University, Northridge
Years of Experience: 27

Brandon Krause, Technical Illustrator, EDAW, Inc.
B.S., Computer Engineering, in progress, University of Alabama in Huntsville
Years of Experience: 1

Jeannette S. Massey, Environmental Specialist, EDAW, Inc.
B.S., Chemical Engineering, in progress, University of Alabama in Huntsville,
Years of Experience: 1

Rickie D. Moon, Senior Systems Engineer
Teledyne Solutions, Inc.
M.S., 1997, Environmental Management, Samford University
B.S., 1977, Chemistry and Mathematics, Samford University
Years of Experience: 14

Steve Scott, Principal, EDAW, Inc.
B.S., 1973, Geology, California State University, San Diego
Years of Experience: 23

William Sims, Geographic Information Services Specialist, EDAW, Inc.
B.S., 1993, Geography, University of North Alabama
Years of Experience: 4

James E. Zielinski, Environmental Planner, EDAW, Inc.
B.S., 1984, Biology, University of Alabama in Birmingham
Years of Experience: 11

7.0
AGENCIES AND INDIVIDUALS CONTACTED

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FEDERAL AGENCIES

Advisory Council on Historic Preservation

Ballistic Missile Defense Organization

U.S. Army Corps of Engineers

U.S. Coast Guard

U.S. Department of Energy

U.S. Department of the Air Force

U.S. Department of the Army

U.S. Department of the Navy

U.S. Environmental Protection Agency

U.S. Fish and Wildlife Service

- Arthur Davenport
- Terry Antrobus

Federal Aviation Agency

- Lari Belisle

U.S. National Marine Fisheries Service

- Brad Smith

U.S. Senator Frank H. Murkowski, Alaska

U.S. Senator Ted Stevens, Alaska

U.S. Senator Don Young, Alaska

STATE AGENCIES

Alaska

Office of the Governor, Tony Knowles

Lieutenant Governor Fran Ulmer

Representative Gary Stevens

Alaska Department of Natural Resources

Karlee Gaskill

Alaska Division of Governmental Coordination

Maureen McCrea

University of Alaska, Environment and Natural Resources Institute

Michael Kelly

LOCAL AGENCIES

Alaska

City of Kodiak

Carolyn L. Floyd, Mayor

Kodiak Island Borough

Tuck Bonney, Deputy Mayor

PRIVATE AGENCIES

Alaska

Alaska Community Action on Toxics

Director of Community Services

APPENDIX A
PUBLIC INFORMATION MATERIALS AND DISTRIBUTION LIST

APPENDIX A CONTENTS

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National Environmental Policy Act (NEPA) Process/Environmental Resources

Major Milestones/ Proposed Schedule

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Air Quality:
- Launch emissions
- Support equipment emissions

Airspace Use:
- Commercial and private air traffic
- Military air traffic

Biological Resources:
- Terrestrial
- Marine
- Wetlands
- Threatened and endangered species

Cultural Resources:
- National Register-eligible sites
- Native Alaskan sites

Geology:
- Soils

Environmental Justice:
- Subsistence

Hazardous Materials and Wastes:
- Solid-fueled missile transportation and handling
- Hazardous material use
- Hazardous waste disposal

Health and Safety:
- Safety zone identification
- Personal safety (OSHA and EPA standards)

Land Use:
- Compatibility with adjacent lands
- Recreation use

Noise:
- People
- Wildlife
- Structures

Socioeconomics:
- Tourism/Public services
- Commercial Fisheries

Transportation:
- Highway
- Aviation

Utilities:
- Electrical
- Water
- Sewage
- Solid waste

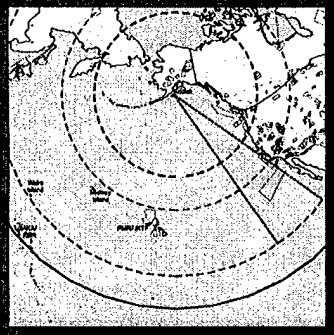
Visual Aesthetics:
- Facilities

Water Resources:
- Surface
- Estuarine
- Ocean

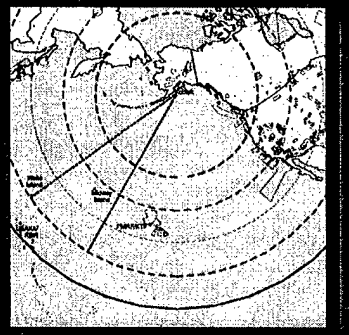
North Pacific Targets Program

Proposed Action: Launch up to 4 targets a year from Kodiak Launch Complex (KLC) and up to 4 targets from Kauai Test Facility (KTF) in Hawaii over a minimum of 5 years. Start in Spring 2001, using the highly reliable Strategic Target System.

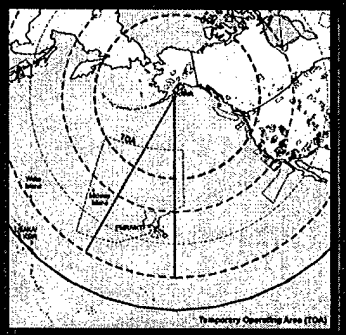
Purpose and Need: To provide targets and flight paths that are more realistic for testing North American sensors, as well as sensors and missile interceptors from U.S. Army Kwajalein Atoll/Kwajalein Missile Range (USAKA/KMR) in the Marshall Islands and Kauai Test Facility in Hawaii.



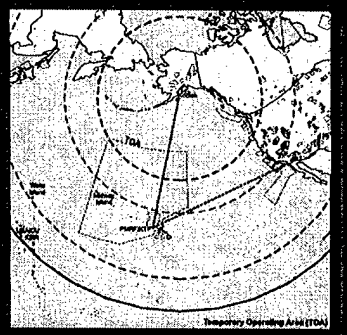
KLC Southeast Into the Broad Ocean Area Off Ensenada, Mexico



KLC Southwest Into the Broad Ocean Area North of USAKA/KMR



KLC South Into the Broad Ocean Area North of PMRF



KTF East and Northeast Into the Broad Ocean Area off the NW Coast of the U.S.

Decisions To Be Made

Whether to launch from KLC and/or KTF on one or more of these flight paths

No-Action Alternative

Continue to launch only from KTF toward USAKA

Note: For representative purposes only, not to scale

Strategic Target System

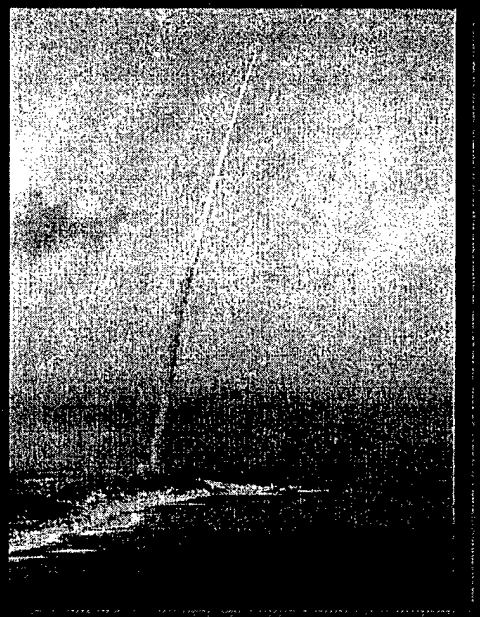
Precise Delivery of Targets for Testing & Research

3 Solid-Rocket Stages
- 2 Manufactured-Refurbished Polaris Boosters
- Specially Designed ORBUS-1 3rd stage

Range
1,000 - 5,500 km (621 - 3,418 mi)

Dimensions
- Length 11.5 m (37.8 ft)
- Diameter 137 cm (54 in)
- Weight 16,670 kg (36,750 lb)

Fully Guided During Launch & Flight
- Turn in flight up to 70 degrees any direction
- Mimic ICBM or Theater Missile trajectories
- Deliver Multiple Targets



Strategic Target System
Launch from PMRF/KTF

INF Treaty Compliant & START Treaty Exempt

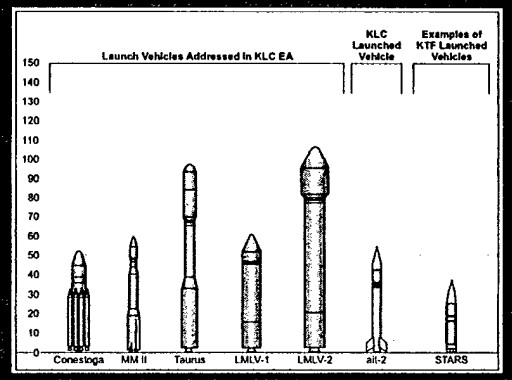
Proven Reliability
- 4 Flights, 4 Successes (all Kauai Test Facility)

Launched From Above-Ground "Launch Stool"

X-rayed & Certified for Flight

Shipped to Kodiak by Military Air

Trucked to KLC



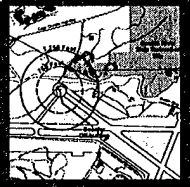
Ground and Flight Safety

Ground Safety

Missile Transportation

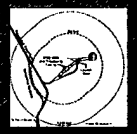
Kodiak Airport &
Buskin River State Recreation Site

- To ensure public safety, a portion of Buskin State Park would be temporarily closed during arrival and offloading of explosive missile components.
- A safety zone of 1,250' to an inhabited building would be required between the offloading site and the westernmost campsites at Buskin River State Recreation Site.
- Minor disruption to some park services since required closure would occur infrequently between 11:00 pm - 6:00 am



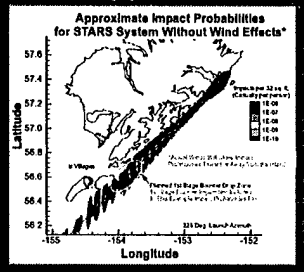
Kodiak Launch Complex,
Integration and Processing Facility

- Detour will allow access to Fossil Beach when the booster is at the Integration and Processing Facility

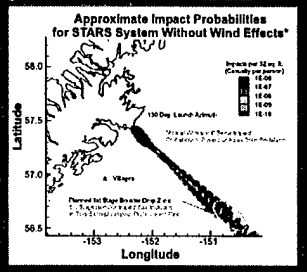


Flight Safety

Approximate Impact Probabilities



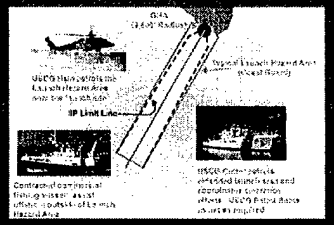
225° Trajectory



130° Trajectory

Launch Area Clearance
USCG Lead/Coordinate

1 Cutter
1 C-130*
1 Helo* (ready on deck)
2 Boundary Boats
*Remote Area Safety Aircraft backup



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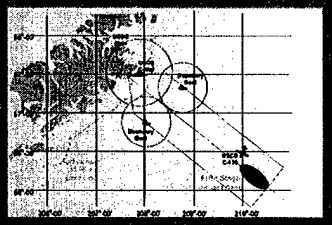


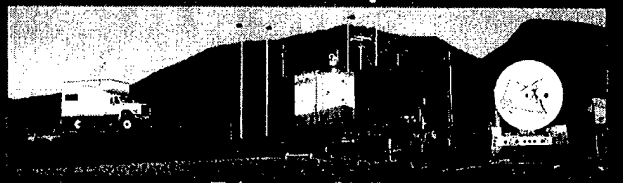
130° Trajectory

Flight Termination

Missile Flight Safety Officer

- Certified by Naval Air Warfare Center Weapons Division
- Coordinates with Launch Contractor and FAA
  - Range Safety Operations Procedure
  - Destruct Criteria
  - Missile Flight Path
- Monitors Missile Flight
  - 1 kW flight termination transmitter w/high gain antenna
  - Dual independent system
    - 8-foot dish mobile antenna
    - Remote Area Safety Aircraft
  - Telemetry station at Cordova, AK

Remote Area Safety Aircraft



Telemetry Station

North Pacific Targets Program
Public Information Meeting

Thank you for attending this information meeting. Our purpose for hosting this meeting is to provide you with information on activities proposed by the U.S. Army Space and Missile Defense Command for the Kodiak Launch Complex. The meeting will also give you an opportunity to assist us in identifying pertinent environmental issues for analysis within the North Pacific Targets Environmental Assessment (EA). Please use this sheet to bring to our attention potential issues (e.g., environmental, safety) that you feel should be addressed. To ensure that your comments are considered as part of the EA process, they must be postmarked or faxed by 15 December 2000.

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COMMENT SHEET

for

The North Pacific Targets Program Public Information Meeting

Date: _____

Please place form in the drop box or mail to:

Please place form in the drop box or mail to: SMDC-EN-V, Mr. Thomas Craven U.S. Army Space and Missile Defense Command PO Box 1500 Huntsville, AL 35807	Commentor: (Optional) Name: _____ Street Address: _____ City, State: _____ Zip Code: _____

White copy—Agency Yellow Copy—Commentor

Privacy Notice

DATA REQUIRED BY THE PRIVACY ACT OF 1974 (5 U.S.C. 552A)

1. Authority
   42 U.S.C. 4321-4370a

---

2. Principal Purpose
   Information is used to compile a list of meeting attendees for the administrative record.

---

3. Routine Uses
   1. The comment sheet is used to signify an individual's desire to make a statement during the public comment portion of the meeting.
   2. Names of individuals and their comments during the public meeting may be published in project reports.
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☐ **I will review copy of Final EA on the program website at http://www.huntsville.edaw.com/northpacific**
(Please note: This will help reduce copying and shipping costs)

☐ **Please send me a copy of the Executive Summary for the Final EA**

☐ **Please send me a copy of the Final EA**

☐ **Please send me the Final EA on CD-ROM**

Name ______________________________

Address ______________________________

____

____

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North Pacific Targets Program Information Meeting 30 November 2000, Kodiak, AK

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U.S. Army SMDC
Space and Missile Defense Command

Fact Sheet

National Environmental Policy Act (NEPA) Process

North Pacific Targets Program Environmental Assessment

Background

The Ballistic Missile Targets Joint Project Office (BMTJPO) of the U.S. Army Space and Missile Defense Command has been tasked to provide realistic targets and realistic trajectories needed to:

- Test North American sensors and sensors at U.S. Army Kwajalein Atoll/Kwajalein Missile Range (USAKA/KMR) in the Marshall Islands and at Pacific Missile Range Facility and Kauai Test Facility in Hawaii
- Test interceptors launched from USAKA/KMR and Navy ships.

To accomplish this, the BMTJPO has proposed the North Pacific Targets Program, which would launch up to four targets a year over a period of approximately 5 years from the Kodiak Launch Complex, Alaska and from Kauai Test Facility, Hawaii.

The National Environmental Policy Act requires Federal agencies to assess proposed new programs for potential effects on both human and natural environments. The BMTJPO is preparing an environmental assessment to analyze the potential environmental consequences of the proposed North Pacific Targets Program.

How To Get Program Information/Environmental Assessment

- Visit the North Pacific Targets Program Web site at http://www.huntsville.edaw.com/northpacific

or

- Complete a request form for a copy of the Environmental Assessment at the public information meeting or on the website

How To Provide Comments and Make Requests

Verbal—At the public information meeting on November 30, 2000

or

Written—At the public information meeting on November 30, 2000

-By U.S. Mail*: U.S. Army Space and Missile Defense Command, SMDC-EN-V, PO Box 1500, Huntsville, AL 35807-3801

or

-By facsimile* to USASMDC SMDC-EN-V (256) 955-5074

***Comments must be postmarked or faxed by 15 December 2000**

For more information, visit web site http://www.huntsville.edaw.com/northpacific

National Environmental Policy Act (NEPA) Process

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Decision on Proposal *30 March 01*	The deciding official may make a decision on the proposed action following issuance of a FNSI and completion of the public review period.

U.S. Army SMDC
Space and Missile Defense Command

Fact Sheet

Environmental Resources

North Pacific Targets Program Environmental Assessment

Background

The North Pacific Targets Program (NPTP) proposes to launch up to four Strategic Target System missiles a year from the Kodiak Launch Complex (KLC) in Alaska for at least the next 5 years. (These would be in addition to up to four launches a year from the Kauai Test Facility in Hawaii.). Accordingly, the Ballistic Missile Targets Joint Project Office of the U.S. Army Space and Missile Defense Command is preparing an assessment of the potential impacts to the human and natural environments. Such an environmental assessment typically analyzes the potential impacts in the environmental resource areas listed below.

Environmental Resources

There are important issues to be addressed concerning the environment. We are working to quantify and study these issues to ensure minimum impact. We can only analyze the issues we recognize or you inform us about.

Previous Results

Each of these resource areas at KLC has been analyzed extensively before, in environmental assessments by the Federal Aviation Agency and the U.S. Air Force. These assessments found no significant impacts from the launch of rocket-powered vehicles from KLC. Results of a monitoring program have supported those findings.

Proposed NPTP activities are similar in type and intensity to those already analyzed or conducted at KLC. Therefore, we hope that the NPTP analysis will also show no significant environmental impacts.

At the same time, we are reexamining existing analyses, interacting with interested state and federal agencies, holding a public information meeting, and receiving information and comments. Our goal is to learn whether there are any "new" resources or effects that we should analyze for our assessment.

Air Quality
- Launch emissions
- Support equipment emission

Airspace Use
- Commercial and private air traffic
- Military air traffic

Biological Resources
- Terrestrial
- Marine
- Wetlands
- Threatened and endangered species

Cultural Resources
- National Register-eligible sites
- Native Alaskan sites

Geology
- Soils

Environmental Justice
- Subsistence

Hazardous Materials and Hazardous Waste
- Solid-fueled missile transportation and handling
- Hazardous material use
- Hazardous waste disposal

Health and Safety
- Safety zone identification
- Personal safety (OSHA and EPA standards)

Land Use
- Compatibility with adjacent lands

Noise
- People
- Wildlife
- Structures

Socioeconomics
- Tourism/Public Services
- Commercial Fisheries

Transportation
- Highway
- Aviation

Utilities
- Electrical
- Water
- Sewage
- Solid waste

Visual Aesthetics
- Facilities

Water Resources
- Surface
- Estuarine
- Ocean

For more information, visit web site http://www.huntsville.edaw.com/northpacific

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U.S. Army SMDC
Space and Missile Defense Command

Fact Sheet

Kodiak Launch Complex

North Pacific Targets Program Environmental Assessment

Background

The North Pacific Targets Program plans to launch up to four Strategic Target System missiles per year from the Kodiak Launch Complex (KLC) in Alaska for at least the next 5 years. (These would be in addition to up to four launches a year from the Kauai Test Facility in Hawaii.)

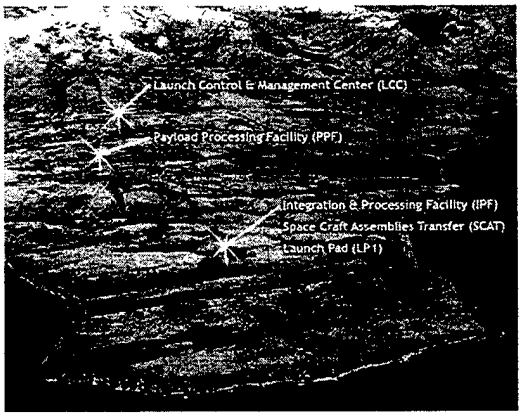
Why KLC?

KLC was proposed from among other alternative locations considered because it could favorably satisfy the criteria for the proposed program, such as deployment costs, logistics response time, required lead time, range costs, available instrumentation, range flexibility, current target capability, multipurpose overall target capability, and target system geometry.

Other alternatives were considered not viable and not carried forward. For example, the Wake Island options could not meet the schedule and target scenario requirements. They also involved significant technical risk. Cape Canaveral was eliminated primarily because of cost, schedule, and launch and target-engagement considerations.

Capabilities to Be Used

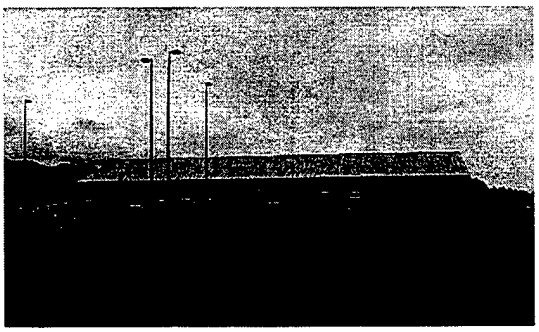
Strategic Target System boosters and payloads would be transported to Kodiak airport by military aircraft. They would then be transported to KLC's Integration and Processing Facility or Payload Processing Facility in an enclosed air-ride truck. After being assembled and checked out, the Strategic Target System flight vehicle would be towed to the launch pad in a transporter/erector trailer. Finally, the erector would elevate the missile for placement on the launch stool by a crane.



Aerial View of Kodiak Launch Complex

Launch Facility

- **Launch Control and Management Center (LCC)** – Used for launch-day operations also serves as the administrative and engineering support facility for KLC.

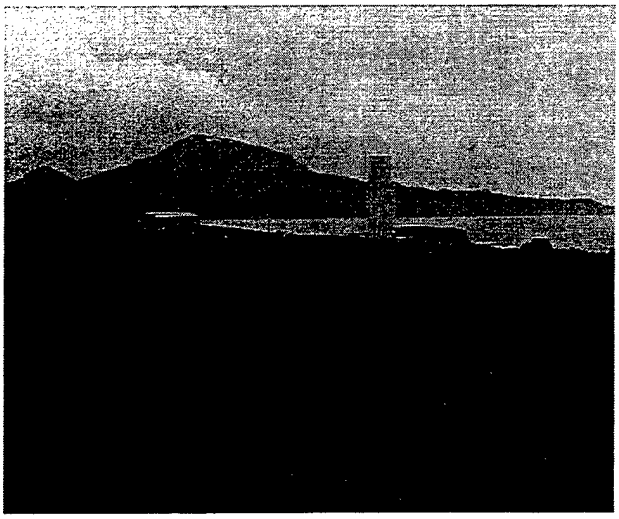


Launch Control and Management Center

For more information, visit web site http://www.huntsville.edaw.com/northpacific

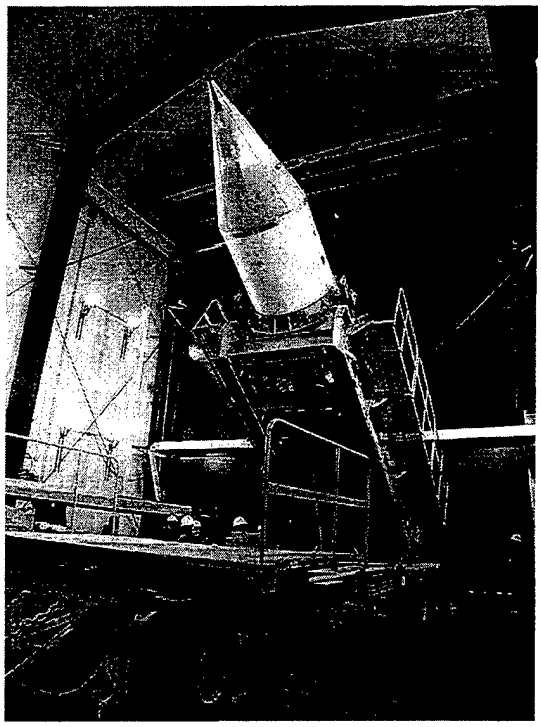
- **Payload Processing Facility (PPF)** – Spacecrafts are received, staged, processed, and checked out in the PPF before being moved to the Launch Pad.

- **Integration and Processing Facility (IPF)** – The IPF is a multi-function building for receiving and staging of equipment, components and flight hardware; receiving, checkout and integration of launch vehicle stages; processing and testing activities; and equipment storage.

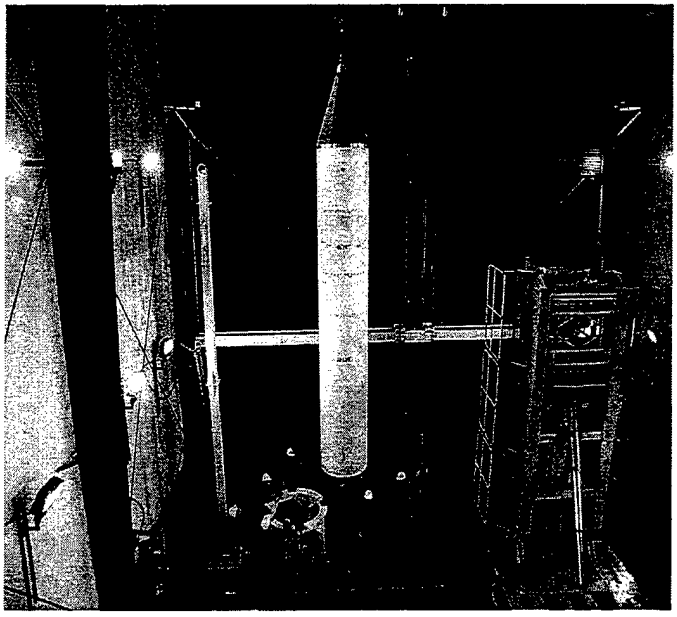


KLC Launch Facilities

- **Space Craft Assemblies Transfer (SCAT)** - The Spacecraft Assemblies Transfer Facility (SCAT) is an environmentally conditioned mobile structure used to transfer spacecraft assemblies from the IPF to the Launch Pad.



Simulated Strategic Target System Missile upload at the SCAT



Simulated Strategic Target System missile placed on launch stool during missile checkout procedures

U.S. Army SMDC
Space and Missile Defense Command

Fact Sheet

Purpose and Need
Description of Proposed Action and Alternatives
North Pacific Targets Program Environmental Assessment

Background

The National Environmental Policy Act (NEPA) and implementing directives and regulations require Federal agencies to assess proposed new programs for potential effects on the human and natural environments.

The Department of Defense is developing two types of missile defense for the United States. National Missile Defense would defend the nation against an attack of a few long-range missiles. Theater Missile Defense would defend our troops, ships, aircraft, and other vital equipment, and our allies and friends from missile attack during combat overseas.

Purpose and Need

The Ballistic Missile Targets Joint Project Office (BMTJPO) of the U.S. Army Space and Missile Defense Command has been tasked to provide realistic targets and realistic trajectories needed to:

- Test North American sensors and sensors at U.S. Army Kwajalein Atoll/Kwajalein Missile Range (USAKA/KMR) in the Marshall Islands
- Test interceptors launched from USAKA/KMR
- Test Navy sensors and interceptors at the Pacific Missile Range Facility, Kauai, Hawaii

Providing realistic targets on realistic flight paths is vital for effective development and testing of both the sensors that would track the attacking missiles and the interceptor missiles that would shoot them down.

Proposed Action

To accomplish this, the BMTJPO has proposed the North Pacific Targets Program and is preparing an environmental assessment (EA) to analyze the potential environmental consequences. The proposed program would:

- Provide a capability to also launch the Strategic Target System from the Kodiak Launch Complex (KLC) on Kodiak Island in Alaska, along three flight paths:
  - **Southeastward** along the west coasts of Canada, the United States and Mexico to an impact area in the BOA off Ensenada, Mexico*;
  - **Southwestward** toward the BOA near USAKA/KMR*, and
  - **Southward** toward the BOA north of KTF*.
- Increase the capability to launch the Strategic Target System from the Kauai Test Facility (KTF) on the Island of Kauai, in Hawaii, by adding a new flight path, **east/northeast**, into the broad ocean area (BOA) off the northwest coast of the United States*
- Launch up to four targets a year over a period of approximately 5 years, from KLC and from KTF
- Integrate newer A3R rocket motors into the Strategic Target System inventory of first and second stage motors

**(See maps on back of this sheet)*

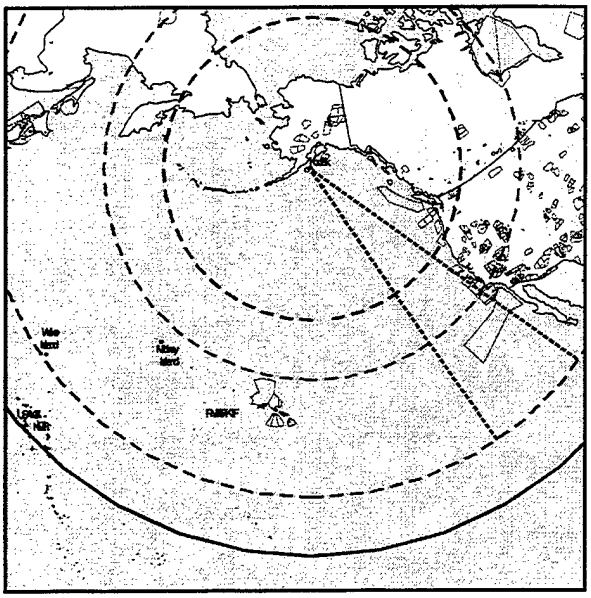
Decision To Be Made

The decision to be made is whether to launch the Strategic Target System along one or more of the flight paths described*. The Deputy Commanding General for Acquisition of the USASMDC will make the decision based on the information in the EA and other factors such as program cost and schedule.

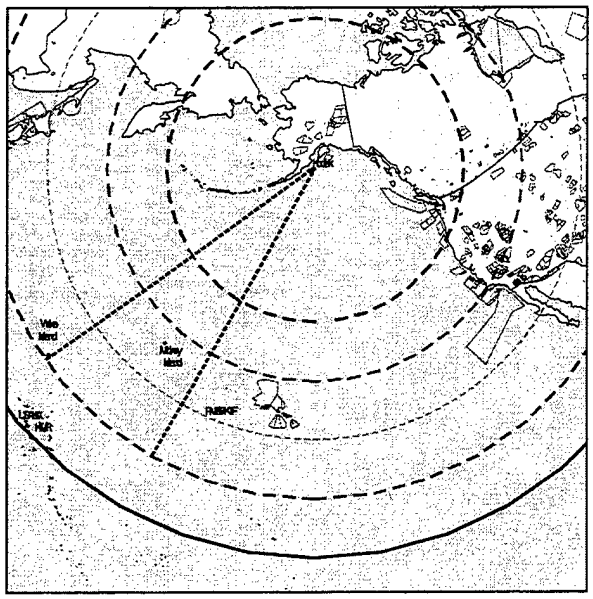
For more information, visit web site http://www.huntsville.edaw.com/northpacific

Alternatives

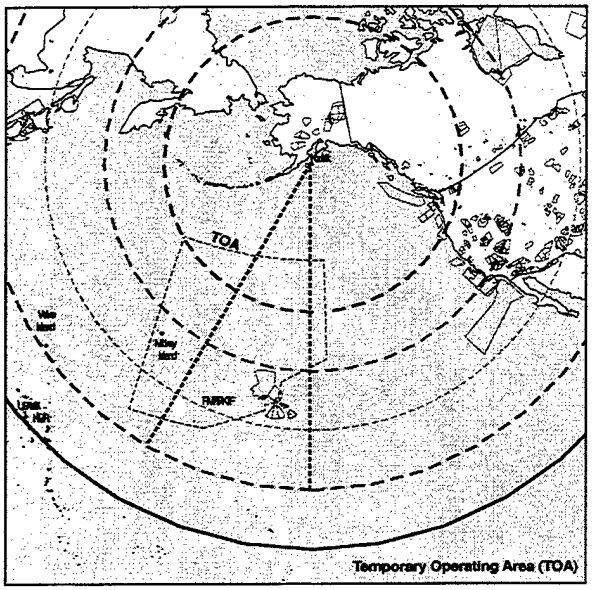
The No-Action Alternative would simply continue to support sensor and interceptor testing at USAKA/KMR with ongoing launches of the Strategic Target System from KTF. As a result, the sensor and interceptor testing requirements that led to the proposal of the North Pacific Targets Program would go unmet. Several other alternatives were not viable and not carried forward. The Wake Island options could not meet the schedule and target scenario requirements. They also involved significant technical risk. Cape Canaveral was eliminated primarily because of cost, schedule, and launch and target-engagement considerations.



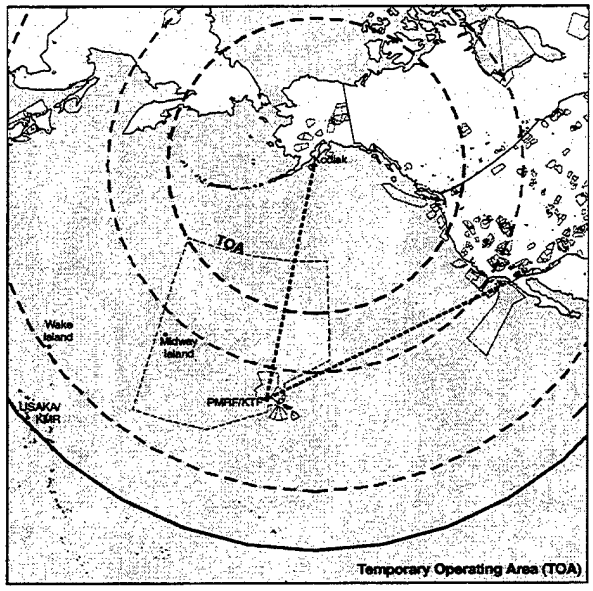
Kodiak Launch Complex
Southeast Trajectory



Kodiak Launch Complex
Southwest Trajectory



Kodiak Launch Complex
South Trajectory



PMRF/KTF East/Northeast
Trajectory

For more information, visit web site http://www.huntsville.edaw.com/northpacific

U.S. Army SMDC
Space and Missile Defense Command

Fact Sheet

Public Safety and Facilities Access

North Pacific Targets Program Environmental Assessment

Background

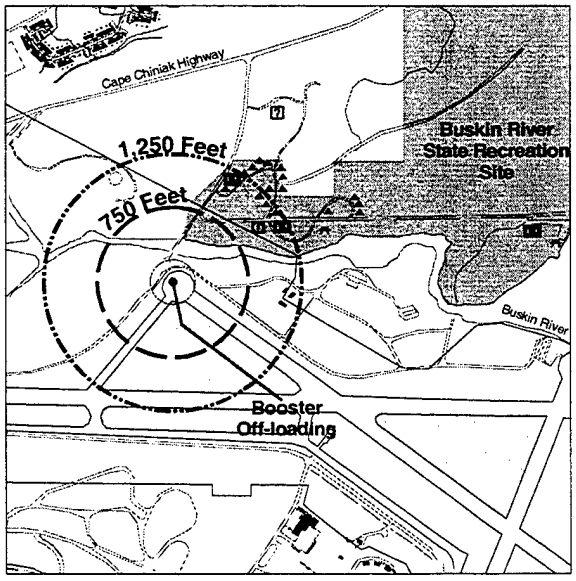
Strategic Target System boosters would be transported to the Kodiak airport by military aircraft and then by enclosed air-ride truck to the Kodiak Launch Complex (KLC). To ensure safety for the public, some public areas would experience temporary closure—Buskin River State Recreation Site adjacent to the airport and a portion of the road through KLC to Fossil Beach.

Buskin River State Recreation Site

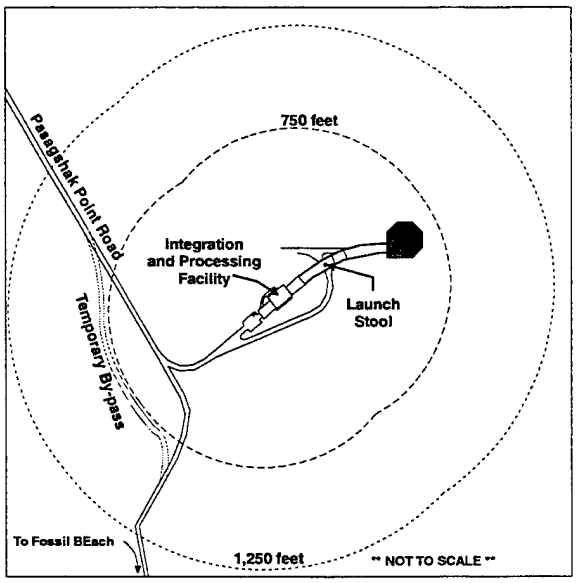
An explosive safety distance of 381 meters (1,250 feet) from inhabited buildings would be established around the aircraft until the boosters are unloaded and removed from the airport by truck. The westernmost part of Buskin River State Recreation Site within this safety distance would be temporarily closed during the booster transfer. The disruption to park services is expected to be minor since the required closure would occur only a few times a year between the hours of 11:00 p.m. and 6:00 a.m.

Fossil Beach Access

The booster would be delivered to the KLC Integration and Processing Facility (IPF). Flight preparation and launch activities would take approximately 6 weeks. During that time, traffic to Fossil Beach would use a temporary bypass off Pasagshak Point Road to drive around the IPF at the required safe distance of 229 meters (750 feet) from public transit routes.



Kodiak Airport and Buskin River State Recreation Site



ESQD from the Integration and Processing Facility

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U.S. Army SMDC
Space and Missile Defense Command

Fact Sheet

Ground and Flight Safety

North Pacific Targets Program Environmental Assessment

Background

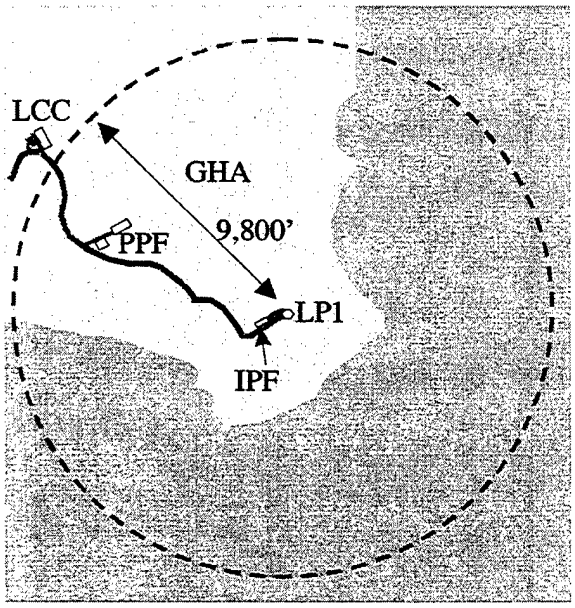
The Ballistic Missile Targets Joint Project Office (BMTJPO) has proposed the North Pacific Targets Program, which would launch up to four targets a year over a period of approximately 5 years from the Kodiak Launch Complex (KLC), Alaska and from Kauai Test Facility, Hawaii.

To ensure public safety, BMTJPO is actively mitigating the potential impacts to ground safety, flight safety, and flight-termination safety.

Ground Safety

The proposed activities at KLC would require the assembly and integration testing of the first, second, and third stage boosters. Prior to each launch at KLC, the Naval Air Weapons Center Warfare Division (NAWCWD) would define a safety exclusion zone and the Ground Hazard Area (GHA). Typically, the safety exclusion zone is a 1-mile (1.6-kilometer) radius around the launch pad. However, the actual radius would be launch specific, based on criteria such as the payload, the launch vehicle, as well as meteorological conditions at the time of launch. To protect persons on Kodiak Island before and during each launch, the Alaska Aerospace Development Corporation (AADC) would prohibit non-participants from entering the safety exclusion zone. In addition, KLC personnel would survey the safety exclusion zone to ensure that 20 minutes before each launch all areas within the safety exclusion zone are verified to be clear of people (except mission-essential personnel). As an added precaution, all site personnel would be relocated to the Launch Control and Management Center for the actual launch.

The GHA is defined as the area overlying land within which the predicted risk to personnel exceeds those probabilistic limits defined in the Range Commanders Council (RCC) Standard 321-00. A GHA with a 9,800-foot radius will be established during Strategic Target System (STARS) missile flight activities at KLC. Non-participants are not allowed inside the GHA.



GHA for STARS at KLC

A probabilistic risk analysis is performed prior to a flight test to ensure that the risk to test participant personnel is less than the RCC Standard 321-00 limit. However, in the event that a risk analysis as prescribed by RCC Standard 321-00 cannot be performed, the GHA would be expanded to include that area within which all potentially hazardous debris would be contained in the event of a missile malfunction or flight termination action. The potentially hazardous inert debris would be limited to debris

For more information, visit web site http://www.huntsville.edaw.com/northpacific

impacting the earth with a kinetic energy equal to or greater than 11 ft-lbs.

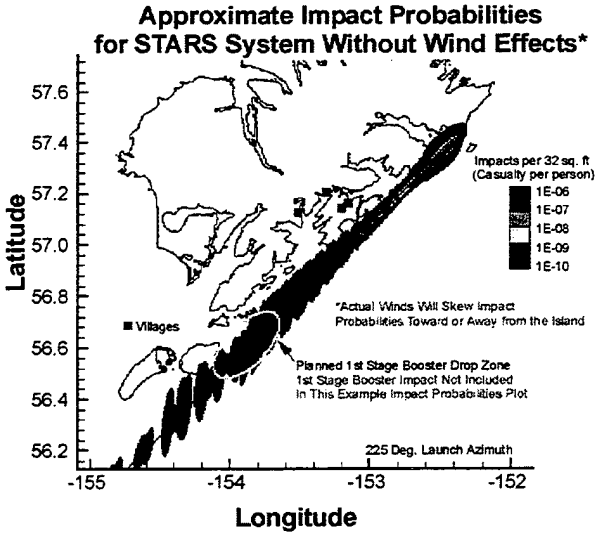
The flight termination line is a line defining the limit/boundary at which command flight termination would be initiated in order to contain the vehicle and its fragments within predetermined hazard and warning areas, such that the risk to personnel is within the RCC Standard 321-00 limits.

Flight Safety

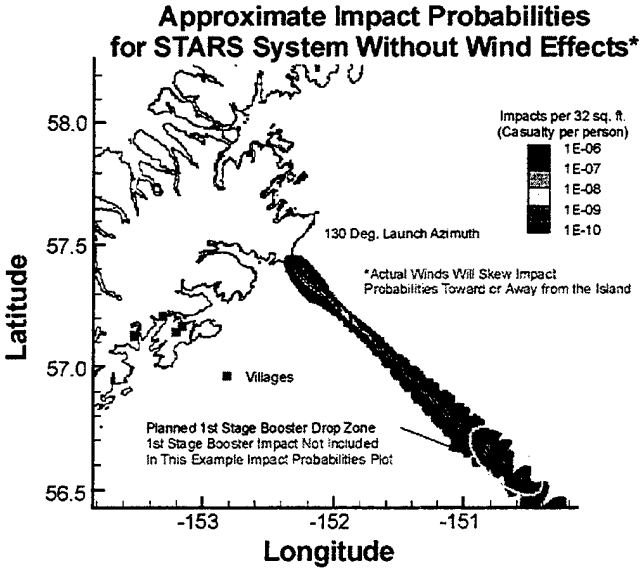
The United States Coast Guard (USCG) is the coordinating office for launch hazard area clearance. The following figures show the impact probabilities, for the proposed STARS launch along a 225-degree trajectory and a 130-degree trajectory.

The USCG typically employs the following resources to ensure public safety:

- 1 USCG Cutter, which patrols extended launch area and coordinates clearance efforts.
- 1 C-130
- 1 Helo- (ready on deck)
- 2 Boundary Boats



225° Launch Area Clearance Scenario



130° Launch Area Clearance Scenario

Flight Termination

The Missile Flight Safety Officer will coordinate mitigation procedures for missile flight safety and missile flight termination procedures. The Missile Flight Safety Officer will be certified by the NAWCWD Safety Office and have the following responsibilities and employable resources:

- Coordinates with launch contractor and the Federal Aviation Agency on:
  - Range safety operations procedure
  - Destruction criteria
  - Missile Flight Path
- Monitors Missile Flight with:
  - 1-kW flight termination transmitter w/high gain antenna
  - Dual independent system
    - 8-foot dish mobile antenna
    - Remote Area Safety Aircraft
  - Telemetry station at Cordova, AK

PUBLIC INFORMATION MEETING

on the

NORTH PACIFIC TARGETS PROGRAM

Activities at the Kodiak Launch Complex

30 November 2000

Space and Missile Defense Command

The Ballistic Missile Targets Joint Project Office and the U.S. Army Space and Missile Defense Command, as part of the National Environmental Policy Act process, are conducting a public information meeting concerning the proposal to launch the Strategic Targets System missile from the Kodiak Launch Complex. The public is encouraged to attend and provide comments.

Kodiak High School, Kodiak, Alaska *Commons Area* *6-9 p.m.*

MEETING AGENDA

AGENDA

Information Exhibits/Informal Discussion — Open 6:00-9:00 pm

- National Environmental Policy Act Process/ Environmental Resources
- Strategic Target System
- North Pacific Targets Program
- Ground and Flight Safety

HOW YOU CAN BE HEARD

1. **If you'd like to make a written comment:**
   A. You may hand in prepared comments at the registration/comment desk.
   B. You may use the "Written Comment Sheet" available at the registration/comment desk.
   C. You may mail comments to:
      SMDC-EN-V, Mr. Thomas Craven
      U.S. Army Space and Missile Defense Command
      P.O. Box 1500
      Huntsville, AL 35807-3801
   D. You may e-mail comments to: tom.craven@smdc.army.mil
   E. You may fax comments to: (256)-955-5074

2. **If you are unable to provide a written comment:**
   A. Please sign up to speak at the registration table. A tape recorder will be provided.
   B. When speaking, please state your name and any organization you are representing.

To ensure that your issues are addressed in the Final EA, your comments must be post-marked or faxed by 15 December 2000.

AVAILABLE INFORMATION

Information about the proposed North Pacific Targets Program can be gathered from the following sources:

Fact Sheets

(Available at the Public Meeting or on the Internet)

- National Environmental Policy Act (NEPA) Process
- Environmental Resources
- Kodiak Launch Complex
- Purpose and Need, Description of Proposed Action and Alternatives
- Public Safety and Facilities Access
- Ground and Flight Safety

Telephone Number

For the following information, call (256) 955-1533:
- Where written comments can be sent
- Where additional information can be obtained
- To request a copy of the Final EA

Internet

Information concerning the North Pacific Targets Program can be obtained from the web site: http://www.huntsville.edaw.com/northpacific. Fact sheets are currently available for view on the web site listed above. The Final EA will also be available when completed.

How You Can Receive the Final EA

Fill out a request card and return to the drop box at the registration table, call the number above and leave name and mailing address, or contact:

SMDC-EN-V, Mr. Thomas Craven
U.S. Army Space and Missile Defense Command
PO Box 1500
Huntsville, AL 35807-3801
(256) 955-1533

NEWSPAPER ADVERTISEMENT for KODIAK, ALASKA

INVITATION TO NORTH PACIFIC TARGETS PROGRAM PUBLIC INFORMATION SESSION

The Ballistic Missile Targets Joint Project Office of the U.S. Army Space and Missile Defense Command invites the public to attend an information session on 30 November 2000 at the Kodiak High School Commons Area.

The purpose of this meeting is to provide you with information on activities proposed by the U.S. Army Space and Missile Defense Command for the Kodiak Launch Complex. The session will also give you an opportunity to assist in identifying pertinent environmental issues for analysis within the North Pacific Targets Environmental Assessment (EA).

The public, interested agencies, and media are invited to attend at any time between the hours of 6:00 to 9:00 p.m.

SMDC-EN-V, Mr. Thomas Craven
U.S. Army Space and Missile Defense Command
PO Box 1500
Huntsville, AL 35807-3801

Interested parties can view additional information on the internet at
http://www.huntsville.edaw.com/northpacific

NEWS RELEASE

ARMY TO HOLD PUBLIC INFORMATION SESSION

The Ballistic Missile Targets Joint Project Office (BMTJPO) of the U.S. Army Space and Missile Defense Command will hold a public information session November 30, 2000, in Kodiak, Alaska. The session has two purposes: (1) to provide information on the proposed North Pacific Targets Program and (2) to receive information on pertinent environmental issues to be analyzed in an environmental assessment (EA).

The public, local and State government officials, interested agencies, and the news media are invited to attend any time between 6:00 and 9:00 p.m. at the Kodiak High School Commons Area.

The North Pacific Targets Program proposes to launch up to eight Strategic Target System missiles a year for the next five years at a minimum. Up to four a year would be launched from the Kodiak Launch Complex (KLC), Kodiak Island, Alaska and up to four others from the Kauai Test Facility (KTF) at the Pacific Missile Range Facility (PMRF), Kauai, Hawaii.

The purpose of the proposed launches would be to provide targets with more realistic trajectories and larger, more diverse payloads than currently available, to test North American sensors. They would also be used for other sensor and interceptor testing.

The proposed launches from KLC could be in three directions: (a) southeast, along the west coast of Canada and the United States into the Broad Ocean Area (BOA) off Mexico; (b) southwest, into the BOA north of U.S. Army Kwajalein Atoll/Kwajalein Missile Range; and (c) south, into the BOA north of PMRF.

The proposed launches from KTF would fly east-northeast, into the BOA off the northwest coast of the United States. The environmental effects at KTF of launching the Strategic Target System have already been analyzed in previous environmental documents. Consequently, the EA analysis of the proposed North Pacific Targets Program launches from KTF will focus on the potential environmental effects in the BOA, and a public information session is not planned in Hawaii.

The Final EA is expected to be made available for public review by late February 2001, together with the decisionmaker's determination. If the determination is a Finding of No Significant Impact, a decision to proceed with the proposed program would be expected by late March.

Point of contact is Mr. Thomas Craven at 256-955-1533. Additional information is also available at http://huntsville.edaw.com/northpacific.

###

U.S. ARMY SPACE AND MISSILE DEFENSE COMMAND

INFORMATION FOR MEMBERS OF CONGRESS

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Point of contact is Mr. Thomas Craven at 256-955-1533. Additional information is also available at http://huntsville.edaw.com/northpacific.

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Strategic Targets Product Office

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Federal

Program Manager, National Missile Defense Program Office,
ATTN: JNDA (Mr. Jack Boswell/Mr. Eric Sorrells)
Huntsville, AL

U.S. Army Space and Missile Defense Command
SMDC-LC, SMDC-TC-WS, SMDC-EN-V, SMDC-EN-I
Huntsville, AL

ALASKA

Federal

Alaskan Command
Elmendorf AFB, AK
ATTN: J74 (MAJ Les Kodlick), J421 (James Spell)

Terry Antrobus
U.S. Fish and Wildlife Service
Anchorage, AK

Lari Belisle
FAA Anchorage
Anchorage, AK

Judith Bittner
State Historic Preservation Officer
Anchorage, AK

LCDR Greg Busch
Commander (ppa)
U.S. Coast Guard
Juneau, AK

CDR Brubaker
Commander (dl)
U.S. Coast Guard
Juneau, AK

Clarence Goward, AAL-536
FAA Anchorage, AK

The Honorable Frank H. Murkowski
United States Senator
Anchorage, AK

Michael Payne
Assistant Regional Administrator
For Protected Resources
National Marine Fisheries Service
Juneau, AK

Ann Rappoport
Field Supervisor
U.S. Fish and Wildlife Service
Anchorage, AK

Brad Smith
National Marine Fisheries Service
Anchorage, AK

The Honorable Ted Stevens
United States Senator
Anchorage AK

LCDR Mike Woolard
Commanding Officer
U.S. Coast Guard
Juneau, AK

The Honorable Don Young
Representative in Congress
Anchorage, AK

State

Alaska Resources Library & Information Services
Anchorage, AK

Alaska State Library
Anchorage, AK

The Honorable Alan Austerman
State Senator
Juneau, AK

Rex Blazer, Project Analysis
Office of the Governor
Juneau, AK

The Honorable Tony Knowles
Governor of Alaska
Juneau Office
Juneau, AK

Pat Ladner
Alaska Aerospace Development Corporation
Kodiak, AK

Maureen McCrea
Division of Governmental Coordination
Anchorage, AK

The Honorable Gary Stevens
State Representative
Kodiak, AK

University of Alaska, Anchorage
Consortium Library
Anchorage, AK

Local

A. Holmes Johnson Memorial Library
Kodiak, AK

The Honorable Tuck Bonney
Kodiak Island Borough Deputy Mayor
Kodiak, AK

The Honorable Carolyn L. Floyd
City of Kodiak Mayor
Kodiak, AK

Linda L. Freed
City Manager - City of Kodiak

Joe Hart
Fire Chief
Kodiak Alaska

Kodiak Island Borough Emergency Management Office
Kodiak, AK

Kodiak Library
Kodiak, AK

Stacy Studebaker
Kodiak Rocket Launch Information Group
Kodiak, AK

The Honorable Gabrielle Le Doux
Kodiak Island Borough Mayor
Kodiak, AK

Dr. Bradley G. Stevens
Kodiak Fisheries Research Center
Kodiak, AK

Private

William Anderson

Janet Axell

Daniel F. Barone

Wendy Beck

Chris Berns

Wendy Black

RJ Blaschka

Dr. Gary Carver

Ron Cecarregui

Glenn Dick

Don Dumin

Rick Ellingson

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Harvey Goodell

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Susanne Hancock

Carolyn Heitman

Ken Hopkin

Steve Hunt

Bobbie Ivanoff

Bernie Karl

Tom Kjera

Dave Krom

Shelly Lawson

Rick MacIntosh

Jack McFarland

Winn Mete

Mike Milligan (Executive Summary only)

Elizabeth Odell

Susan Payne

Karren Rasmussen

Mike Sirofchuck

Haus Tschersich

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J.M. Willis

Dave Woodruff

Carrie Worton

CALIFORNIA

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Naval Air Warfare Center Weapons Division
ATTN: Robert Nowak, Alex Stone
Point Mugu, CA

HAWAII

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National Marine Fisheries Service
Honolulu, HI

Pacific Missile Range Facility

State

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Director, Ballistic Missile Defense
Organization
ATTN: TERC (Mr. Crate Spears)
Arlington, VA

Lyn Carroll
PEO (TSV)

Defense Technical Information Center
Ft. Belvoir, Virginia

Local

Pamela Schanel
ICF Consulting

Private

Todd Stribley

WASHINGTON

Federal

James W. Baliger
Regional Director
National Marine Fisheries Service
Seattle, WA

WASHINGTON, D.C.

Federal

Director, Ballistic Missile Defense
Organization
ATTN: GC (LTC Karen Judkins)/
EA (Lt Col Rick Lehner)
Washington, DC

U.S. Department of Transportation
Nick Himaras
Washington, DC

APPENDIX B
CORRESPONDENCE

STATE OF ALASKA

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DIVISION OF GOVERNMENTAL COORDINATION

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PH: (907) 269-7470/FAX: (907) 561-6134

CENTRAL OFFICE
P.O. BOX 110030
JUNEAU, ALASKA 99811-0030
PH: (907) 465-3562/FAX: (907) 465-3075

PIPELINE COORDINATOR'S OFFICE
411 WEST 4TH AVENUE, SUITE 2C
ANCHORAGE, ALASKA 99501-2343
PH: (907) 271-4336/FAX: (907) 272-0690

January 18, 1996

4A43-2.1

Dave Sadlowski
Alaska Aerospace
Development Corp.
3601 C Street, Suite 1400
Anchorage, AK 99503

Dear Mr. Sadlowski:

QA Filed

Subject: FINAL CONSISTENCY DETERMINATION
Narrow Cape 1
STATE I.D. NUMBER AK 9410-14AA

The Division of Governmental Coordination (DGC) has completed coordinating the State's review of your project for consistency with the Alaska Coastal Management Program (ACMP). On December 22, 1995 you were issued a revised proposed consistency determination for your project. The project is to construct, pursuant to AADC's enabling statute, AS 14.40.861 and 14.40.866, a rocket launch complex at Narrow Cape, Kodiak, Alaska. In furtherance of the goals of the Commercial Space Launch Act, 49 U.S.C. 70101 et seq, the Kodiak Launch Complex (KLC) will provide commercial users, universities, corporations, the Department of Defense and NASA with a high inclination orbital launch facility. The KLC will provide cost effective, priority, all-weather launch capability as well as the necessary security capability, and flexibility required by national security and commercial payloads in the small to medium category. The KLC infrastructure at Narrow Cape includes the following principal elements: 1) Launch Control and Management Center; 2) Payload Processing Facility; 3) Integration and Processing Facility with integral Spacecraft and Assemblies Transfer Facility; 4) Launch Pad; 5) Range Instrumentation; 6) Communications; 7) Satellite Command and Control Ground Station Support; and 8) Support Infrastructure.

Roads, power, water and other support provisions and infrastructure upgrades are planned. Approximately one mile of Pasagshak Point Road will be improved to access the site adjacent to Narrow Cape. Approximately one mile of additional road will be required to access the new facilities. The KLC water requirements will be provided by a tank farm drawing from East Twin Lake. A pumping station will be provided where required. Power will be brought to the site over new 24,900 volt power lines and pad mounted distribution transformers. New site power distribution will be provided to all facilities. Back-up power will be by generator. Communications will interface point to point with all facilities.

01-A35LH

The project location is sections 3, 4, 5, 6, 9, 31, 32, 33, 34, T.31 S., R. 19 W., Seward Meridian, Narrow Cape, Kodiak, Alaska, state land leased to AADC as an agency of the state of Alaska.

This final consistency determination, developed under 6 AAC 50, applies to the following State and federal authorizations:

U.S. Army Corps of Engineers (COE) - Section 404 Permit (4-940276)

Alaska Department of Natural Resources, Division of Water & Mining (DNR, DOWM) - Water Use Permit (LAS 19994)

Alaska Department of Environmental Conservation (DEC) - Certificate of Reasonable Assurance

Alaska Department of Fish and Game (DFG) - Fish Habitat Permit

This project is also authorized under an Interagency Land Management Assignment with the Alaska Department of Natural Resources, Division of Land (ADL 226285).

Your project was reviewed for consistency by the Alaska Departments of Natural Resources, Environmental Conservation, and Fish and Game, and the Kodiak Island Borough Coastal District. Based on modifications to your project that represent a consensus between you and the State, as provided for under 6 AAC 50.070(k), the State concurs with your certification that the project is consistent with the ACMP.

These modifications will appear as stipulations on the State permit noted:

1. The DEC will work with AADC to ensure that required equipment and procedures utilizing effective, current technology for limiting emissions and effluents, and for handling, cleanup, and disposal of oil and hazardous materials are on site.

RATIONALE: This stipulation is required to meet Air and Water Quality Policy#2. Stipulation #1 is necessary to balance the competing goals of industrial development and resource enhancement.

2. Periodic soil and water sampling reports will be sent to DEC (Air Quality and Water Quality Departments) to detect changes in the existing soil and/or water.

RATIONALE: This stipulation is necessary to monitor for any potential degradation of existing conditions of the soil and water.

3. Methods are implemented to filter or settle out suspended sediments from all construction related wastewater prior to its direct or indirect discharge into any natural body of water for protection against water quality degradation.

4. Prior to construction, a silt fence shall be installed on a line parallel to and within 5 feet of the proposed roadway toe of slope within all areas of the wetlands containing standing water that is connected to any natural body of water. This structure shall be installed and maintained to impede sediment or silt laden water from entering the water body. The silt fence shall remain in place until the roadway side slope has been stabilized against erosion.

RATIONALE: Stipulations 3 and 4 are necessary to protect water quality by minimizing erosion and preventing introduction of sediment into the water environment.

5. Material such as sorbent pads or booms are to be available on-site to contain and cleanup any petroleum product spilled as a result of construction activity.

RATIONALE: This stipulation is necessary to protect against the destruction of important habitat by the accidental discharge of a toxic material.

These stipulations will be placed on the DEC Certificate of Reasonable Assurance.

These five modifications are necessary to ensure consistency with the ACMP Habitat Standard (6 AAC 80.130), the Air, Land and Water Quality Standard (6 AAC 80.140), and the KIB Air and Water Quality policy.

As provided under 15 CFR 930.64(c), federal authorization of your project will be made with the full understanding that your original project proposal has been modified as described above.

The Kodiak Island Borough does not have the expertise available to complete a comprehensive environmental review of the KLC project. They are relying, for this project as they have for many others, on the expertise of State and federal agencies to ensure that the environmental impacts of the KLC project are adequately and appropriately reviewed.

Specifically, in this case, they are relying on the technological expertise of the DEC, to review and evaluate the technical information they anticipate being produced by the applicant, to ensure that the air and water quality of the Kodiak Island Borough is protected. Based on the Air and Water Quality policies contained in the Kodiak Island Borough Coastal Management Plan, they recommend that the consistency determination for the KLC be subject to the stipulations listed above. The Kodiak Island Borough (KIB) believes that the KLC is a "use of State concern" and that it meets the general intent of the KIBCMP, however the identified stipulations are necessary to ensure that the KLC project balances the competing goals of "industrial development and resource enhancement".

KIB further understands that because of the innovative nature of this project, that there may not be specific air or water quality standards against which to measure the operational components of the project. However, DEC needs to provide adequate review to accomplish their mission "to prevent, monitor, and control emissions into the air and water to protect the public health and environment," as they review the KLC project.

One concern expressed was that AADC has stated that up to 20 launches per year may be needed in the future. AADC states that the market can not hold more than 9 launches per year at this time. Since this is the case, if expansion of the facility is required, a modification review will be necessary.

The State reserves the right to enforce compliance with this final consistency determination if the project is changed in any significant way, or if the actual use differs from the approved use contained in the project description. If appropriate, the State may amend the State approvals listed in this final consistency determination.

If changes to the approved project are proposed prior to or during its siting, construction, or operation, you are required to contact this office immediately to determine if further review and approval of the revised project is necessary.

Other Concerns/Advisories:

Although AADC is provided with an exemption from certain local regulation under AS 14.40 876, AADC voluntarily submitted an application to the Kodiak Island Borough for a conditional use permit (CUP) from the KIB, pursuant to Title 17 (Zoning) of the Borough Code. The KLC is proposed to be located on property zoned C--Conservation and conditionally permitted uses in this zoning district include "Transportation and utility facilities not otherwise permitted and not otherwise used in conjunction with permitted uses...". The KIB Planning and Zoning Commission held a public hearing on the CUP application for the KLC project on October 18, 1995 and subsequently made a decision to grant the CUP, subject to one condition, for the KLC.

The decision to grant the CUP was subject to a reconsideration motion filed by a Commissioner, and the motion to reconsider the decision to grant the CUP was discussed by the Commission at their regular November meeting, held on November 15, 1995. The motion to reconsider the decision failed at that meeting and so the original motion to grant the CUP stands.

As noted earlier, the Commission granted a CUP for the KLC subject to one condition. That condition is: "this conditional use permit is contingent upon the review and approval of the Kodiak Launch Complex Project by applicable federal and State permitting agencies." The staff report accompanying the request commented that "environmental impacts of KLC's construction and operation will be reviewed and permitted by a variety of federal and State agencies."

In addition, in support of the CUP, the Commission adopted the following as part of their findings:

> "Conditioning this CUP upon the review and approval of the KLC by applicable federal and State permitting agencies will assure that potential environmental concerns are addressed by those with the appropriate expertise.....the special district regulations of the Conservation zoning district (KIBC 17.13.090) concerning impacts on the natural environment and preservation of natural features specific to vegetation coverage, drainage patterns, erosion, and water quality and flow appear to have been addressed in the siting and design of the project's structures. Further environmental review will be conducted by federal and State permitting agencies with specific expertise in these issues."

As part of the CUP review process, KIB Community Development Department staff, also typically review projects for consistency with the KIBCMP. While such a review was completed for the KLC project, staff failed to include in the review all the applicable district policies. This oversight is corrected in this correspondence, which addresses all the applicable KIBCMP policies. This is appropriate, since the coastal consistency determination for a project subject to State and federal permits is issued by DGC on behalf of the State of Alaska.

Based on staff review of the KIBCMP, the following KIBCMP specific use policies may apply to this project:

- *Industrial Development (reviewed as part of the CUP)
- *Recreation, Tourism, and Natural Setting
- *Transportation and Utility Routes
- *Coastal Access
- *Resource Enhancement and Protection
- *Air and Water Quality

KIB further understands that because of the innovative nature of this project, there may not be specific air or water quality standards against which to measure the operational components of the project. However, DEC needs to provide adequate review to accomplish their mission "to prevent, monitor, and control emissions into the air and water to protect the public health and environment," as they review the KLC project.

DFG will issue a Fish Habitat Permit for the culvert replacement at station 106.55 with the addition of 6 stipulations. DFG also notes that the road work included under this review does not incorporate all of the road improvements that may be required to provide safe and serviceable access to the rocket launch facility. Given that fish bearing waters may be affected by other project-related road improvements it would be beneficial to identify other agency responsibilities for planning and conducting such road repair/upgrade work.

If cultural or paleontological resources are discovered as a result of this activity, we request that work which would disturb such resources be stopped and that the State Historic Preservation Office (762-2626) and the U.S. Army Corps of Engineers (COE) (753-2712) be contacted immediately so that consultation per section 106 of the National Historic Preservation Act may proceed.

The State anticipates that AADC will be working with the U.S. Fish and Wildlife Service, as well as National Marine Fisheries, to address any environmental concerns related to effects of the operation on marine mammals and birds.

Concerns expressed in response letters to the draft Environmental Assessment (EA) review will be forwarded to AADC and the Federal Aviation Administration, Office of Commercial Space Transportation.

Please be advised that although the State has found your project consistent with the ACMP, based on your project description and any stipulations contained herein, you are still required to meet all applicable State and federal laws and regulations. Your consistency determination may include reference to specific laws and regulations, but this in no way precludes your responsibility to comply with other applicable laws and regulations.

By a copy of this letter we are informing the COE of our determination.

If you have questions regarding this determination, please contact me at 269-7474.

Sincerely,

Faye E. Heitz

Faye E. Heitz
Project Review Coordinator

cc: Linda Freed, KIB
Gary Saupe, DEC
Kellie Litzen, DNR, DOWM
Ali Iliff, DNR, DOL
Wayne Dolezal, DFG
Tim Smith, DNR, SHPO
Scott Lytle, DEC
James Freschione, DEC
Nick Himaras, FAA-Office of Associate Administrator for Commercial Space Transportation, Licensing and Safety Division, 400 7th Street, S.W., Room 5402A, Washington, D.C., 20590
John Pfeifer, Kodiak Chamber of Commerce, PO Box 1485, Kodiak, AK 99615
Stacy Studebaker and Mike Sirofchuck, PO Box 980, Kodiak, AK 99615
Mary Forbes, Kodiak Audubon Society, PO Box 1756, Kodiak, AK 99615
Robert C. Pfutzenreuter, PO Box 1740, Kodiak, AK 99615
Cliff Stone, PO Box 5550, Chiniak, AK 99615
Hans U. Tschersich, 1915 E. Rezanof Drive, Kodiak, AK 99615
Marion Stirrup, PO Box 1694, 1610 Ismailov, Kodiak, AK 99615
Ray Jean Blaschka, PO Box 649, Kodiak, AK 99615
Tia Leber, 1211 E. Rezanof Drive, Kodiak, AK 99615
Eric Munk, PO Box 2940 Kodiak, AK 99615
Richard A. MacIntosh, 909 Mission Road, Kodiak, AK 99615
Stephen Burnside, Chief of Staff, Kodiak Island Hospital, Kodiak, AK 99615
Fran Bennis, Alaska Marine Conservation Council, PO Box 101145, Anchorage, AK 99510

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Department of Energy
Albuquerque Operations Office
Kirtland Area Office
PO Box 5400
Albuquerque, New Mexico 87185-5400

SEP 0 5 2000

Edwin P. Janasky
Colonel, U. S. Army
Deputy Chief of Staff, Engineer
Department of the Army
U.S. Army Space and Missile Defenses Command
P. O. Box 1500
Huntsville, Alabama 35807-3801

Dear Col. Janasky:

This letter is in response to your letter of August 25, 2000 regarding the preparation of an Environmental Assessment for the North Pacific Targets Program. The proposed action, as described in your correspondence, does include assistance from the Department of Energy, Sandia National Laboratories, Kauai, and use of Department of Energy facilities at the Kauai Test Facility. Therefore, the Department of Energy, in accordance with the National Environmental Policy Act (NEPA), and the Council on Environmental Quality, is willing to be a cooperating agency for the preparation of this EA. My point of contact for this effort is Susan Lacy, Kirtland Area Office, NEPA Compliance Officer. Ms. Lacy can be reached at (505) 845-5542.

George K. Lasker

for Michael J. Zamorski
Area Manager
Kirtland Area Office

cc:
R. Hay, SNL 15419, MS 0315
A. Lopez, SNL 15419, MS 0315
T. Wolff, SNL 12650, MS 1313
J. Bonaguidi, SNL 7131, MS 1042

DEPARTMENT OF THE ARMY
U.S. ARMY SPACE AND MISSILE DEFENSE COMMAND
POST OFFICE BOX 1500
HUNTSVILLE, ALABAMA 35807-3801

NOV 17 2000

REPLY TO ATTENTION OF

Deputy Chief of Staff,
Engineer

Ms. Judith E. Bittner
State Historic Preservation Officer
550 W 7th Avenue, Suite 1310
Anchorage, Alaska 99501-3565

Dear Ms. Bittner:

In compliance with the National Environmental Policy Act (NEPA) and the Council on Environmental Quality regulations implementing NEPA, the U.S. Army Space and Missile Defense Command (USASMDC) is preparing an Environmental Assessment (EA) in support of the North Pacific Targets Program.

The purpose of the North Pacific Targets Program would be to test North American sensors by launching targets from the Kodiak Launch Complex (KLC), Kodiak Island, Alaska along the west coast of Canada, the United States, Mexico, and from the Kauai Test Facility (KTF) at the Pacific Missile Range Facility (PMRF), Kauai, Hawaii toward the Broad Ocean Area (BOA) off the northwest coast of the United States. The program would also provide target alternatives to the U.S. Army Kwajalein Atoll and PMRF for sensor and intercept testing programs. The Strategic Target System would provide targets that fly more realistic trajectories and carry larger and more diverse payloads than presently available. The EA will describe and address the potential environmental impacts of transporting and launching up to four Strategic Target System missiles per year from the KLC and up to four Strategic Target System missile launches per year from the KTF over a minimum period of 5 years.

The Strategic Targets Product Office (STPO) within the Ballistic Missile Targets Joint Project Office of USASMDC is responsible for providing the target launch system. The STPO proposes to increase the launch capability of the Strategic Target System by providing a launch capability from KLC and adding a new trajectory after launch from KTF. The KLC is a commercial rocket launch facility operated by the Alaska Aerospace Development Corporation (AADC). The construction and operation of KLC was analyzed in an EA prepared by the Federal Aviation Administration (FAA) (*Environmental Assessment of the Kodiak Launch Complex*, 1996). Missile launches from the KLC have

also been analyzed by the Air Force in the 1997 *Environmental Assessment for U.S. Air Force atmospheric interceptor technology Program* and the 2000 *Draft Environmental Assessment for U.S. Air Force Quick Reaction Launch Vehicle.*

The Strategic Target System target would continue to be launched from the KTF to the BOA near the U.S. Army Kwajalein Atoll in the Marshall Islands. These activities were analyzed in an EA in 1990 (*Strategic Target System (STARS) Environmental Assessment*) and a subsequent environmental impact statement (EIS) (*Environmental Impact Statement for the Strategic Target System,* 1992). An EIS in 1998 addressed the enhancement of capabilities at PMRF, to include the expansion of the range's BOA and the extension of the Strategic Target System restrictive easement until 2030 (*Pacific Missile Range Facility Enhanced Capability Environmental Impact Statement*). The proposed new trajectory after launch from KTF would be in an east and northeasterly direction toward the Seattle BOA.

The proposed launches from KLC would be along three different azimuths. The first would be in a southeasterly direction, off the west coasts of Canada, the United States, and Mexico, with impacts in the BOA off the coast of Mexico. The second azimuth would be in a southwesterly direction toward the USAKA BOA. The third azimuth would be in a southerly direction toward the PMRF BOA. Additionally, newer first and second stage A3R rocket motors would be integrated into the Strategic Target System inventory for launches. Other than a road detour being constructed by AADC outside the 750-foot explosive safety quantity distance from the KLC integrated processing facility, no additional construction or ground disturbing activities are anticipated.

The purpose of this letter is to introduce your office to the program and to initiate early consultation. It is USASMDC's desire to ensure that any concerns you might have about our efforts to identify historic properties and assess potential impacts are addressed early in the planning process. Members of the interdisciplinary team preparing the Environmental Assessment will be in Anchorage on November 28, 2000. I would like to invite you and/or your staff to attend an agency coordination meeting at the Alaska Aerospace Development Corporation offices, Suite 101, 4300 B Street, Anchorage. The meeting will begin at 9:00 a.m. The purpose of the meeting is to provide information to the agencies on the status of the proposed action and the environmental analysis and to seek comment from the agencies on issues that may need to be addressed in the EA.

In addition, we are holding an informal information meeting for the public at Kodiak High School on November 30, 2000, from 6:00 to 9:00 pm. Program personnel will be available to discuss the proposed activities and answer questions.

If you have any comments or questions regarding the North Pacific Targets program, please provide them by December 15, 2000. Please provide them to Commander, U.S. Army Space and Missile Defense Command, Attention SMDC-EN-V (Mr. Thomas M. Craven), P.O. Box 1500, Huntsville, Alabama 35807-3801 or by data facsimile at (256) 955-5074. You may contact Mr. Craven at (256) 955-1533.

Sincerely,

Edwin P. Janasky
Colonel, U.S. Army
Deputy Chief of Staff,
Engineer

Copy Furnished:
Mr. Pat Ladner, Alaska Aerospace Development Corporation,
Suite 101 4300 B Street, Suite 101, Anchorage, Alaska 99503

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services Anchorage
605 West 4th Avenue, Room 61
Anchorage, Alaska 99501-2249

in reply refer to
WAES

12/12/00

Commander, U.S. Army Space and Missile Defense Command
Attention: SMDC-EN-V (Mr. Thomas M. Craven)
P.O. Box 1500
Huntsville, AL 35807-3801

Re: North Pacific Targets Program, Kodiak Launch Complex

Dear Mr. Craven:

This responds to your request for a list of endangered and threatened species and critical habitats pursuant to section 7 of the Endangered Species Act of 1973, (16 U.S.C. 1531 et seq: 87 stat 884, as amended) (Act). The purpose of the proposed North Pacific Targets Program is to test North American sensors by launching up to four Strategic Target System missiles a year for a minimum of five years from the Kodiak Launch Complex (KLC). There are no changes to the current list of Endangered and Threatened species that you currently have for your project area. The following listed, delisted and proposed species occur in the Kodiak area:

SPECIES		ESA STATUS
Short-tailed albatross	(*Phoebastria albatrus*)	Endangered
Steller's eider (AK breeding pop)	(*Polysticta stelleri*)	Threatened

Minimizing the number of missile launches during the times when the migratory Short-tailed Albatross and Steller's eiders are using the Kodiak area would reduce the adverse effects of your project to Alaska's endangered and threatened species. This, however, is not easily done since Short-tailed Albatross primarily occur in your project area during the summer months and Steller's eiders primarily occur there during the winter months. Steller's eiders use the Kodiak area in larger numbers and on a more regular basis than Short-tailed albatross. Because disturbance of Steller's eiders by a winter launch is nearly assured and disturbance of Short-tailed albatross by a summer launch is questionable, we believe launches during the summer will minimize effects to listed species.

I have enclosed a copy of the appropriate endangered species fact sheets and a map of the proposed critical habitat for Steller's Eiders (final determination of critical habitat for Steller's eiders should be public in January, 2001) to aid you in determining whether your proposed project may adversely affect threatened or endangered species.

This letter relates only to endangered species under our jurisdiction. It does not address species under the jurisdiction of National Marine Fisheries Service, or other legislation or responsibilities under the Fish and Wildlife Coordination Act, Clean Water Act, or National Environmental Policy Act.

Thank you for your cooperation in meeting our joint responsibilities under section 7 of the Endangered Species Act. Please send the Environmental Assessment you are preparing to the attention of Terry J. Antrobus at the address listed above. If you have any questions or concerns about this consultation or the consultation process in general, please feel free to contact me at:

Phone: 907/271-1467
Fax: 907/271-2786
E-mail: Terry_Antrobus@fws.gov

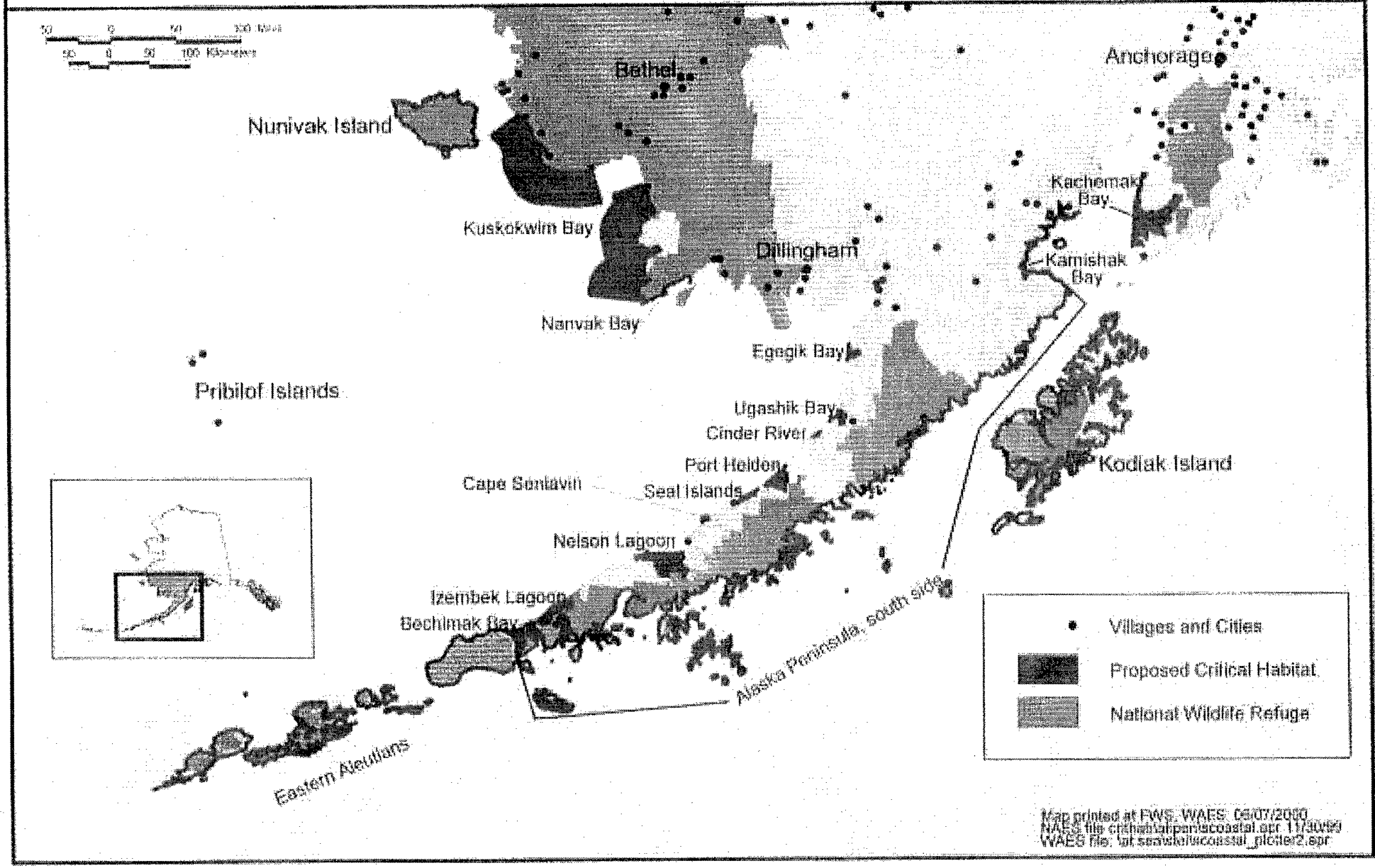
Sincerely,

Terry J Antrobus

Terry Antrobus
Endangered Species Biologist

T:\terry\Section7\Army_NPTP@Kodiak.wpd

Steller's Eider Proposed Critical Habitat
Marine Units



U.S. Fish & Wildlife Service

Threatened and Endangered Species

Steller's eider *(Polysticta stelleri)*

Other names: Iginikkauktuk (Inupiaq) Anarnissaguq (Yup'ik)

Status

Threatened - Alaska breeding population (*Federal Register*, June 11, 1997)

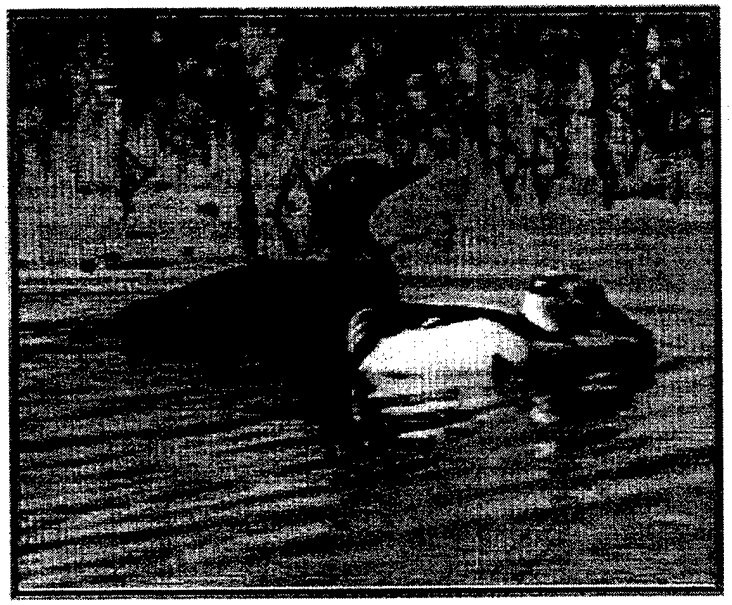
Description

Steller's eiders are the smallest of the four eider species, averaging 43-47 centimeters long (17-18.5 inches). In the winter, spring, and early summer adult males are in breeding plumage with a black back, white shoulders, chestnut breast and belly, a white head with a greenish ruff, and small black eye patches. During the late summer and fall, males are entirely mottled dark brown. Females and juveniles are mottled dark brown year-round. Adults of both sexes have a blue patch with a white border on the upper wing, similar to a mallard.

Range and Population Size

Three breeding populations of Steller's eiders are recognized, two in Arctic Russia and one in Alaska. The Russian Atlantic population breeds in western Russia and winters in the north Atlantic Ocean while the Russian Pacific population nests in eastern Russia and winters in the southern Bering Sea, including southwest Alaska. Neither Russia-breeding population is classified as endangered or threatened; only Steller's eiders that nest in Alaska are considered threatened under the Endangered Species Act.

The Alaska-breeding population historically nested in western and northern Alaska. In western Alaska, they were formerly considered locally common in portions of the Yukon-Kuskokwim Delta and were recorded nesting on Saint Lawrence Island, the Seward Peninsula, the Alaska Peninsula, and Aleutian Islands. Today, however, they are extremely scarce on the Yukon-Kuskokwim Delta and have not been found breeding elsewhere in western Alaska for several decades. The species' current breeding range in Alaska is primarily confined to the Arctic Coastal Plain between Wainwright and Prudhoe Bay, with a notable concentration near Barrow. After nesting, Alaska's Steller's eiders move into the nearshore marine waters of southwest Alaska where they mix with the much more numerous Russian Pacific population. Adults undergo a flightless molt in autumn; most molt in the protected bays and lagoons on the north side of the Alaska Peninsula, most notably Izembek and Nelson lagoons. Although some remain in molting areas throughout winter, others disperse into the coastal waters of the eastern Aleutian Islands, south side of the Alaska Peninsula, Kodiak Archipelago, and southern Cook Inlet. During spring migration, Steller's eiders concentrate in Kuskokwim and Bristol bays to await the retreat of sea ice and opening of overwater migratory routes.



Named after Georg Steller, who first described the species to western science, Steller's eiders are the smallest of the four eider species. An adult female is on the left, and an adult male is on the right. Photo by Michele M. Johnson.

Population sizes are only imprecisely known. The Russian Atlantic population is believed to contain 80- 50,000 individuals, and the Russian Atlantic population likely numbers 100-150,000. The threatened Alaska-breeding population is thought to include hundreds or low thousands on the Arctic Coastal Plain, and possibly tens or hundreds on the Yukon-Kuskokwim Delta.

Habitat and Habits

Steller's eiders are diving ducks that spend most of the year in shallow, near-shore marine waters. Molting and wintering flocks congregate in protected lagoons and bays, as well as along rocky headlands and islets. They feed by diving and dabbling for molluscs and crustaceans in shallow water. In summer, they nest in tundra adjacent to small ponds or within drained lake basins. During the breeding season they feed on aquatic insects and plants in freshwater ponds and streams.

Reasons for Current Status

Causes of the decline are unknown but several potential threats have been

identified. Lead poisoning, caused by eiders ingesting spent lead shot as they feed, may have affected Steller's eiders on the Yukon-Kuskokwim Delta. Predation by ravens, large gulls, and foxes on the breeding grounds may be increasing in areas where populations of these predators are enhanced by food and shelter provided by human activities and garbage dumps. Shipping and fishing poses the risk of oil spills and disturbance of feeding flocks in marine waters. Other possible threats include marine contaminants and changes in the Bering Sea ecosystem affecting food availability.

Distribution of Steller's eiders in Alaska and Russia.

Management and Protection

To protect Steller's eiders and their breeding, molting, and wintering habitat, the U.S. Fish & Wildlife Service recommends the guidelines below for projects and activities within the range of Steller's eiders. Adherence to these guidelines will help avoid the illegal take of Steller's eiders, and reduce the potential for adverse effects to the species. If these guidelines cannot be followed, consultation with the U.S. Fish & Wildlife Service is required for federal actions. Under federal law, all federal agencies must consult with the U.S. Fish & Wildlife Service on any project they authorize, fund, or carry out that may affect Steller's eiders or other listed species.

For projects within the breeding range of Steller's eiders:

■ Assess whether Steller's eiders are likely to use the project area for nesting or brood-rearing. Contact the U.S. Fish & Wildlife Service, Ecological Services Fairbanks Field Office for assistance. For projects conducted during the breeding season, a Service-approved survey for Steller's eiders should be conducted in the year of construction, prior to initiation of activities.

■ If Steller's eider nests are in the project area, the following activities require special permits within 200 meters (656 feet) of nest sites:

Vehicle and foot traffic from May 20 through August 1, except on existing roads.

Construction of permanent facilities, placement of fill, or alteration of habitat.

Introduction of high noise levels from May 20 through August 1, including but not limited to noise from airports, blasting, and compressor stations.

Eiders are present on breeding grounds from mid-May through mid-September, but activities any time of year may affect them through habitat modification.

For projects in coastal marine waters around the Alaska Peninsula, Kodiak Island, lower Cook Inlet, and Nunivak Island, contact the U.S. Fish & Wildlife Service, Ecological Services Anchorage Field Office for guidelines and recommendations.

Hunting of eiders is regulated under the Migratory Bird Treaty Act. In Russia, hunting of Steller's eiders has been closed since 1981, but subsistence harvest occurs in Siberia at an unknown level. In Alaska, reported subsistence harvest on the Yukon-Kuskokwim Delta has averaged 34 Steller's eiders over the past six years. Sport hunting of Steller's eiders in Alaska has been closed since 1991. Non-toxic shot must be used for all waterfowl hunting. Use of lead shot for waterfowl hunting has been prohibited throughout the United States since 1991.

References

Jones, R.D., Jr. 1963. Returns from Steller's eiders banded in Izembek Bay, Alaska. Wildfowl Trust Ann. Rep. 14:63-65.

Kertell, K. 1991. Disappearance of the Steller's eider from the Yukon-Kuskokwim Delta, Alaska. Arctic 44(3):177-87.

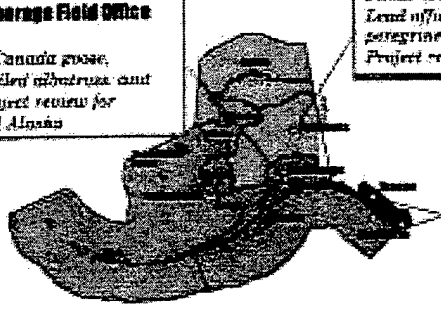
Larned, W.W., G.R. Balogh, H.A. Stehn, and W.L. Butler. 1995. The Status of Eider Breeding Populations in Alaska, 1992. Unpublished Report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 55 pp.

Lauhban, M.K. and K.A. Metzner. 1999. Distribution and diurnal behavior of Steller's eiders wintering in the Alaska Peninsula. Condor 101:804-809.

Nygard, T., B. Frantzen, and E. Svenen. 1995. Steller's eider *Polysticta stelleri* wintering in Europe: numbers, distribution and origin. Wildfowl 46:140-153.

Petersen, M. 1981. Population, feeding ecology and molt of Steller's eiders. Condor 83:256-262.

For more information on this and other threatened and endangered species, contact the U.S. Fish & Wildlife Service, Ecological Services Field Office near you.



Ecological Services Anchorage Field Office
Phone (907)271-2888
Lead office for Aleutian Canada goose, spectacled eider, short-tailed albatross and Aleutian shield-fern. Project review for western and southcentral Alaska

Ecological Services Fairbanks Field Office
Phone (907)456-0203
Lead office for Steller's eider, American peregrine falcon, and Eskimo curlew. Project review for northern Alaska

Juneau Fish and Wildlife Service Office
Phone (907)586-7240
Ketchikan Sub-office, phone (907)225-9691
Status review for old-growth forest species in southeast Alaska

U.S. Fish & Wildlife Service
1 800/344 WILD
http://www.fws.gov

February 2000

Threatened and Endangered Species

Short-tailed Albatross *(Phoebastria albatrus)*

Status
Endangered throughout its range except in the United States (*Federal Register*, June 2, 1970; July 25, 1980). Proposed endangered throughout its range, including the United States (*Federal Register*, Nov. 2, 1998). The final rule for this proposal is expected to be published by August 1, 2000.

Description
With a wingspan of over 2 meters (over 7 feet), the short-tailed albatross is the largest seabird in the North Pacific. Its long, narrow wings are adapted to soaring low over the ocean. It is best distinguished from other albatrosses by its large, bubblegum-pink bill. Young birds also have the large pink bill, but their feathers are dark chocolate brown, gradually turning white as the bird ages. Adults have an entirely white back, white or light gold head and back of neck, and black and white wings.

Range and Population Level
Historically, millions of short-tailed albatrosses bred in the western North Pacific on several islands south of the main islands of Japan. Only two breeding colonies remain active today: Torishima Island and Minami-kojima Island, Japan. Short-tailed albatrosses forage widely across the temperate and subarctic North Pacific, and can be seen in the Gulf of Alaska, along the Aleutian Islands, and in the Bering Sea. The world population is currently estimated to be about 1200 birds and is increasing.

Habitat and Habits
Like many seabirds, short-tailed albatrosses are slow to reproduce and are long-lived, with some known to be over 40 years old. They begin breeding at about 7 or 8 years, and mate for life. Short-tailed albatrosses nest on sloping grassy terraces on rugged, isolated, windswept islands. Pairs lay a single egg each year in October or November. Eggs hatch in late December through early January. Chicks remain near the nest for about 5 months, fledging in June. After breeding, short-tailed albatrosses move to feeding areas in the North Pacific. When feeding, albatrosses alight on the ocean surface and seize their prey, including squid, fish, and shrimp.

The largest of three albatross species found in the North Pacific Ocean, short-tailed albatrosses are best distinguished by their large, bubblegum-pink bill with bluish tip. Adults, like the one shown here, are black and white with a light gold head. Although younger birds can be much darker, they still have the large pink bill. Photo by Hiroshi Hasegawa.

Reasons for Current Status
Short-tailed albatrosses have survived multiple threats to their existence. During the late 1800's and early 1900's, feather hunters clubbed to death an estimated five million of them, stopping only when the species was nearly extinct. In the 1930's, nesting habitat on the only active nesting island in Japan was damaged by volcanic eruptions, leaving fewer than 50 birds by the 1940's. Loss of nesting habitat to volcanic eruptions, severe storms, and competition with black-footed albatrosses for nesting habitat continue to be natural threats to short-tailed albatrosses today.

Human-induced threats include hooking and drowning on commercial longline gear, entanglement in derelict fishing gear, ingestion of plastic debris, contamination from oil spills, and potential predation by introduced mammals on breeding islands.

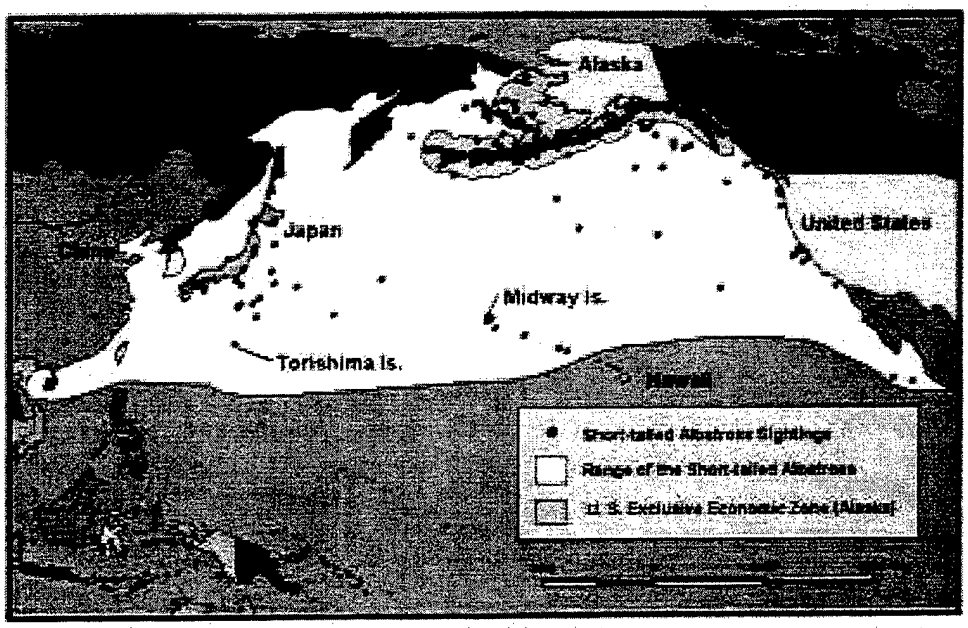
Management and Protection

The U.S. Fish & Wildlife Service is taking the final steps to extend the listing of this species to include the U.S. and its coastal waters. Short-tailed albatrosses do currently have endangered status on the high seas, in Japan, Russia, and in the Exclusive Economic Zone (EEZ) of the United States (between 3-200 miles from land). To protect short-tailed albatrosses and their habitat, Federal agencies permitting, authorizing, funding or conducting actions in the EEZ must consult with the U.S. Fish & Wildlife Service.

The government of Japan provides legal protection to the short-tailed albatross as a Special National Monument and a Special Bird of Protection. The main nesting island, Torishima, is protected as a National Monument. Japan has improved the nesting habitat on Torishima by planting grass at the colony site to stabilize soils and provide cover. Efforts to establishing a second nesting area on Torishima Island continue. The second nesting island, Minami-Kojima, is currently claimed by both Japan and China. This dispute in ownership prevents scientists from studying and helping the birds that nest there.

The Convention on International Trade in Endangered Species (CITES) prohibits commercial import or export of the short-tailed albatross or the trade of its parts across international borders.

To reduce the incidental take of seabirds by the fishing industry, including the short-tailed albatross, the National Marine Fisheries Service requires the Alaska longline fisheries to employ bird avoidance techniques such as using weighted groundlines, hanging streamer or tori lines above baited hooks, deploying baited hooks underwater, and setting gear at night. Fisherman are strongly encouraged to develop new, effective techniques to avoid catching birds. The U.S. Fish and Wildlife Service is supplying free paired streamer (tori) line kits to longline vessels that fish Alaskan waters.



Short-tailed albatross distribution and sightings from 1995-1996. The birds can be in any part of their range during any months in which open water is present.

You can help in documenting the habits of this species. Please report any sightings of short-tailed albatrosses to the U.S. Fish & Wildlife Service, Ecological Services Anchorage Field Office at (907)271-2888.

References

Harrison, C. 1979. The largest seabird in the North Pacific breeds on one small island south of Japan. Oceans 12:24-26.

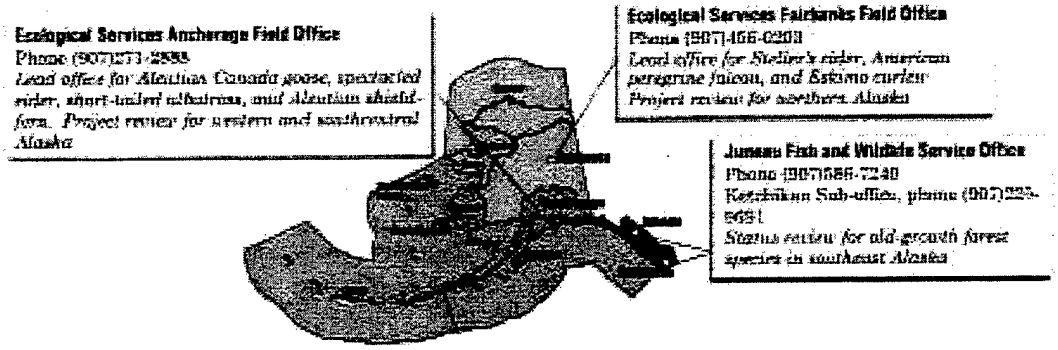
Hasegawa, H. Pers. comm.

Hasegawa, H., and A.R. DeGange. 1982. The short-tailed albatross, *Diomedea albatrus*: Its status, distribution and natural history. American Birds 36:806-814.

Sherburne, J. 1993. Status Report on the Short-tailed Albatross, *Diomedea albatrus*. Alaska Natural Heritage Program, University of Alaska Anchorage, for U.S. Fish and Wildlife Service, Anchorage, Alaska. 33 pp.

U.S. Fish and Wildlife Service. 1989. Biological Opinion on the Interim Incidental Take Exemption Program. Unpublished report. U.S. Fish and Wildlife Service to National Marine Fisheries Service. 13 pp.

For more information on this and other threatened and endangered species, contact the U.S. Fish & Wildlife Service, Ecological Services Field Office near you.



U.S. Fish & Wildlife Service
1 800/344 WILD
http://www.fws.gov

December 1999

DEPARTMENT OF THE ARMY
U.S. ARMY SPACE AND MISSILE DEFENSE COMMAND
POST OFFICE BOX 1500
HUNTSVILLE, ALABAMA 35807-3801

NOV 17 2000

REPLY TO ATTENTION OF
Deputy Chief of Staff,
Engineer

Ms. Ann Rappoport
Field Supervisor
U.S. Fish and Wildlife Service
1011 E. Tudor Road
Anchorage, Alaska 99503

Dear Ms. Rappoport:

In compliance with the National Environmental Policy Act (NEPA) and the Council on Environmental Quality regulations implementing NEPA, the U.S. Army Space and Missile Defense Command (USASMDC) is preparing an Environmental Assessment (EA) in support of the North Pacific Targets Program.

The purpose of the North Pacific Targets Program would be to test North American sensors by launching targets from the Kodiak Launch Complex (KLC), Kodiak Island, Alaska along the west coast of Canada, the United States, Mexico, and from the Kauai Test Facility (KTF) at the Pacific Missile Range Facility (PMRF), Kauai, Hawaii toward the Broad Ocean Area (BOA) off the northwest coast of the United States. The program would also provide target alternatives to the U.S. Army Kwajalein Atoll and PMRF for sensor and intercept testing programs. The Strategic Target System would provide targets that fly more realistic trajectories and carry larger and more diverse payloads than presently available. The EA will describe and address the potential environmental impacts of transporting and launching up to four Strategic Target System missiles per year from the KLC and up to four Strategic Target System missile launches per year from the KTF over a minimum period of 5 years.

The Strategic Targets Product Office (STPO) within the Ballistic Missile Targets Joint Project Office of USASMDC is responsible for providing the target launch system. The STPO proposes to increase the launch capability of the Strategic Target System by providing a launch capability from KLC and adding a new trajectory after launch from KTF. The KLC is a commercial rocket launch facility operated by the Alaska Aerospace Development Corporation (AADC). The construction and operation of KLC was analyzed in an EA prepared by the Federal Aviation Administration (FAA) (*Environmental Assessment of the*

Kodiak Launch Complex, 1996). Missile launches from the KLC have also been analyzed by the Air Force in the 1997 *Environmental Assessment for U.S. Air Force atmospheric interceptor technology Program* and the 2000 *Draft Environmental Assessment for U.S. Air Force Quick Reaction Launch Vehicle*.

The Strategic Target System target would continue to be launched from the KTF to the BOA near the U.S. Army Kwajalein Atoll in the Marshall Islands. These activities were analyzed in an EA in 1990 (*Strategic Target System (STARS) Environmental Assessment*) and a subsequent environmental impact statement (EIS) (*Environmental Impact Statement for the Strategic Target System*, 1992). An EIS in 1998 addressed the enhancement of capabilities at PMRF; to include the expansion of the range's BOA and the extension of the Strategic Target System restrictive easement until 2030 (*Pacific Missile Range Facility Enhanced Capability Environmental Impact Statement*). The proposed new trajectory after launch from KTF would be in an east and northeasterly direction toward the Seattle BOA.

The proposed launches from KLC would be along three different azimuths. The first would be in a southeasterly direction, off the west coasts of Canada, the United States, and Mexico, with impacts in the BOA off the coast of Mexico. The second azimuth would be in a southwesterly direction toward the USAKA BOA. The third azimuth would be in a southerly direction toward the PMRF BOA. Additionally, newer first and second stage A3R rocket motors would be integrated into the Strategic Target System inventory for launches.

In order to complete the NEPA process, we are requesting an informal Endangered Species Act Section 7 compliance list from your office. Enclosure 1 contains a table of threatened and endangered wildlife species that were derived from information provided by the facility and your office for previous EAs. We would appreciate your concurrence with these lists for the proposed site locations in your jurisdiction. If you desire additional species to be addressed, please let us know as soon as possible.

It is USASMDC's desire to ensure that any concerns you might have about our efforts to identify listed species and assess potential impacts are addressed early in the planning process. Members of the interdisciplinary team preparing the Environmental Assessment will be in Anchorage on November 28, 2000. I would like to invite you and/or your staff to attend an agency coordination meeting at the Alaska Aerospace Development Corporation offices, Suite 101, 4300 B Street, Anchorage.

The meeting will begin at 9:00 a.m. The purpose of the meeting is to provide information to the agencies on the status of the proposed action and the environmental analysis and to seek comment from the agencies on issues that may need to be addressed in the EA.

In addition, we are holding an informal information meeting for the public at Kodiak High School on November 30, 2000, from 6:00 to 9:00 pm. Program personnel will be available to discuss the proposed activities and answer questions.

Please review this information and provide comments by December 15, 2000. You may provide your response to Commander, U.S. Army Space and Missile Defense Command, Attention: SMDC-EN-V (Mr. Thomas M. Craven), P.O. Box 1500, Huntsville, AL 35807-3801 or by data facsimile (256) 955-5074.

If you have any questions or comments, please contact Mr. Thomas M. Craven at (256) 955-1533.

Sincerely,

Edwin P. Janasky
Colonel, U.S. Army
Deputy Chief of Staff,
Engineer

Enclosure

Copies Furnished:
Margaret Dupree, Pacific Islands Area Office, U.S. National Marine Fisheries Service, Suite 1110, 1601 Kapiolani Boulevard, Honolulu, Hawaii 96814-4700
Jeff Hughes, Regional Supervisor, Alaska Department of Fish and Game, Division of Wildlife Conservation, 333 Raspberry Road Anchorage, Alaska 99518-1599
Mr. Pat Ladner, Alaska Aerospace Development Corporation, 4300 B Street, Suite 101, Anchorage, Alaska 99503
Brad Smith, Protected Resources Management Division, U.S. National Marine Fisheries Service, Suite 43, 222 West 7th Avenue, Anchorage, Alaska 99513

Enclosure 1: Species with Federal Status Potentially Occurring in the Vicinity of Kodiak Launch Complex or within the Open Ocean Area Region of Influence

Scientific Name	Common Name	Status	
		State	Federal
Birds			
Phoebastria albatrus	Short-tailed albatross	E	E
Polysticta stelleri	Steller's eider	SSC	T
Mammals			
Balaena glacialis	Northern right whale	E	E
Balaena mysticetus	Bowhead whale	SSC	E
Balaenoptera borealis	Sei whale	-	E
Balaenoptera musculus	Blue whale	E	E
Balaenoptera physalus	Fin whale	-	E
Megaptera novaeangliae	Humpback whale	E	E
Physeter macrocephalus	Sperm whale	-	E
Eumetopias jubatus	Steller sea lion	SSC	E

- Not listed
E Endangered
SSC State Species of Special Concern
T Threatened

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, Maryland 20910

FEB 22 2001

Edwin P. Janasky
Colonel, U.S. Army
U.S. Army Space and
Missile Defense Command
P.O. Box 1500
Huntsville, Alabama 35807-3801

Dear Colonel Janasky:

Thank you for your letter concerning the presence of threatened and endangered species in the action areas associated with the North Pacific Targets Program. We have reviewed the list of species provided in your letter and offer the following comments.

1. Kodiak/North Pacific Broad Ocean Area. We concur with the list of species you presented for this area, with the following additions or qualifications:

The endangered bowhead whale occurs in waters of the Bering, Chukchi, and Beaufort Seas, but would not be expected in the Gulf of Alaska or Pacific Ocean.

There are also several species (evolutionary significant units) of Pacific salmon that have been listed as threatened, or endangered under the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*; ESA). While we would not expect these species to be affected by the proposed work, the Department of the Army should specifically consider these species when making its determinations under section 7 of the ESA. Information on these species may be obtained from the National Marine Fisheries Service web site at: http://www.nwr.noaa.gov/

Marine mammals protected under the Marine Mammal Protection Act of 1972, as amended (16 U.S.C. 1361 *et seq.*; MMPA), which are not endangered or threatened under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*), that are found in these waters include:

Harbor seal (*Phoca vitulina*)
Killer whale (*Orcinus orca*)
Harbor porpoise (*Phocoena phocoena*)
Pacific white-sided dolphin (*Lagenorhynchus obliquidens*)

Dall's porpoise (*Phocoenoides dalli*)
Baird's beaked whale (*Berardius bairdii*)
Stejneger's beaked whale (*Mesoplodon stejnegeri*)
Cuvier's beaked whale (*Ziphius cavirostris*)
Gray whale (*Eschrichtius robustus*)
Minke whale (*Balaenoptera acutorostrata*)

2. Hawaiian Islands/South Pacific Broad Ocean Area. We concur with the list of species you presented for this area, with the following additions or qualifications:

Endangered Species
Leatherback turtle (*Dermochelys coriacea*)
Hawksbill sea turtle (*Eretmochelys imbricata*)
Humpback whale (*Megaptera novaeangliae*)
Sperm whale (*Physeter macrocephalus*)
Hawaiian monk seal (*Monachus schauinslandi*)
Sei whale (*Balaenoptera borealis*)
Blue whale (*Balaenoptera musculus*)
Fin whale (*Balaenoptera physalus*)

Threatened species
Green sea turtle (*Chelonia mydas*)
Olive Ridley Sea turtle (*Lepidochelys olivacea*)
Loggerhead sea turtle (*Caretta caretta*)

Marine mammals protected under the Marine Mammal Protection Act of 1972, as amended, 16 U.S.C. 1361 *et seq.*(MMPA) (not endangered or threatened under the Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 *et seq.*), that are found in the waters off Oahu include:

Minke whale (*Balaenoptera acutorostrata*)
Blainville's beaked whale (*Mesoplodon derisirostris*)
Dwarf sperm whale (*Kogia simus*)
Arch beaked whale (*Mesoplodon carlhubbsi*)
Japanese beaked whale (*Mesoplodon ginkgodens*)
Northern Right Whale dolphin (*Lissodelphis borealis*)

Bryde's whale (*Balaenoptera edeni*)
Cuvier's beaked whale (*Ziphius cavirastris*)
Pygmy sperm whale (*Kogia breviceps*)
Melon-headed whale (*Peponocephala electra*)
Pygmy killer whale (*Feresa attenuata*)
False killer whale (*Pseudorca crassidens*)
Killer whale (*Orcinus orca*)
Short finned pilot whale (*Globicephala macrorhynchus*)
Spinner dolphin (*Stenella longirostris*)
Striped dolphin (*Stenella coeruleoalba*)

Pantropical spotted dolphin (*Stenella attenuata*)
Common dolphin (*Delphinus delphis*)
Risso's dolphin (*Grampus griseus*)
Fraser's dolphin (*Lagenodelphis hosei*)
Bottlenose dolphin (*Tursiops truncatus*)
Rough toothed dolphin (*Steno bredanensis*)
Shortbeaked common dolphin (*Delphinrus delphis*)

This letter delineates the threatened or endangered species that are known to occur in the area that may be affected by the proposed action. However our review of the information available on the action leads us to conclude that the proposed action may affect, but is not likely to adversely affect threatened or endangered species or designated critical habitat in the action area. We base this information on the low probability of an interaction between the proposed action and these species: although an interaction is possible, it is extremely unlikely to occur. As a result, further consultation on the North Pacific Targets program is not required.

Should you have further questions regarding protected species and/or the section 7 process, please contact Ms. Margaret Dupree in Hawaii (808) 973-2937, or Mr. Brad Smith in Alaska at (907) 271-5006.

Sincerely,

Donald R. Knowles
Director
Office of Protected Resources

DEPARTMENT OF THE ARMY
U.S. ARMY SPACE AND MISSILE DEFENSE COMMAND
POST OFFICE BOX 1500
HUNTSVILLE, ALABAMA 35807-3801

NOV 17 2000

REPLY TO ATTENTION OF
Deputy Chief of Staff,
Engineer

Mr. Brad Smith
U.S. National Marine Fisheries Service
222 West 7th Avenue, Suite 43
Anchorage, Alaska 99513

Dear Mr. Smith:

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The Strategic Targets Product Office (STPO) within the Ballistic Missile Targets Joint Project Office of the USASMDC is responsible for providing the target launch system. The STPO proposes to increase the launch capability of the Strategic Target System by providing a launch capability from KLC and adding a new trajectory after launch from KTF. The KLC is a commercial rocket launch facility operated by the Alaska Aerospace Development Corporation (AADC). The construction and operation of KLC was analyzed in an EA prepared by the Federal

Aviation Administration (FAA) (*Environmental Assessment of the Kodiak Launch Complex*, 1996). Missile launches from the KLC have also been analyzed by the Air Force in the 1997 *Environmental Assessment for U.S. Air Force atmospheric interceptor technology Program* and the 2000 *Draft Environmental Assessment for U.S. Air Force Quick Reaction Launch Vehicle*.

The Strategic Target System target would continue to be launched from the KTF to the BOA near the U.S. Army Kwajalein Atoll in the Marshall Islands. These activities were analyzed in an EA in 1990 (*Strategic Target System (STARS) Environmental Assessment*) and a subsequent environmental impact statement (EIS) (*Environmental Impact Statement for the Strategic Target System*, 1992). An EIS in 1998 addressed the enhancement of capabilities at PMRF; to include the expansion of the range's BOA and the extension of the Strategic Target System restrictive easement until 2030 (*Pacific Missile Range Facility Enhanced Capability Environmental Impact Statement*). The proposed new trajectory after launch from KTF would be in an east and northeasterly direction toward the Seattle BOA.

The proposed launches from KLC would be along three different azimuths. The first would be in a southeasterly direction, off the west coasts of Canada, the United States, and Mexico, with impacts in the BOA off the coast of Mexico. The second azimuth would be in a southwesterly direction toward the USAKA BOA. The third azimuth would be in a southerly direction toward the PMRF BOA. Additionally, newer first and second stage A3R rocket motors would be integrated into the Strategic Target System inventory for launches.

In order to complete the NEPA process, we are requesting an informal Endangered Species Act Section 7 compliance list from your office. Enclosure 1 contains a table of threatened and endangered wildlife species that were derived from information provided by the facility, the U.S. Fish and Wildlife Service, and your office for previous EAs. We would appreciate your concurrence with these lists for the proposed site locations in your jurisdiction. If you desire additional species to be addressed, please let us know as soon as possible.

It is USASMDC's desire to ensure that any concerns you might have about our efforts to identify listed species and assess potential impacts is addressed early in the planning process. Members of the interdisciplinary team preparing the Environmental Assessment will be in Anchorage on November 28, 2000. I would

like to invite you and/or your staff to attend an agency coordination meeting at the Alaska Aerospace Development Corporation offices, Suite 101, 4300 B Street, Anchorage. The meeting will begin at 9:00 a.m. The purpose of the meeting is to provide information to the agencies on the status of the proposed action and the environmental analysis and to seek comment from the agencies on issues that may need to be addressed in the EA.

In addition, we are holding an informal information meeting for the public at Kodiak High School on November 30, 2000, from 6:00 to 9:00 pm. Program personnel will be available to discuss the proposed activities and answer questions.

Please review this information and provide comments by December 15, 2000. You may provide your response to Commander, U.S. Army Space and Missile Defense Command, Attention: SMDC-EN-V (Mr. Thomas M. Craven), P.O. Box 1500, Huntsville, AL 35807-3801 or by data facsimile (256) 955-5074.

If you have any questions or comments, please contact Mr. Thomas M. Craven at (256) 955-1533.

Sincerely,

Edwin P. Janasky
Colonel, U.S. Army
Deputy Chief of Staff,
Engineer

Enclosure

Copies Furnished:
Margaret Dupree, Pacific Islands Area Office, U.S. National Marine Fisheries Service, Suite 1110, 1601 Kapiolani Boulevard, Honolulu, Hawaii 96814-4700
Jeff Hughes, Regional Supervisor, Alaska Department of Fish and Game, Division of Wildlife Conservation, 333 Raspberry Road, Anchorage, Alaska 99518-1599
Mr. Pat Ladner, Alaska Aerospace Development Corporation, 4300 B Street, Suite 101, Anchorage, Alaska 99503
Ann Rappoport, Field Supervisor, U.S. Fish and Wildlife Service, 1011 E. Tudor Road, Anchorage, Alaska 99503

Enclosure 1: Species with Federal Status Potentially Occurring in the Vicinity of Kodiak Launch Complex or within the Open Ocean Area Region of Influence

Scientific Name	Common Name	Status	
		State	Federal
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Polysticta stelleri	Steller's eider	SSC	T
Mammals			
Balaena glacialis	Northern right whale	E	E
Balaena mysticetus	Bowhead whale	SSC	E
Balaenoptera borealis	Sei whale	-	E
Balaenoptera musculus	Blue whale	E	E
Balaenoptera physalus	Fin whale	-	E
Megaptera novaeangliae	Humpback whale	E	E
Physeter macrocephalus	Sperm whale	-	E
Eumetopias jubatus	Steller sea lion	SSC	E

- Not listed
E Endangered
SSC State Species of Special Concern
T Threatened

DEPARTMENT OF THE ARMY
U.S. ARMY SPACE AND MISSILE DEFENSE COMMAND
POST OFFICE BOX 1500
HUNTSVILLE, ALABAMA 35807-3801

November 28,2000

REPLY TO ATTENTION OF
Deputy Chief of Staff,
Engineer

Ms. Margaret Dupree
National Marine Fisheries Service
1601 Kapiolani Blvd, Suite 1110
Honolulu, Hawaii 96814-4700

Dear Ms. Dupree:

In compliance with the National Environmental Policy Act (NEPA) and Executive Order (EO) 12114, *Environmental Effects Abroad of Major Federal Actions*, the U.S. Army Space and Missile Defense Command (USASMDC) is preparing an Environmental Assessment (EA) in support of the North Pacific Targets program. As explained below, one of the proposed actions being examined in the EA is the addition of a new trajectory after launch from the Kauai Test Facility. The launch azimuth remains the same as previously used for Strategic Target System launches but rather than turning west toward the Kwajalein Missile Range, this new trajectory turns east toward the Broad Ocean Area off the Northwest United States (see enclosure 1). It is this trajectory on which we wish to consult with the National Marine Fisheries Service.

The purpose of the North Pacific Targets program would be to test North American sensors by launching targets from the Kodiak Launch Complex (KLC), Kodiak Island, Alaska along the west coast of Canada, the United States, and Mexico and from the Kauai Test Facility (KTF) at the Pacific Missile Range Facility (PMRF), Kauai, Hawaii toward the Broad Ocean Area (BOA) off the northwest coast of the United States. The program would also provide target alternatives to the U.S. Army Kwajalein Atoll (USAKA) and PMRF for sensor and intercept testing programs. The Strategic Target System would provide targets that fly more realistic trajectories and carry larger and more diverse payloads than presently available. The EA will describe and address the potential environmental impacts of transporting and launching up to four Strategic Target System missiles per year from the KLC and up to four Strategic Target System missile launches per year from the KTF over a minimum period of five years.

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The Strategic Target System target would continue to be launched from the KTF to the BOA near USAKA in the Marshall Islands. These activities were analyzed in an EA in 1990 (*Strategic Target System (STARS) Environmental Assessment*) and a subsequent environmental impact statement (EIS) (*Environmental Impact Statement for the Strategic Target System*, 1992). An EIS in 1998 addressed the enhancement of capabilities at PMRF; to include the expansion of the range's BOA and the extension of the Strategic Target System restrictive easement until 2030 (*Pacific Missile Range Facility Enhanced Capability Environmental Impact Statement*). The proposed new azimuth from KTF would be in an east and northeasterly direction toward the Seattle BOA. The EA will analyze the effects to the ocean east of the area that was analyzed in the *Pacific Missile Range Facility Enhanced Capability Environmental Impact Statement.*

The proposed launches from KLC would be along three different azimuths. The first would be in a southeasterly direction, off the west coasts of Canada, the United States, and Mexico, with impacts in the BOA off the coast of Mexico. The second azimuth would be in a southwesterly direction toward the USAKA BOA. The third azimuth would be in a southerly direction toward the PMRF BOA. Additionally, newer first and second stage A3R rocket motors would be integrated into the Strategic Target System inventory for launches.

In order to complete the NEPA and EO 12114 process, we are requesting an informal Endangered Species Act Section 7 compliance list from your office. Enclosure 2 contains a list of marine mammals and sea turtles that may occur within Hawaiian coastal waters and in the open ocean region of influence. We would appreciate your concurrence with these lists for the proposed site locations in your jurisdiction. If you desire additional species to be addressed, please let us know as soon as possible.

Please review this information and provide comments by December 15, 2000, to Commanding General, U.S. Army Space and Missile Defense Command, Attention: SMDC-EN-V (Mr. Thomas M. Craven), P.O. Box 1500, Huntsville, Alabama 35807-3801 or by data facsimile (256) 955-5074.

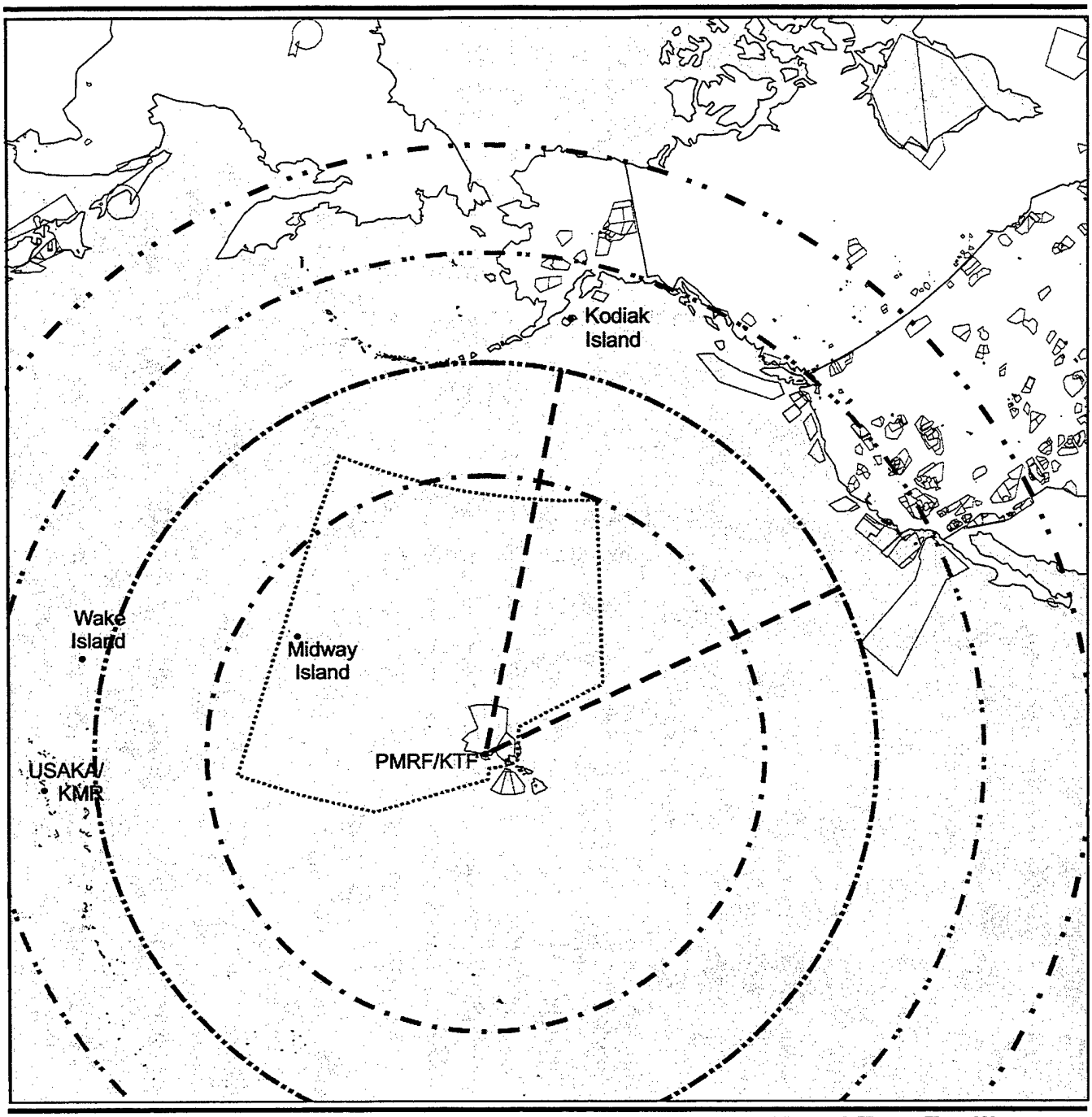
If you have any questions or comments, please contact Mr. Thomas M. Craven at (256) 955-1533.

Sincerely,

Edwin P. Janasky
Colonel, U.S. Army
Deputy Chief of Staff,
Engineer

Enclosures

Copies Furnished:
Jeff Hughes, Regional Supervisor, Alaska Department of Fish and Game, Division of Wildlife Conservation, 333 Raspberry Road, Anchorage, Alaska 99518-1599
Mr. Pat Ladner, Alaska Aerospace Development Corporation, 4300 B Street, Suite 101, Anchorage, Alaska 99503
Ann Rappoport, Field Supervisor, U.S. Fish and Wildlife Service, 1011 E. Tudor Road, Anchorage, Alaska 99503
Brad Smith, U.S. National Marine Fisheries Service, Suite 43, 222 West 7th Avenue, Anchorage, Alaska 99513



EXPLANATION

- 2,500KM Radius
- 3,500KM Radius
- 4,500KM Radius
- 5,500KM Radius
- Existing Warning Areas and Temporary Operating Areas
- Special Use Airspace
- Kauai Test Facility to BOA Northwest of North America Launch Corridor (Alternative)

USAKA/KMR = United States Army Kwajalein Atoll / Kwajalein Missile Range

PMRF/KTF = Pacific Missile Range / Kauai Test Facility

Kauai Test Facility East/North-east Trajectory: 40° Centerline

Kauai Test Facility, Hawaii

NORTH

Not to Scale

12-18-00 Trajectory_4

Enclosure 1

Enclosure 2

Marine Mammal and Sea Turtle Species with Federal Status Potentially Occurring within the Hawaii Coastal Area and in the Open Ocean Region of Influence

		Status	
Scientific Name	**Common Name**	**State**	**Federal**
Balaenoptera borealis	Sei whale	E	E
Balaenoptera musculus	Blue whale	E	E
Balaenoptera physalus	Fin whale	E	E
Megaptera novaeangliae	Humpback whale	E	E
Physeter macrocephalus	Sperm whale	E	E
Monachus schauinslandi	Hawaiian monk seal	E	E
Caretta caretta	Loggerhead sea turtle	T	NL
Chelonia mydas	Green sea turtle	T	E
Dermochelys coriacea	Leatherback sea turtle	E	NL
Eretmochelys imbricata	Hawksbill sea turtle	E	E
Lepidochelys olivacea	Olive Ridley sea turtle	T	NL

E = Endangered
T = Threatened
NL = Not Listed

U.S. Department of Transportation
United States Coast Guard

Commander
Seventeenth Coast Guard District

P.O. Box 25517
Juneau, AK 99802-5517
Staff Symbol: (dl)
Phone: (907) 463-2050
Fax: (907) 463-2054

16450
30 March 2001

Department of the Army
U.S. Army Space and Missile Defense Command
Attn: Mr. Thomas Craven
P.O. Box 1500
Huntsville, Alabama 35807-3801

Dear Mr. Craven:

I have reviewed the Comment Incorporation Summary sheet telefaxed to me this afternoon. It accurately restates the proposed revisions to the North Pacific Targets Program (NPTP) draft Environmental Assessment (EA) we discussed this morning in our teleconference. The concerns expressed in my comments on the draft EA in my letter 16450 of 28 March 2001 have all been addressed.

I concur with the revised language. The Seventeenth Coast Guard District finds that it concurs with the EA with those revisions. As I noted in my initial letter, additional comments may be forthcoming during the formal comment process from other Coast Guard commands

If you have questions please contact me at (907) 463-2055. For other communications regarding the NPTP EA please contact Ms. Merry Goodenough, environmental law branch chief, Coast Guard Maintenance & Logistics Command Pacific, Bldg 54C, Coast Guard Island, Alameda, CA , 94501-5100, telephone (510) 437-2747.

Sincerely,

M.E. TOUSLEY
Lieutenant Commander, U.S. Coast Guard
By Direction

Copy: Commander, Seventeenth Coast Guard District (ole, osr, mor, ppa)
Commander, Fourteenth Coast Guard District (dl)
Commander, Coast Guard Maintenance & Logistics Command Pacific (s, le)
Commanding Officer, Integrated Support Command Kodiak (slo)

COMMENT INCORPORATION SUMMARY

COMMENT INCORPORATOR	DATE
EDAW INC	*3/30/01*
COMMENTOR	**ORGANIZATION OF COMMENTOR**
CMDR Tousley	U.S. Coast Guard
TITLE OF DOCUMENT	**DATE OF DOCUMENT**
North Pacific Targets Program Preliminary Coordinating Draft EA (*Coordinating)*	21 February 2001

CONTRACTOR RESPONSE COLUMNS

ITEM NO.	PAGE NO.	LINE NO.	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES *(Exact wording of suggested change)*	INCORPORATED? *(Yes/No)*	HOW COMMENT WAS INCORPORATED *(If not incorporated, why?)*
1					General Comment—"...EA fails to address the impact of the NPTP on Coast Guard commands immediately proximate to the Kodiak NPTP activities. During prior launch processes there has been a considerable logistics and security support role played by the Coast Guard in Kodiak. Coast Guard airframes have been relied upon to conduct foreseeable, contractible logistics support at the expense of their availability fore primary operational missions...This misallocation of personnel and aircraft has an impact on both the Coast Guard's ability to accomplish its mission and on the health and safety of the public. Does NPTP reliance on the Coast Guard cost lives? Is it avoidable?"	Yes	The Coast Guard will concur provided resolution of these issues is included in the EA. Page 2-10, text revised to state: Prior launches from Kodiak Launch Complex have utilized Coast Guard assets to provide logistical support such as transport of boosters, payloads, and other components. The U.S. Army SMDC will contract out the logistical support function such as those mentioned above to private firms or other Federal agencies. The Coast Guard will not be utilized to provide those logistical activities. Coast Guard assistance would only be requested in an emergency or if advance notification could be provided with no impact to assets allocated to the Coast Guard's primary mission. Therefore there should be no effect on Coast Guard ability to perform mission-related activities using assets that would have been involved in logistical support. If the Kodiak Launch Complex operator, AADC, requires logistical support for their activities this would be done under the provisions and guidance of their existing Memorandum of Understanding with the U.S. Coast Guard.
2	2-10-2-12				"The Coast Guard is responsible for implementing a safety zone and dedicating resources to ensure that the exclusion	Yes	U.S. Army SMDC would be responsible for dedicating resources to ensure that the exclusion zone is in effect. SMDC would contract out to

COMMENT INCORPORATION SUMMARY

ITEM NO.	PAGE NO.	LINE NO.	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES *(Exact wording of suggested change)*	INCORPORATED? *(Yes/No)*	HOW COMMENT WAS INCORPORATED *(If not incorporated, why?)*
					zone is in effect. NAWCWD is also required to enforce the exclusion zone. Coast Guard operations related to search and rescue and fisheries law enforcement take precedence over closures of airspace and exclusion zones. On three prior launches the Coast Guard has been compelled to reallocate assets to enforce the exclusion zone away from higher priority missions because of the absence of NAWCWD enforcement tools. The Coast Guard can only affect the exclusion zone if there are sufficient assets remaining after other operational resource assignments have been made. There is no discussion of these limitations of Coast Guard exclusion zone enforcement assets. How would the NAWCWD enforce the exclusion zone enforcement assets? This possible significant environmental impact has not been assessed.		private or DoD facilities for assistance in enforcing the exclusion zone. Coast Guard assistance may be utilized on an "as available" non-interference basis and would be funded for services provided. Coast Guard assistance would only be requested in an emergency or if advance notification could be provided with no impact to assets allocated to the Coast Guard's primary mission. In the event that a search and rescue mission is required, those Coast Guard assets involved in launch support would be diverted for the mission. Launch operations would be suspended should this occur if SMDC could not find other non-Coast Guard assets to perform the functions.
3	4-4- 4-5				The discussion of the use of airspace, airways and jet routes, and airports and airfields does not address the impact of rocket launch processes on the operations of the Coast Guard Air Station. Any inability of the Air Station to access airframes for search and rescue could cost lives. This possible significant environmental impact has not been assessed.	Yes	The EA will be revised to describe the Coast Guard Air Station activities where appropriate and potential effects on the Air Station would be described. Wherever the airport activities are described in the EA as affected by vehicle operations, we would note: In the event of a search and rescue operation, hazardous activities at the airport would stop or move to allow the Coast Guard to proceed and would resume after an all clear is provided. Therefore there should be no effect to Air Station operations. In the event of a search and rescue operation requiring direct flight through the Kodiak Launch Complex, hazardous activities would stop to allow the Coast Guard to proceed and would resume after an all clear is provided.

COMMENT INCORPORATION SUMMARY

ITEM NO.	PAGE NO.	LINE NO.	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES *(Exact wording of suggested change)*	INCORPORATED? *(Yes/No)*	HOW COMMENT WAS INCORPORATED *(If not incorporated, why?)*
4	4-16-4-22	22			The discussion of health and safety impact does not address the potential interaction of Coast Guard members and their dependents with launch process. For example, transportation of the rocket fuel cells occurs along dirt roads immediately adjacent to housing facilities. Risk of accident and injury in these areas is great. Further, there is no discussion of the possibility that transmissions from the Coast Guard Communications Station could not detonate explosive materials. These possible significant environmental impacts have not been adequately assessed.	Yes	The EA will be revised at appropriate points to describe the Kodiak Coast Guard activities and personnel. At appropriate points in the EA, the following would be inserted: Transportation of the boosters from the airport to the Kodiak Launch Complex would be conducted in accordance with U.S. DOT regulations and are not anticipated to be a hazard to homes along the route, including Coast Guard housing. At an appropriate point in the EA, we will insert the following statement: The Naval Air Warfare Center, Weapons Division (NAWCWD) Point Mugu conducted a Hazards of Electromagnetic Radiation to Ordnance (HERO) study for an Air Force C-5 and a C-130 aircraft. The tests that were done included determining the shielding effectiveness of each aircraft and then determining the worst-case electromagnetic power that would be encountered on Kodiak Island. The results of those studies along with the data determined on previous Strategic Target System flights indicate that the Strategic Target System vehicles are safe from HERO hazards during transportation. Based on this study, the risk of detonation of the vehicle by activity at the Coast Guard Communication Station is negligible. Therefore there should be no effect on human safety and health for electromagnetic radiation exposure of the Strategic Target System vehicle.

U.S. Department of Transportation
United States Coast Guard

Commander
Seventeenth Coast Guard District

P.O. Box 25517
Juneau, AK 99802-5517
Staff Symbol: (dl)
Phone: (907) 463-2050
Fax:. (907) 463-2054

16450
28 March 2001

Department of the Army
U.S. Army Space and Missile Defense Command
Attn: Mr. Thomas Craven
P.O. Box 1500
Huntsville, Alabama 35807-3801

Dear Mr. Craven:

On 6 March 2001, the legal office for the Seventeenth Coast Guard District (CCGD17) in Juneau, Alaska, received your letter soliciting comments on your 28 February 2001 draft environmental assessment (EA) for the North Pacific Targets Program (NPTP) by 28 March 2001. The scope of the EA impacts the interests not only of CCGD17 but also Coast Guard commands in Kodiak, Alaska, Honolulu, Hawaii, and Alameda, California. The draft EA was copied and forwarded to those commands upon receipt. This letter addresses only the comments of the CCGD17. Time did not allow for a combined Coast Guard response. As we discussed, the other Coast Guard commands may comment, as necessary, during the formal comment period.

From a CCGD17 perspective, the draft EA is generally lacking in that it fails to address the impact of the NPTP on Coast Guard commands immediately proximate to the Kodiak NPTP activities. The Coast Guard base in Kodiak is the single largest Coast Guard facility with a dozen commands, nearly two thousand active duty personnel and a like number of dependants on the facility. The missions of these commands are essential to human health and the environment in Alaska. Commands at Kodiak are responsible for search and rescue for the entire Aleutian Island chain and the waters off of south central and western Alaska. These commands are also responsible for fisheries law enforcement in the North Pacific, Gulf of Alaska, and Bering Sea.

During prior launch processes there has been a considerable logistics and security support role played by the Coast Guard in Kodiak. At the expense of their availability for primary operational missions, Coast Guard airframes have been relied upon to conduct foreseeable, contractable logistics support. A complete assessment of the Coast Guard's roles and missions in Kodiak and a more thorough assessment of the available non-Coast Guard logistics support assets in the EA would address this potentially costly reliance. Having a Coast Guard helicopter move rocket launch gear means it isn't available to do search and rescue. This misallocation of personnel and aircraft has an impact on both the Coast Guard's ability to accomplish its missions and on the health and safety of the public. Does NPTP reliance on the Coast Guard cost lives? Is it avoidable? A thorough discussion of the Kodiak support infrastructure including the Coast Guard would answer these questions. This possible significant environmental impact has not been assessed.

Specific comments on the text of the draft EA follow:

At pages 2-10 to 2-12: The Coast Guard is responsible for implementing a safety zone and dedicating resources to ensure that the exclusion zone is in effect. NAWCWD is also required to enforce the exclusion zone. Coast Guard operations related to search and rescue and fisheries law enforcement take precedence over closures of airspace and exclusion zones. On three prior launches the Coast Guard has been compelled to reallocate assets to enforce the exclusion zone away from higher priority missions because of the absence of NAWCWD enforcement tools. The Coast Guard can only effect the exclusion zone if there are sufficient assets remaining after other operational resource assignments have been made. There is no discussion of these limitations of Coast Guard exclusion zone enforcement assets. How would the NAWCWD enforce the exclusion zone without the Coast Guard? This possible significant environmental impact has not been assessed.

At pages 4-4 to 4-5: The discussion of the use of airspace, airways and jet routes, and airports and airfields does not address the impact of rocket launch processes on the operations of the Coast Guard Air Station. Any inability of the Air Station to access airframes for search and rescue could cost lives. This possible significant environmental impact has not been assessed.

At 4-16 to 4-22: The discussion of health and safety impact does not address the potential interaction of Coast Guard members and their dependents with launch process. For example, transportation of the rocket fuel cells occurs along dirt roads immediately adjacent to housing facilities. Risk of accident and injury in these areas is great. Further, there is no discussion of the possibility that transmissions from the Coast Guard Communications Station could detonate explosive materials. These possible significant environmental impacts have not been adequately assessed.

If you have questions about these comments, please contact me at (907) 463-2055.. For other communications regarding the NPTP EA please contact Ms. Merry Goodenough, environmental law branch chief, Coast Guard Maintenance & Logistics Command Pacific, Bldg 54C, Coast Guard Island, Alameda, CA , 94501-5100, telephone (510) 437-2747.

Sincerely,

M.E. TOUSLEY
Lieutenant Commander, U.S. Coast Guard
By Direction

Copy: Commander, Seventeenth Coast Guard District (ole, osr, ppa)
Commander, Fourteenth Coast Guard District (dl)
Commander, Coast Guard Maintenance & Logistics Command Pacific (s, le)
Commanding Officer, Integrated Support Command Kodiak (slo)

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

March 27, 2001

Edwin P. Janasky
Colonel, U.S. Army
Army Space and Missile Defense Command
P.O. Box 1500
Huntsville, Alabama 35807-3801

ATTN: T. Craven

Dear Colonel Janasky:

The National Marine Fisheries Service has reviewed the draft Environmental Assessment (EA) of the North Pacific Targets Program, February 2001. Generally, we felt the major impacts associated with this work were identified and discussed in the EA. We have several specific comments on this document, which follow.

P. ES-2, line 13.
This states "The proposed launches at the KLC would utilize launch azimuths included in those analyzed in the KLC EA". However, three azimuths are referred to for the missiles that will be launched from the Kodiak Launch Complex (KLC), at least one of which (the SW trajectory) was not addressed in the original EA for the KLC. The map of the SW launch path (Fig. 2-4) shows the trajectory along the SE side of Kodiak passing over nearshore habitat as well as near two native villages, ~~Old Harbor~~ and Akhiok. Fig. 2-4 is not detailed enough to show the actual proximity of this trajectory to Kodiak island, nor is this trajectory explained in any detail. In contrast, Fig. 2-6 shows details of one such azimuth, on a trajectory of approx. 135 degrees. The EA should provide a more detailed map and better description of the actual path of these launches so the impacts can be adequately evaluated. A specific analysis of the impacts of this new proposal should be done. Some possible impacts of this trajectory that should be considered are:

Safety and interference to local fisheries
Steller sea lions
Harbor seals
Public safety in Akhiok and Old Harbor

Birds
Air and water quality
Near shore fish habitat

P. ES-6, line 14.
This refers to the KLC Health and Safety plan. Please indicate where this document is available.

P. 2-11, Fig. 2-6.
This shows a "Warning Area" extending approximately 5 km (3 miles) to either side of the flight trajectory. However, on page 4-22, line 16, the width of a Warning Area is defined as 37 km (20 miles) on each side of the flight path. The Warning Area surrounding the SW trajectory would therefore encompass the village of Old Harbor and possibly Akhiok as well. Page 2-12, para. 2, states that, if a flight is terminated by vehicle destruction within the Flight Termination zone, the vehicle and its fragments may descend within the warning area, i.e. anything inside that zone is at risk. Does that imply that the village of Old Harbor would evacuate during any launch on the SW trajectory so as not to be inside the Warning Area?

P. 2-12, line 8.
What is meant by "If a risk analysis as prescribed in RCC Standard 321-00 and its supplement cannot be performed the GHA (Ground Hazard Area) would be expanded to include the area that would contain all potentially hazardous debris from a missile malfunction or flight termination action"? Under what conditions would such analysis not be possible? How large an area would this be expanded to? How far downrange?

P. 3-1, line 27.
This states "No additional analysis is provided for seismic activity at KLC". The KLC site is in a highly active earthquake zone. Adequate analysis of local geology and seismology of the KLC area needs to be done to ensure safety, given the size and frequency of local earthquakes. Considering that a missile with payloads, booster and fuels could remain on the launch pad for 14 days (P. 4-22), this should be examined and mitigation of structures should be done in compliance with standards used in California.

P. 3-8, line 19.
This states that coho salmon juveniles were found in two freshwater streams within the KLC site. Line 23 states that "Habitat areas of particular concern include all streams, lakes, and other freshwater areas used by salmon and other anadromous fish." But then states that "The closest such area is the Pasagshak River..."approximately 10 km away. This is inconsistent. Why are the two streams with coho salmon not considered to be fish habitat areas? Twin lakes also contain fish (though probably artificially stocked). Shouldn't Twin Lakes also be considered as fish habitat areas? Furthermore, many of the streams within the KLC boundaries drain into Twin Lakes. Any pollutants (oils, solvents, fuel emissions, aluminum hydroxide, and hydrogen chloride) generated from the KLC onto adjacent ground will drain into Twin Lakes, and exit into the expansive rocky intertidal zone at Fossil Beach. Yet there has been no discussion of potential impacts to intertidal fauna. Rock reefs and kelp beds provide shelter for many juvenile fish and shellfish, some of which are fished commercially, others which become food for commercial fish

species. Sea otters feed in these areas, and maintain healthy kelp beds. Disruption of the food chain in these areas could have negative impacts on the kelp beds, sea urchin and otter populations, and rocky intertidal communities. Some locals go to these tidepools to collect chitons for subsistence consumption. Will chitons be affected by pollutants?

P. 3-8. Threatened and Endangered Species.
Para 1. Correct spelling of species name for Steller sea lion is *jubatus*. The Ugak Island sea lion site is a haul out, rather than a rookery as stated in the draft EA. Pupping does not occur at this site. This section understates the use of the Narrow Cape area by large whales. Humpback whales are common to the Ugak Bay area, and many hundreds of gray whales migrate along Narrow Cape during their spring migration in April and May. Some gray whales feed in this area, and may remain offshore of Kodiak Island for the summer. The Narrow Cape area is a popular whale watching site for the Kodiak public.

P. 3-9. Critical Habitat.
Several Steller sea lion haul outs and rookeries near the Kodiak Launch Complex have been designated as critical habitat under the Endangered Species Act. These include the Ugak Island haul out, haul outs on Gull Point, Two-Headed Island, Cape Barnabas, and Cape Chiniak, and the rookery on Marmot Island. All of these critical habitats include a 20 nautical mile aquatic zone surrounding the sites. We recommend personnel associated with the NPTP launches remain at least one-half mile offshore of these sites, with the exception of wildlife monitoring personnel.

P. 3-14, Line 1.
This states that a realignment of the Pasagshak road will allow access to Fossil Beach when the road is closed. Until this realignment is completed, access to this State recreation site will be affected by these launches and should be recognized as an adverse impact associated with this work.

P. 3-16, line 29.
"Recreation and subsistence activities are widespread in the southwestern region of Alaska, including Kodiak Island." P. 3-17, line 17, states "Tourists come to view the scenery, hike, camp, visit historical and cultural sites, view and photograph wildlife, and hunt and fish." Narrow Cape and Fossil Beach are prime recreational areas, not only for tourists, but for locals as well, especially in summer. Any closure of these areas during missile launches will impact recreational users.

P. 3-32, Biological Resources- open ocean section.
Although there is much concern about ground hazard areas around the launch site, minimal impacts are expected due to splashdown of missiles, boosters, or missile debris in the open ocean, presumably because open ocean species are widely dispersed, and "organisms that inhabit the open ocean typically do not come near land" (Page 3-34, line 2). However, scant attention is paid to the nearshore pelagic zone. Narrow cape is widely known for the fact that hundreds of gray whales migrate past it every spring, although the EA states only that they "use the nearshore

waters of Kodiak Island". The EA should discuss the spring gray whale migration and assess whether launch operations could have significant impacts on migrating whales.

P. 4-1, Section 4.1.1, Air quality.
Halon and freon should be included here; as known ozone depleting gases.

P. 4-2, Table 4-1.
This table shows that approximately 7000 kg of Aluminum oxide would be released during each launch from the KLC, although presumably only half of that (from the first stage) would be released near ground. Line 16, states that this amount of aluminum oxide would cause "no significant impact to air quality at KLC". The potential impacts on ground water quality are not mentioned. However, At Cape Kennedy, fish kills were observed following a Space shuttle launch on 11 November 1982. Due to the acuteness of the fish kills and close association with time of launch, exhaust products, such as Hcl and/or aluminum oxide were suspected as the cause. The conclusion was that the fish died from ionic imbalances and fatal anoxia resulting from severe gill damage caused by a rapid decrease in the water pH (Milligan, JE and Hubbard, GB. 1983. "STS-5 (Space Transport System-5) fish kill, Kennedy Space Center, Florida". Air Force Occupational and Environmental Health Lab., Brooks AFB, TX (USA). OEHL- 83-096EE003AFA, 1983, 28 pp). Aluminum oxide also acts as an adsorbent for high molecular weight organic compounds. Chemicals such as 2,4,-D, organohalines and trihalomethanes (all known carcinogens) adsorb to aluminum oxide particles and coagulate, forming large organic complexes. What does this mean for fish? Would they be more likely to ingest such large particles than if the organic compounds were more widely dispersed?

P. 4-14, line 14.
What are halon and freon being used for? What are the quantities of asbestos and magnesium-thorium to be used in each launch? In order to evaluate cumulative impacts to pelagic and benthic habitat, those figures should be included in this document.

P. 4-17, line 5.
C-5 aircraft delivering rocket components would park and unload at a site next to the Buskin River state park (shown in Fig.4-5 on page 4-18), such that the campground is inside the Explosive Safety Quantity-distance (ESQD). The Army is planning to have the campground evacuated during periods when the aircraft parking site is utilized. In other words, Buskin State Park will be closed whenever the Army unloads a plane. Presumably this also implies that Pasagshak State Park would be closed and evacuated when the transport vehicle passes by that location on the way to the KLC. These impacts should be presented in greater detail in the EA.
P. 4-17, line 14.
"...Pasagshak Point road would be closed and the bypass road would be used while the Strategic Target System is at Kodiak Launch Complex". Again, no such road presently exists.

We also concur that consultation under section 7 (a)(2) of the Endangered Species Act of 1973 is satisfied through this EA. The monitoring for these launches, by the Alaska Aerospace Development Corporation, will determine whether additional actions under the Endangered Species Act and Marine Mammal Protection Act are appropriate. NMFS will continue to

monitor behavioral reactions of marine mammals during future launches to insure these actions will not adversely affect listed species or habitat.

Please refer any questions to Brad Smith in our Anchorage Field Office at (907) 271-5006.

Sincerely,

P. Michael Payne
Assistant Regional Administrator
for Protected Resources

cc: Alaska Aerospace Development Corporation
USFWS: Anchorage
ADFG: Anchorage
EPA:Anchorage
ADEC:Anchorage

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services Anchorage
605 West 4th Avenue, Room 61
Anchorage, Alaska 99501-2249

in reply refer to
WAES

April 9, 2001

Commander, U.S. Army Space and Missile Defense Command
Attention: SMDC-EN-V (Mr. Thomas M. Craven)
P.O. Box 1500
Huntsville, AL 35807-3801

Re: North Pacific Targets Program Environment Assessment, Kodiak Launch Complex

Dear Mr. Craven:

This responds to your request for comments on the North Pacific Targets Program Draft Environmental Assessment, which we received March 5, 2001. The purpose of the proposed North Pacific Targets Program is to test North American sensors by launching up to four Strategic Target System missiles a year for a minimum of 5 years from the Kodiak Launch Complex (KLC). Specific comments on this document follow.

Page 3-11, lines 1 through 3
A discussion of proposed critical habitat designations in the Kodiak area for the Steller's eider appear here. On February 2, 2001, the final rule for the designation of critical habitat for the Alaska-breeding population of Steller's eider was published in the Federal Register (50 CFR Part 17), to be effective March 5, 2001. The waters surrounding Kodiak, Afognak, Ugak, and the Trinity Islands were not included. However, not designating these areas as critical habitat does not imply that they are unimportant, are not required for recovery, or do not require special management considerations or protections.

Page 4-12, lines 10 through 13
This states, "Although Steller's eiders rafting off Narrow Cape may be disturbed by the Proposed Action, since they breed in Russia or northwest Alaska outside the ROI, Strategic Target System launches from Kodiak Launch Complex would have no impact on breeding or the nesting success of this species." This statement is not accurate. Threats to the survival of a protected species can occur throughout the species range, on either breeding or wintering grounds. Actions that affect the fitness and/or survival of birds during the nonbreeding season through disturbance or destruction of habitat may have an additive affect on breeding success. Additionally, we have no information on what proportion of birds wintering in the Kodiak area belong to the protected Alaska-breeding population.

Page 4-13, lines 22 through 25
This states that ".... the first launches will be within the number required for monitoring" (according to the AADC Environmental Monitoring Plan). We recommend that eiders and/or their surrogate species, the harlequin duck, be monitored during launches which take place from October through March, the time period when eiders are present in the area. Monitoring during launches conducted outside this time period would not be necessary. If possible, video monitoring of eiders during the launch event would enhance our state of knowledge regarding this species response to noise phenomena.

Pages 4-6 through 4-13
Your discussion of the potential effects to eiders is fragmented and does not adequately support your not likely to adversely affect determination. Ample evidence does exist, however, in the environmental assessment, in your February 28, 2001 letter, and in the preliminary monitoring results from previous launches to uphold this conclusion. While the EA states a predicted launch noise level of 81 dBA, Figure 4-4 suggests the peak noise levels in the vicinity of Narrow Cape would be between 97.1 dBA and 107.9 dBA. This information is not clearly represented in your discussion of effects to eiders. Nor is it clearly indicated that peak noise levels would be nearly instantaneous, and that the entire noise event from a launch lasts less than 60 seconds.

Surveys of Narrow Cape conducted in 1998 indicate that Steller's eider numbers peak in the Narrow Cape area during February, when 587 birds were observed, and again in December (376 birds were observed). Eiders were also present in March (197 birds), January (21 birds) and October (15 birds). By avoiding launches during the months when eiders are present in the area, potential disturbances to protected species may be minimized or avoided altogether.

Page 4-13, lines14 through 19
Your discussion of the potential effects to short-tailed albatross should disclose that the vehicle trajectory is almost vertical and attains an altitude of 10,000 feet while still over land 20 seconds after launch, making it highly unlikely that the short-tailed albatross would be affected by the vehicle while in flight.

Based on the project as described, and taking into account that launches are infrequent, that the entire noise event lasts less than 60 seconds, and that initial monitoring has detected no notable response by Steller's eiders or harlequin ducks to previous launches, the Service concurs with your agency's assessment that this project is not likely to adversely affect listed species.

This letter relates only to endangered species under our jurisdiction. It does not address species under the jurisdiction of National Marine Fisheries Service, or other legislation or responsibilities under the Fish and Wildlife Coordination Act, Clean Water Act, or National Environmental Policy Act.

Thank you for your cooperation in meeting our joint responsibilities under section 7 of the Endangered Species Act. If you have any questions about this letter, please feel free to contact Charla Sterne by phone at (907) 271-1467, by fax at (907) 271-2786, or by e-mail at charla_sterne@fws.gov.

Sincerely,

Ann G. Rappoport
Field Supervisor

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, Maryland 20910

APR 13 2001

Edwin P. Janasky
Colonel, U.S. Army
U.S. Army Space and
Missile Defense Command
P.O. Box 1500
Huntsville, Alabama 35807-3801

Dear Colonel Janasky:

Thank you for your letter concerning the presence of threatened or endangered species in the action area associated with the North Pacific Targets Program. We have reviewed the list of species provided in your letter and offer the following comments.

1. Kodiak/North Pacific Broad Ocean Area. We concur with the list of species you presented for this area, with the following additions or qualifications:

The endangered bowhead whale occurs in waters of the Bering, Chukchi, and Beaufort Seas, but would not be expected in the Gulf of Alaska or Pacific Ocean.

There are also several species (evolutionary significant units) of Pacific salmon that have been listed as threatened, or endangered under the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*; ESA). While we would not expect these species to be affected by the proposed work, the Department of the Army should specifically consider these species when making its determinations under section 7 of the ESA. Information on these species may be obtained from the National Marine Fisheries Service web site at: http://www.nwr.noaa.gov/

Marine mammals protected under the Marine Mammal Protection Act of 1972, as amended (16 U.S.C. 1361 *et seq.*; MMPA), which are not endangered or threatened under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*), that are found in these waters include:

Harbor seal (*Phoca vitulina*)
Killer whale (*Orcinus orca*)
Harbor porpoise (*Phocoena phocoena*)
Pacific white-sided dolphin (*Lagenorhynchus obliquidens*)
Dall's porpoise (*Phocoenoides dalli*)

Baird's beaked whale (*Berardius bairdii*)
Stejneger's beaked whale (*Mesoplodon stejnegeri*)
Cuvier's beaked whale (*Ziphius cavirostris*)
Gray whale (*Eschrichtius robustus*)
Minke whale (Balaenoptera acutorostrata)

2. Hawaiian Islands/South Pacific Broad Ocean Area. We concur with the list of species you presented for this area, with the following additions or qualifications:

Endangered Species
Leatherback turtle (*Dermochelys coriacea*)
Hawksbill sea turtle (*Eretmochelys imbricata*)
Humpback whale (*Megaptera novaeangliae*)
Sperm whale (*Physeter macrocephalus*)
Hawaiian monk seal (*Monachus schauinslandi*)
Sei whale (*Balaenoptera borealis*)
Blue whale (*Balaenoptera musculus*)
Fin whale (*Balaenoptera physalus*)

Threatened species
Green sea turtle (*Chelonia mydas*)
Olive Ridley Sea turtle (*Lepidochelys olivacea*)
Loggerhead sea turtle (*Caretta caretta*)

Marine mammals protected under the Marine Mammal Protection Act of 1972, as amended, 16 U.S.C. 1361 *et seq.* (MMPA) (not endangered or threatened under the Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 *et seq.*), that are found in the waters off Oahu include:

Minke whale (*Balaenoptera acutorostrata*)
Blainville's beaked whale (*Mesoplodon derisirostris*)
Dwarf sperm whale (*Kogia simus*)
Arch beaked whale (*Mesoplodon carlhubbsi*)
Japanese beaked whale (*Mesoplodon ginkgodens*)
Northern Right Whale dolphin (*Lissodelphis borealis*)

Bryde's whale (*Balaenoptera edeni*)
Cuvier's beaked whale (*Ziphius cavirastris*)
Pygmy sperm whale (*Kogia breviceps*)
Melon-headed whale (*Peponocephala electra*)
Pygmy killer whale (*Feresa attenuata*)
False killer whale (*Pseudorca crassidens*)
Killer whale (*Orcinus orca*)
Short-finned pilot whale (*Globicephala macrorhynchus*)
Spinner dolphin (*Stenella longirostris*)
Striped dolphin (*Stenella coeruleoalba*)
Pantropical spotted dolphin (*Stenella attenuata*)

Common dolphin (*Delphinus delphis*)
Risso's dolphin (*Grampus griseus*)
Fraser's dolphin (*Lagenodelphis hosei*)
Bottlenose dolphin (*Tursiops truncatus*)
Rough-toothed dolphin (*Steno bredanensis*)
Shortbeaked common dolphin (*Delphinrus delphis*)

Although this letter delineates the threatened or endangered species that are known to occur in the area that may be affected by the proposed action, our review of the information available on the action leads us to conclude that the proposed action may affect, but is not likely to adversely affect threatened or endangered species or designated critical habitat in the action area. We base this information on the low probability of an interaction between the proposed action and these species: although an interaction is possible, it is extremely unlikely to occur. As a result, further consultation on the North Pacific Targets program is not required.

Should you have further questions regarding protected species and/or the section 7 process, please contact Ms. Margaret Dupree in Hawaii (808) 973-2937, or Mr. Brad Smith in Alaska at (907) 271-5006.

Sincerely,

Donald R. Knowles
Director
Office of Protected Resources

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Craven, Tom M Mr USASMDC

From: Margaret Dupree [Margaret.Dupree@noaa.gov]
Sent: Monday, April 16, 2001 7:30 PM
To: Craven Tom M Mr USASMDC
Cc: Gallien Randy Mr USASMDC; 'Dick Mike'; 'Joy Edd'
Subject: Re: Informal Section 7 Consultation on the Hawaii Shallow Water Training Range Environmental Assessment

Tom,

Thanks for the summary e-mail. As to the revisiting of the February 3, 1998 informal section 7 letter, your e-mail account of NMFS' review is correct. The informal section 7 is current as to species and the criteria applied to characterize the potential effects of the action. The Feb. 3, 1998 NMFS concurrence with the U.S. Navy determination that the potential for effects is low and that the prposed action will not likely adversely affect listed marine species within the action area remains valid.

Margaret

"Craven, Tom M Mr USASMDC" wrote:

> Margaret,
>
> Thanks so much for getting back to me by phone on the Informal Section 7
> consultation on the Hawaii Shallow Water Training Range Environmental
> Assessment. I appreciate you and the NMFS staff taking the time to review
> the EA and the section 7 consultation information.
>
> Based on that review of the EA, NMFS determined that there is no conflict
> with Essential Fish Habitat in the area. I understand that a letter to that
> effect was sent to the US Army Corps of Engineers in response to the Navy
> application for a Nationwide Permit to implement the proposed action.
>
> As we discussed in your office when we met on 7 March 2001, the consultation
> on this project was initiated several years ago. The Navy received a 3 Feb
> 1998 letter that reviewed the documentation and found that the proposed
> activity would not likely adversely affect the threatened or endangered
> marine mammals that inhabit the affected area and thus concluded the
> Informal Section 7 consultation. As we discussed, I asked you to review the
> listed species, the acoustical parameters of the system, and the acoustical
> criteria used in that 1998 evaluation to ensure that the assessment is still
> correct.
>
> Based on your phone message today, 4 April 2001, I understand that you have
> completed the review. Based on your message, the species, parameters, and
> criteria used in the 1998 evaluation are still valid. The Section 7
> consultation results are the same as those NMFS provided previously.
> Therefore, NMFS concludes that the proposed action will not likely adversely
> affect the endangered or threatened marine mammal species within or near the
> proposed project area.
>
> If this captures the current NMFS position on the proposed project, please
> confirm in an e-mail. If there are inaccuracies, please advise me of them.
>
> Again, thank you for taking the time to review the proposed action, EA, and
> previous Section 7 consultation information.
>
> Thomas M. Craven
> Environmental Protection Specialist

> Deputy Chief of Staff, Engineer
> US Army Space and Missile Defense Command
> SMDC-EN-V
> PO Box 1500
> Huntsville, AL 35807-3801
> VOICE: (256) 955-1533
> DSN: 645-1533
> FAX: (256) 955-5074

APPENDIX C
KODIAK LAUNCH COMPLEX ENVIRONMENTAL MONITORING PLAN (APPENDIX B OF NATURAL RESOURCES MANAGEMENT PLAN)

APPENDIX B

KODIAK LAUNCH COMPLEX
ENVIRONMENTAL MONITORING PLAN

The primary goals of this plan are (1) to monitor the effects of rocket-motor noise on certain species of birds and a pinniped and (2) to monitor the effects of rocket-motor exhaust products on local surface waters and soils.

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APPENDIX B
KODIAK LAUNCH COMPLEX
ENVIRONMENTAL MONITORING PLAN

by
ENVIRONMENT AND NATURAL RESOURCES INSTITUTE
University of Alaska Anchorage
707 A Street, Anchorage, Alaska 99501

for
Alaska Aerospace Development Corporation
4300 B Street, Suite 101, Anchorage, Alaska 99503

June 1998

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Kodiak Launch Complex
Environmental Monitoring Plan

INTRODUCTION

As set forth in the June 1996 *Environmental Assessment of the Kodiak Launch Complex* (EA) and the subsequent Finding of No Significant Impact (FONSI), the primary goals of this Kodiak Launch Complex (KLC) Environmental Monitoring Plan are (1) to monitor the effects of rocket-motor noise on certain species of birds and a pinniped and (2) to monitor the effects of rocket-motor exhaust products on local surface waters and soils. The purpose of monitoring at KLC is to verify that the predictions made in the EA that supported a FONSI are correct. This plan covers the first five launches from KLC, assuming that at least one of them is a Lockheed Martin Athena series rocket—the largest rocket that can be flown from KLC. If an Athena series rocket is not one of the first five rockets launched, the monitoring procedures set forth in this plan will be implemented again when the first such vehicle is launched.

The principal bird species to be monitored—Steller's eider, harlequin duck as a surrogate for Steller's eider, and bald eagle—were established by the U.S. Fish and Wildlife Service (USFWS), the cognizant authority. The marine mammal to be monitored—the Steller sea lion—was selected by the National Marine Fisheries Service (NMFS), the cognizant authority. Figure B-1 shows the months when these four species occur in the KLC area. Data on other birds and mammals that can be gathered while monitoring the principal species will be obtained opportunistically as well. Water quality and soils monitoring are stipulations of the Final Consistency Determination issued by the Alaska Coastal Zone Management Program and the Certificate of Reasonable Assurance issued by the Alaska Department of Environmental Conservation (ADEC).

SPECIES	J	F	M	A	M	J	J	A	S	O	N	D
Steller Sea Lion												
Steller's Eider												
Bald Eagle — Breeding												
Bald Eagle — Nonbreeding												
Harlequin Duck												
Harlequin Duck — Molting												

Figure B-1. Monthly use of KLC area by principal species to be monitored.

The monitoring objective for Steller sea lion is to document whether rocket launches are inducing any disturbance behaviors. The monitoring objective for Steller's eider and harlequin duck is to detect a large-scale (≥50%) abandonment from the zone of impact following a launch and to document whether the areas in question are subsequently reoccupied after disturbance. The later objective is conservative, as abandonment of a zone of occupancy by over-wintering species for a short duration time period (a week or less) is assumed not to cause an increase in over-winter mortality, a reduction in population reproductive performance, or a reduction in reproductive lifespan. This assumption is based on the observations that nearby alternative habitat (even if less preferred) appears to exist and that local carrying capacity has not been exceeded. The monitoring objective for bald eagles is to determine whether rocket launches have a direct negative effect on nesting success at the aerie located on Narrow Cape.

This plan identifies five monitoring tasks that collectively address the two goals previously identified. Each task statement includes background information, appropriate monitoring objectives and procedures, and reporting requirements. When necessary, deviations from these task statements will be developed in consultation with cognizant authorities as soon as practical following the scheduling of a launch. This will be done to accommodate such things as seasonal changes in the use of local environments by species of concern. Any revisions needed to a monitoring task to accommodate launch schedules will be attached to this plan, as described in the overview to the KLC Natural Resources Management Plan, no later than 60 calendar days prior to a scheduled launch.

Monitoring Tasks

1. STELLER SEA LION SURVEYS OF UGAK ISLAND HAULOUTS

BACKGROUND

Presently, several hundred Steller sea lions (*Eumetopias jubata*) use a haulout on Ugak Island (Figure B-2) in the late summer to early fall postbreeding period (July-October). These Steller sea lions are part of a federally listed endangered population. Sea lions (and pinnipeds in general) have been shown to startle on exposure to certain sound intensities and frequencies. Such responses constitute a taking under relevant law.

MONITORING PROCEDURES

The objective of monitoring Steller sea lions is to detect any indications of disturbance to individuals at the seasonally occupied haulout site at Ugak Island spit that result from KLC rocket launches. Monitoring will likely be appropriate from July to October, but this will depend on the seasonal occurrence of Steller sea lions at the Ugak Island haulout. Monitoring will be done for each of the first five KLC launches, provided at least one is of the largest class of vehicle that can be flown from KLC. If the largest class of rocket is not flown in the initial series of five launches, these procedures will be reinitiated once such a launch is scheduled.

Fixed-wing aerial surveys will be flown for each of the first five KLC rocket launches using a standard protocol provided by NMFS. This protocol calls for a minimum flight altitude of 500 ft ASL to be flown at low tide or, with consultation, toward evening. The aircraft is to come no closer than one-quarter mile to the haulouts. Two biologist observers will accompany the pilot. Data will be gathered both visually and on 35 mm color film with a camera having a zoom lens. An initial survey will be flown one day prior to the scheduled launch; the second will be flown as soon after the launch as conditions permit. Replicate surveys will then be flown on the following three successive days to determine reoccupancy rates.

A real-time video record will also be made of sea lion reactions to any launch noise that reaches the haulout area on Ugak Island. This will be accomplished by installing a remote (plus a backup) video camera capable of 24-hr recording on the island prior to the launch. The video-recording assembly will consist of a time-lapse video cassette recorder with a digital video camera equipped with a telephoto lens. The video system will be powered by 12-volt batteries. The recorder, camera, and batteries will be contained in a specially constructed weatherproof aluminum housing to protect them from extremes in environmental conditions. Tapes will be analyzed by replaying them on the time-lapse recorder connected to a color television.

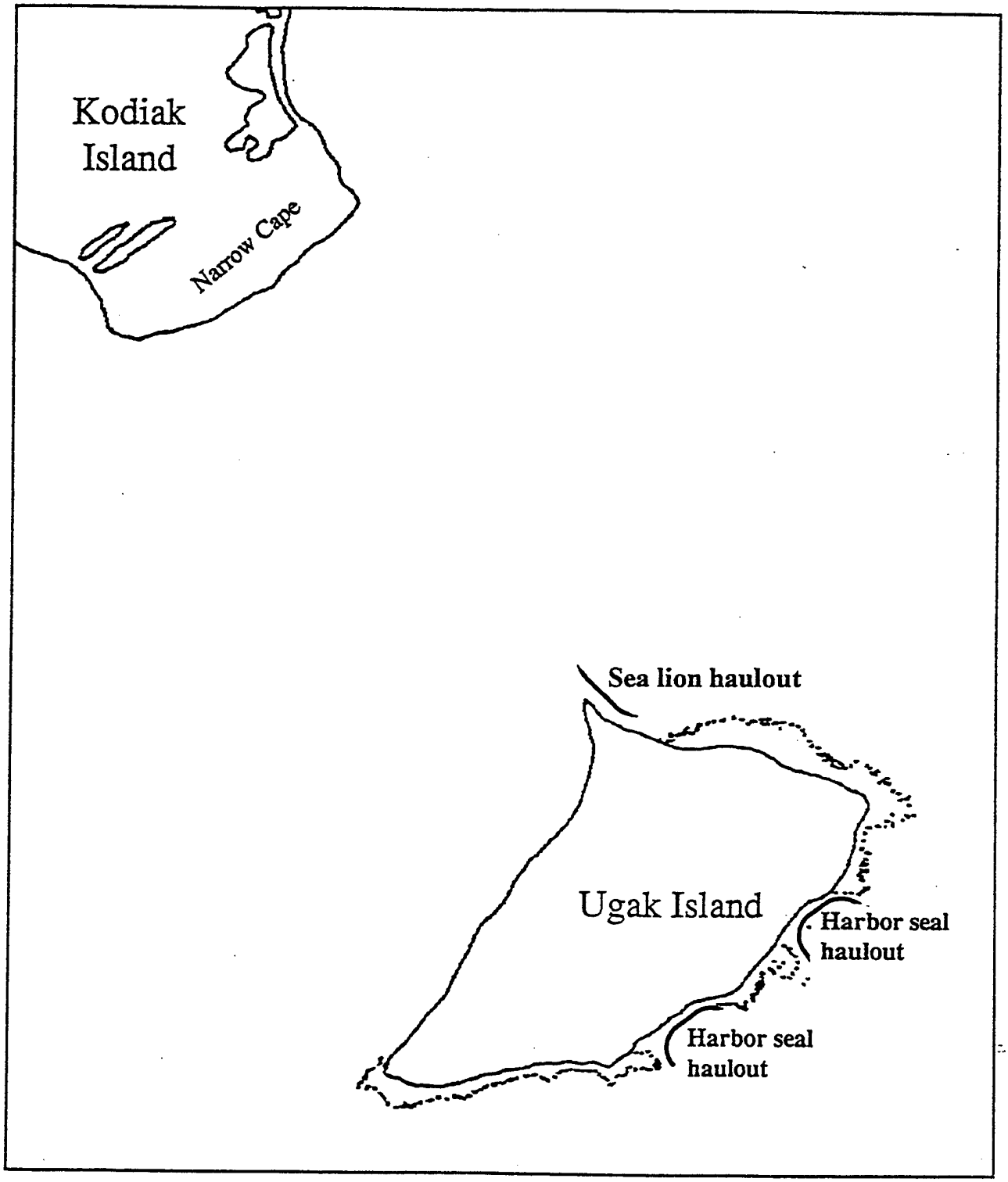

Figure B-2. Sea lion and harbor seal haulouts on Ugak Island.

Results of the aerial and video surveys will be compared, providing information on startle effects and durations. Comparisons will also be made with the baseline data assembled for AADC to help gage any natural trends that may be occurring. Rocket-motor noise monitoring will also be done concurrently at the haulout on Ugak Island, as described in Task 2, Noise Monitoring. These data will be synchronized to the video data to document correlations between noise signatures and pinniped responses. An observer can be placed on the island during launch events, provided operational safety considerations permit it, to make additional observations and to ensure that the video and noise recorders are functioning properly.

REPORTING

If indications of a disturbance to Steller sea lions is recorded, AADC will consult with NMFS regarding the advisability of applying for an incidental take permit. Data from this task will be reduced, analyzed, and reported to AADC within 60 calendar days following cessation of field activities. AADC will include this information in its Annual Environmental Monitoring and Natural Resources Management Report.

2. NOISE MONITORING

BACKGROUND

Rocket-motor noise at certain sound intensities has been shown to trigger startle responses in birds and in hauled-out pinnipeds. Rocket-motor noise is complex and comprised of a broad spectrum of frequencies, some of which are not audible to humans but are to other animals. Thus, sound intensity alone is not the best measure of sound. NMFS specifies recording frequency, as well as intensity, as a monitoring-related requirement.

MONITORING PROCEDURES

The objective of this task is to record rocket-motor sound intensity and frequency at locations used by species of concern. Sound intensity and frequency will be recorded pre- and postlaunch at two prime sites for each of the initial KLC launches. When Steller sea lions and nesting bald eagles are present, one sound-recording station will be placed on Ugak Island proximal to the Steller sea lion haulout and the other on Narrow Cape proximal to the bald eagle nest located there. Sound measurements will be made with equipment produced by a reputable company that minimally meets the specifications set forth by NMFS. (Close coordination with NMFS is required.) Hardware must be all-weather capable with a record of reliability and have a battery-power life of about two weeks to accommodate launch delays. The sound-recording stations will be emplaced one day or more before a launch and be retrieved within one day afterwards. Fixed wooden platforms will be built on site to provide an anchored substrate for the stations.

The two prime sound-monitoring stations described above will be in direct line of sight from each other and the KLC launch pad. Data acquired from the stations will be tabulated and

graphed along with data from rocket manufacturers for sound at the rocket-motor throats. This will provide a site-specific representation of sound intensity and frequency by distance that can be extrapolated out from the pad in any direction and to any distance. When Steller sea lions and/or nesting bald eagles are not present during a launch (November-March), the noise-monitoring stations can be located elsewhere at KLC to monitor rocket-motor sounds. One such location is the area offshore of Barry Lagoon that is used regularly by Steller's eiders.

REPORTING

If noise levels are observed above those noted in the EA, NMFS and USFWS will be consulted. Data from this task will be reduced, analyzed, and reported to AADC within 60 calendar days following cessation of field activities. AADC will include this information in its Annual Environmental Monitoring and Natural Resources Management Report.

3. BALD EAGLE NESTING AT NARROW CAPE

BACKGROUND

The bald eagles (*Haliaeetus leucocephalus*) of North America are comprised of two non-interbreeding races. The southern race historically occupied much of the area of the 48 conterminous states; and its population is currently depleted and federally listed under the federal Endangered Species Act. The population of the southern race is being rebuilt through a captive breeding bird program with genetic stock taken from the northern race, which is largely restricted geographically to Alaska and portions of far-western Canada. The northern race is not federally listed or proposed for listing; it's breeding population is considered to be robust and believed to number from 10,000 to 20,000. Bald eagles are widely held to be indicators of environmental quality, in light of the species' role as an apex predator, and their presence is generally held to be evidence of environmental health. Bald eagles are also the U.S. national emblem and are protected under the federal Bald Eagle Protection Act and the Migratory Bird Convention and Treaty Act (as amended).

The bald eagles of Kodiak Island are members of the nonlisted northern race. Five active nests were found in 1997 surveys within about five miles of the KLC launch pad (Figure B-3), a distance agreed upon by the federal agencies involved as being the limit of impact-monitoring activities. The closest of these nests is on Narrow Cape proper, about one statute mile from the launch pad and directly downrange from it. Bald eagles commonly maintain clearly defined nesting territories for life and show marked site fidelity to nest sites. Bald eagle pairs can have two to three nest sites per territory and alternate use between them over time. Nests on Kodiak Island occur on three substrates: large trees (predominantly cottonwood), sea cliffs, and offshore islets. All active nests observed in 1997 within the agency specified, five-mile, impact-monitoring radius from the launch pad were on coastal cliffs.

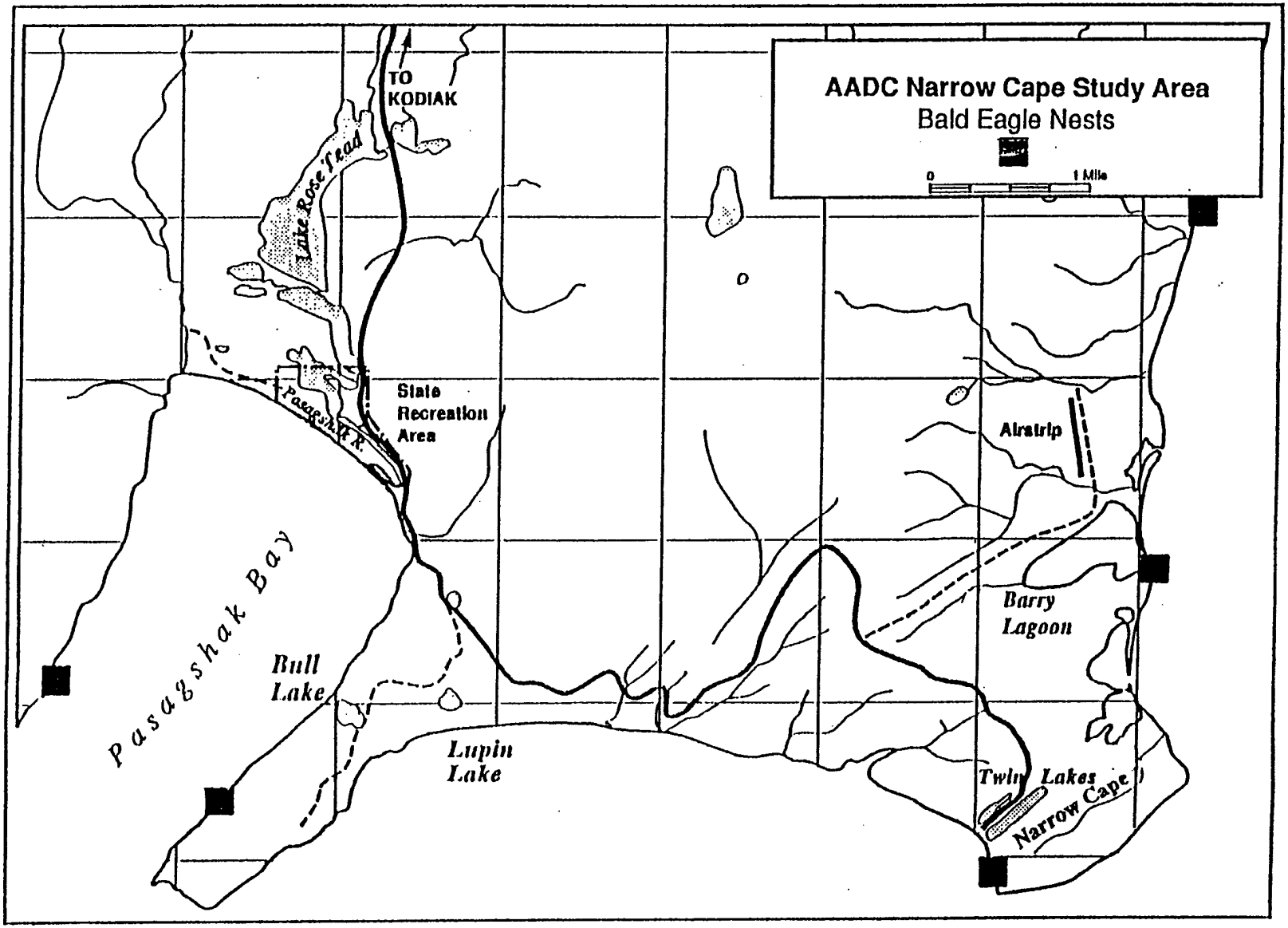

Figure B-3. Active bald eagle nests in the AADC Narrow Cape study area.

MONITORING PROCEDURES

The primary objective of this task is to determine whether or not KLC rocket launches are negatively affecting bald eagle nesting success in the vicinity of the site. Each year in the first week in May and for the period of duration of the first five launches, an aerial breeding pair survey will be flown to document active bald eagle nest sites in the vicinity of KLC. The survey will be flown in a single engine, high-winged aircraft at around 300 ft ASL at the aircraft's slowest safe airspeed along the coast from a point about five statute miles north of Narrow Cape to Pasagshak Point. Two biologist-observers will conduct the surveys. One will be the primary observer and the other the data recorder. Survey results will be tabulated and used with data from the launch-related surveys described below.

Pre- and postlaunch aerial surveys identical in format to the May surveys described above will be conducted for all of the first five KLC launches that occur from May through August, the period when nest sites are occupied. The prelaunch surveys will be flown anytime in the week preceding launch. Prelaunch survey results will be synthesized with those of the May breeding pair survey to identify any nests that have failed from natural causes. The postlaunch surveys will be flown from 7 to 14 days after a launch, and the results will be contrasted with those from previous work at the site to document any nest-site abandonment following launch activities. Rocket-motor-noise monitoring will also be done at the bald eagle nest site on Narrow Cape as described in Task 2, Noise Monitoring.

REPORTING

If bald eagle nests are abandoned following a launch, consultation will be effected with USFWS. Data from this task will be reduced, analyzed, and reported to AADC within 60 calendar days following cessation of field activities. AADC will include this information in its Annual Environmental Monitoring and Natural Resources Management Report.

4. SEABIRD AND SEA DUCK HABITAT USE PATTERNS

BACKGROUND

Offshore waters between Narrow Cape and Ugak Island are attractive to a variety of marine birds, including the Steller's eider, which is listed as a threatened species under provisions of the Endangered Species Act. USFWS, the cognizant authority for Steller's eider, requires that the species along with the harlequin duck (a USFWS-designated surrogate for Steller's eider) be monitored during rocket launches to determine their responses to rocket-motor noise. A pelagic cormorant roost at the base of Narrow Cape is to be monitored concurrently as well.

MONITORING PROCEDURES

The objectives of monitoring rocket launch effects on Steller's eider, harlequin duck, and pelagic cormorant are to determine: (1) whether rocket launches result in large order (≥50%) reductions in the numbers of birds using Narrow Cape habitats and (2) if bird

numbers are shown to decline immediately following a launch, to determine if numbers return to normal within five days after the event.

A combination of aerial and ground-based surveys will be used to monitor marine birds in the primary area of impact, which includes the area of Narrow Cape to Pasagshak Bay. Steller's eiders, which are present in the area from mid-October through March, will be monitored primarily by means of aerial surveys. These surveys will be done (1) in the strait between Narrow Cape and Ugak Island and (2) in Pasagshak Bay. The aerial surveys will be flown in a high-winged, fixed-wing aircraft at an airspeed of 120 mph and an altitude of 300 ft ASL, weather conditions permitting. Two observers will accompany the pilot and simultaneously count birds on both sides of the aircraft. All aerial surveys will be completed at high tide when birds are commonly flocked in resting aggregations. Aerial transects in both survey areas will be S-shaped, with parallel legs running about 2000 m in length and spaced about 400 m apart.

Replicate surveys will be flown daily for up to five days prior to a launch and, again, on the five days following a launch. The final prelaunch survey will be flown on the day immediately before a scheduled launch. The prelaunch surveys will determine (1) patterns of bird distribution and (2) support calculation of a launch-period-specific variance metric for placing postlaunch survey counts in perspective. Following completion of each survey, data will be reduced and analyzed to determine whether or not a ≥50% decrease in pre- and postlaunch numbers of birds is apparent.

Ground-based point count surveys will be used primarily to monitor harlequin duck and cormorant responses to rocket launches from KLC. They will provide information on Steller's eiders as well. Two types of land-based counts will be used. From October through April, when harlequin ducks are relatively evenly dispersed in the nearshore surf zone, point count surveys will be done from 10 adjacent, non-overlapping points along the Narrow Cape bluffs. These points are shown in Figure B-4. The point count survey team will consist of two members: one will be the principal observer and the other the data recorder. The data recorder will also track bird movements in the point count survey area for the principal observer. Point counts will be done through 10 x 40 power binoculars and extend in an arc 200 m seaward of the observers. All birds seen will be counted and identified to the species level. Each point count station will be occupied for a 10-minute period, and the surveys will be timed to a rising tide if daylight conditions permit.

From May through September when harlequins in the Narrow Cape area are rafted (and so, clumped as opposed to being more evenly distributed), vantage-point census counts will be made from several strategic locations along the bluff between the Burton Ranch and Twin Lakes, which overlooks known rafting areas of harlequin ducks. All birds seen will be counted. Once again, counts will be made by a two-person team consisting of a primary observer and a data recorder. The primary observer will use 10 x 40 power binoculars in counting birds, and the data recorder will track bird movements to preclude double counting. Count periods will last 10 minutes each.

Replicate surveys for harlequin ducks will be flown daily for up to five days prior to a scheduled launch and, again, on the five days following the launch. The final prelaunch

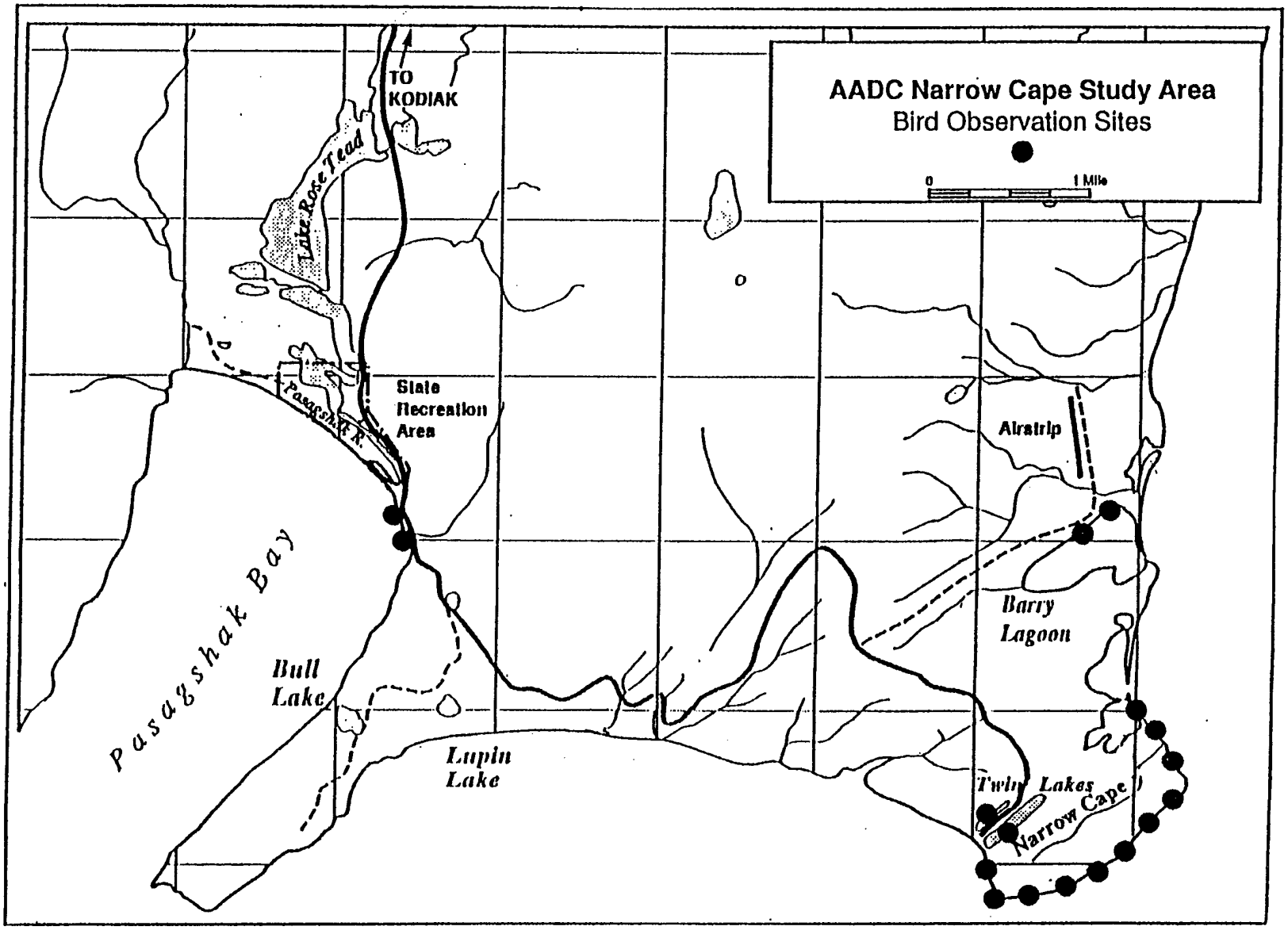

Figure B-4. Bird observation study sites in the AADC Narrow Cape study area.

survey will be flown on the day immediately before the scheduled launch. As for the Steller's eider, the prelaunch surveys will provide a variance metric that will be used to place postlaunch count data in perspective. Following completion of each survey, data will be reduced and analyzed to determine whether or not a ≥50% decrease in pre- and postlaunch numbers of harlequin ducks is apparent. The pelagic cormorant roost at the base of the cliffs at Narrow Cape is presumed to be occupied from September until June. Counts at this roost will be made coincidental to the point count and vantage-point surveys (described above) for harlequin ducks.

The monitoring surveys for Steller's eider, harlequin ducks, and pelagic cormorant will be done for each of the first five launches from KLC. Following the fifth launch, AADC will review the results from all launch-related surveys in committee with USFWS. If agreement is reached that the data are in accordance with the predictions in the EA regarding marine-associated birds in general, no further monitoring of Steller's eider, harlequin duck, or pelagic cormorant will be done. If the data show otherwise, the monitoring protocols will be revised to better define the nature and consequences of the disturbance.

REPORTING

If the data record shows a ≥50% reduction of numbers between pre- and postlaunch surveys, AADC will consult with USFWS as soon as possible. Data from this task will be reduced, analyzed, and reported to AADC within 60 calendar days following cessation of field activities. AADC will include this information in its Annual Environmental Monitoring and Natural Resources Management Report.

5. SURFACE WATER AND SOILS MONITORING

BACKGROUND

Solid rocket motors on firing release large quantities of exhaust products. These products consist chiefly of hydrochloric acid, carbon monoxide, nitrogen oxides, and aluminum oxide. The EA concluded that the kinds and amounts of rocket exhaust products to be released during launches would cause small and transitory effects to local water quality. This finding was based on region-specific modeling of exhaust gas fates and a review of rocket exhaust gas effects worldwide, as well as on the relatively undisturbed nature of the KLC environment and its capacity to absorb any effects that did accrue. ADEC affixed a stipulation to its 401 Water Quality Assurance Permit requiring monitoring of surface waters and soils.

MONITORING PROCEDURES

The objective of this task is to determine if rocket exhaust products impair soil and water quality at Narrow Cape. Four separate but complementary monitoring methods will be used: pH, dissolved oxygen, alkalinity, conductivity, and temperature monitoring; macroinvertebrate surveys; Microtox® technology; and vegetation monitoring. The pH and related monitoring will detect any change due to acid deposition to both the terrestrial and

associated freshwater environments. The macroinvertebrate survey will detect both short- and long-term changes in stream health that could follow exhaust product inputs to area streams. The Microtox® bacterial bioassay will determine whether any degradation to instream sediment quality follows rocket launches. The vegetation monitoring is principally being done to determine a benchmark of vegetation conditions for future examination if it becomes necessary.

Water pH, dissolved oxygen, alkalinity, conductivity, and temperature levels will be recorded at stream points previously established during baseline surveys done for AADC in 1994 using a handheld, scientifically acceptable field meter. These measurements will be taken in conjunction with the aquatic macroinvertebrate sampling and sampling for the Microtox® bacterial bioassay surveys described below. Water quality monitoring using macroinvertebrate surveys will also involve application of a rapid bioassessment protocol included in the Alaska Stream Condition Index (ASCI), which was recently developed by the University of Alaska Anchorage's Environment and Natural Resources Institute with support from ADEC.

The ASCI is based on selected aquatic macroinvertebrate metrics aggregated into an index to gage changes in water quality, and it was designed specifically for use in Alaska. It includes sample collection, handling, and processing standard operating procedures in addition to quality assurance/quality control procedures. Macroinvertebrates will be sampled in three streams using two different methods within the five-mile impact-monitoring area agreed upon by the agencies. These streams are shown in Figure B-5.

The first method will follow those as outlined in the ASCI document. The second method will follow the methods used for the EA and are described as follows. Five macroinvertebrate samples will be collected from each stream via kick net, fixed in the field with 80% ethanol, and returned to Anchorage for sorting and identification down to genera for Ephemeroptera, Plecoptera, and Tricoptera (EPT) and to families for other taxa. Biotic metrics will be assembled for each site to include the number of EPT genera, average number of EPT/total individuals ratio, percent dominant taxa, and Hilsendorf's family biotic index. Results from both methods will be compared. If results from the ASCI method are comparable to the sampling method used for the EA, future monitoring will only be done using the more recent methodology.

Macroinvertebrate sampling will be done for each of the first five KLC launches, just prior to a launch and approximately one month afterwards. Metrics assembled from these data will be compared with each other and with those in the predisturbance (baseline) database to identify any changes that may have occurred. The Microtox® bacterial bioassay will use the solid-phase protocol and microbics model 500 analyzer.

Long-term vegetation monitoring will involve establishment of an exclosure (a fenced-in area) and an inventory of the vegetation in the exclosure. The function of the exclosure will be to conserve a patch of vegetation from the effects of grazing and browsing by ranch animals (cattle, bison, and horses) and deer for use as a reference if needed. A single 10 x 10 m exclosure will be constructed of commercially available chain-link fencing; it will be 3 m high. Posts will be 2 m apart and set in concrete. The exclosure will be sited within

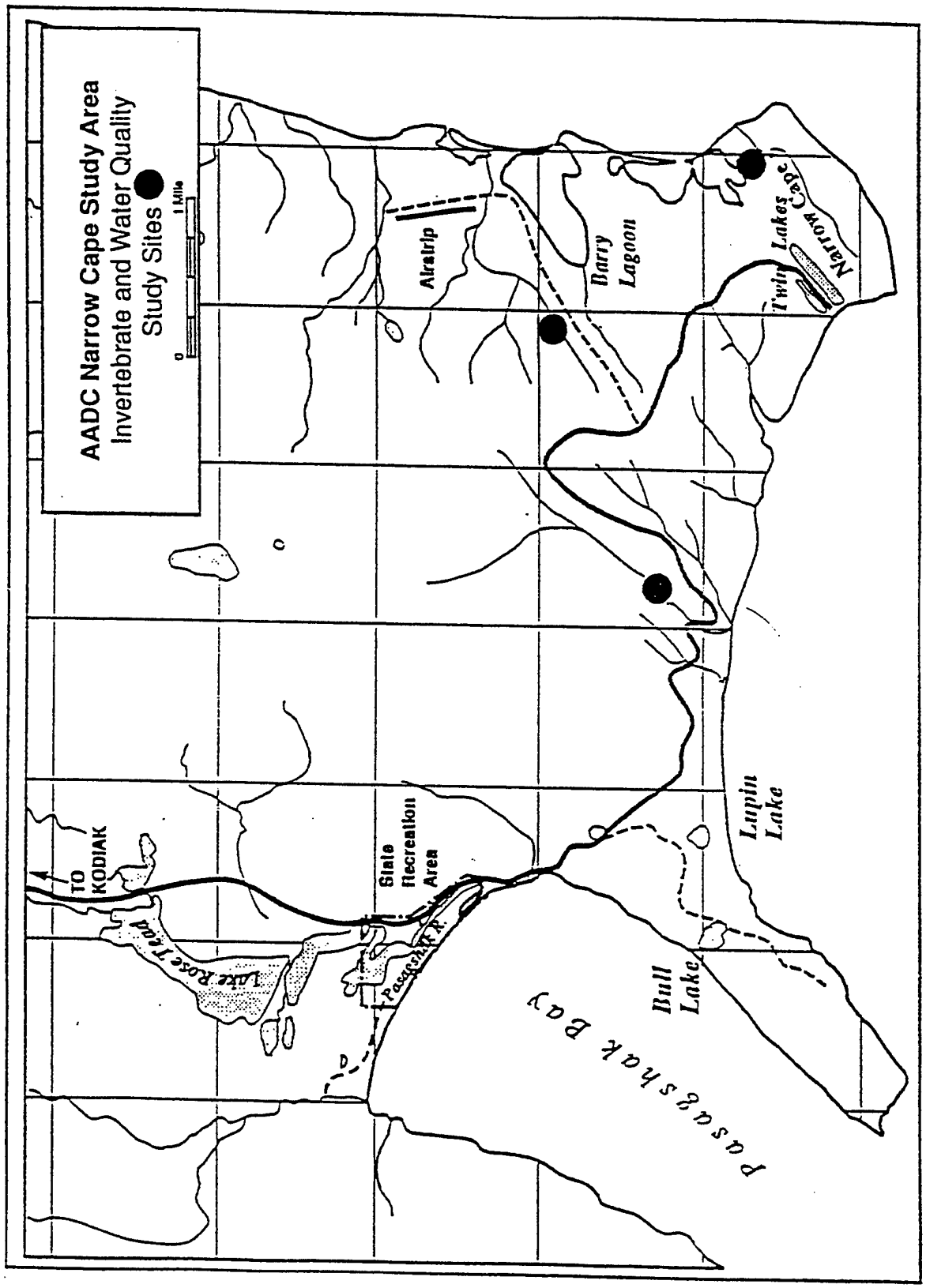

Figure B-5. Invertebrate and water quality study sites in the AADC Narrow Cape study area.

one mile of the launch pad in an easily accessible area to facilitate its construction and subsequent monitoring.

Following construction of the exclosure, several 1 m^2 quadrats will be identified within it and a vegetation census will be taken of each. Each quadrat will be monumented to allow its identification over time. The vegetation census will provide a time-specific record of plant locations, types, numbers, and conditions for later reference purposes. Follow-on visual monitoring of the exclosure is to be done once a year up until the launch of the fifth vehicle from KLC. This will be done to look for obvious signs of direct acid damage to leaves and other possible indications of changes in growing conditions that might be attributable to rocket exhaust exposures.

REPORTING

If monitoring indicates water or soil quality is degrading, AADC will consult with ADEC as soon as possible. Data from this task will be reduced, analyzed, and reported to AADC within 60 calendar days following cessation of field activities. AADC will include this information in its Annual Environmental Monitoring and Natural Resources Management Report.

ACRONYMS AND ABBREVIATIONS

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AADC	Alaska Aerospace Development Corporation
ait	Atmospheric Interceptor Technology
ALTRV	Altitude Reservation
ARTCC	Air Route Traffic Control Center
BOA	Broad Ocean Area
CFR	Code of Federal Regulations
dB	Decibel(s)
dBA	A-weighted decibels
DoD	Department of Defense
DOT	Department of Transportation
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMP	Environmental Monitoring Plan
EMR	Electromagnetic Radiation
ESQD	Explosive Safety Quantity-distance
FAA	Federal Aviation Administration
FL	Flight Level
FTS	Flight Termination System
GHA	Ground Hazard Area
GROW-1	Generic Rest-of-World-1
HERO	Hazards of Electromagnetic Radiation to Ordnance
ICAO	International Civil Aviation Organization
IFT	Integrated Flight Test
L_{dn}	Annual Average Day-Night Sound Level
L_{max}	Maximum Sound Level
MAB	Missile Assembly Building
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NAWCWD	Naval Air Warfare Center Weapons Division
NEPA	National Environmental Policy Act
NOTAM	Notice to Airmen
NOTMAR	Notice to Mariners
OPNAVINST	Chief of Naval Operations Instruction
OSHA	Occupational Safety and Health Administration
PMRF	Pacific Missile Range Facility
QRLV	Quick Reaction Launch Vehicle
RCC	Range Commanders Council
ROI	region of influence
RRF	Risk Reduction Flight
SNL	Sandia National Laboratories
STPO	Strategic Targets Product Office
TNT	Trinitrotoluene
TTS	Temporary Threshold Shift
USAKA/KMR	United States Army Kwajalein Atoll/Kwajalein Missile Range
USASMDC	United States Army Space and Missile Defense Command
USFWS	U.S. Fish and Wildlife Service

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