



United Launch Alliance
DZ31-L480-REC-L-12-00X
7 May 2012

SUBJECT: INCIDENTAL HARASSMENT AUTHORIZATION RENEWAL

TO: NOAA, NMFS, Office of Protected Resources
1315 East-West Highway
Silver Spring, MD, 20910

ATTN.: Dr. Tammy C. Adams

Enclosed is the application for renewal of the Incidental Harassment Authorization (IHA) for marine activities associated with the Delta IV/ Evolved Expendable Launch Vehicle (EELV) Program on South Vandenberg Air Force Base, California. The existing IHA expires on 6 June 2012.

Dredging occurred in July-August of 2011. A flight hardware delivery occurred in October of 2011. Monitoring reports of all harbor activities were submitted as required. No activities are anticipated in the harbor until late 2012.

In case you have questions do not hesitate to call the undersigned at (805) 606-6340 x6566.

Sincerely,

Rhonda Cardinal
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REC/imk

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Application for Incidental Harassment Authorization for Harbor Activities Related to Delta IV/Evolved Expendable Launch Vehicle (EELV) Program

1. Delta IV/EELV Activities Affecting Marine Mammals

An Incidental Harassment Authorization (IHA) is requested to allow the unavoidable incidental take of marine mammals resulting from Delta Mariner operations, cargo unloading activities, and harbor maintenance dredging at Vandenberg Air Force Base (VAFB). These activities are in support of Delta IV/EELV launch activity from Space Launch Complex 6 (SLC-6) at VAFB (Figure 1-1).

All activities covered by the IHA will take place in or near the VAFB harbor. Marine mammals that are typically present in the area are the Pacific harbor seal (*Phoca vitulina richardii*) and, less frequently, the California sea lion (*Zalophus californianus*). Harbor seals haul out on the rocks outside the harbor breakwater, approximately 200 yards from the dock. Typically the seals only use this haul-out area when tides are +1 foot Mean Sea Level (MSL) or lower. At higher tides, the flat rocks where the seals prefer to haul out are awash or submerged.

Sea lions were observed to be hauling out on the breakwater during wharf construction that took place in June-July 2002. This is not a common occurrence, and may have been due to fish schooling in the area. (ENSR 2002a)

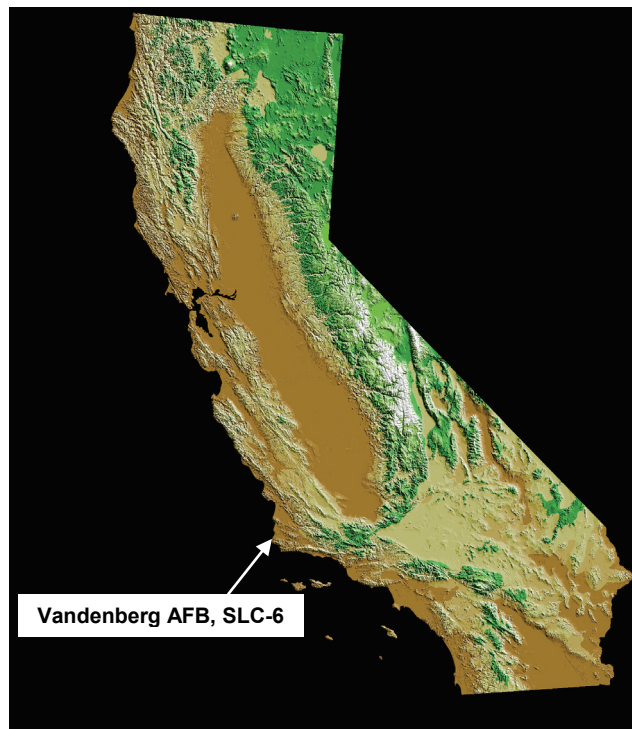


Figure 1-1: Vandenberg AFB, California.

The Delta IV/EELV launch vehicle is comprised of a common booster core (CBC), an upper stage, and a payload fairing. The size of the CBC requires it to be transported to the launch site by a specially designed vessel, the Delta Mariner. The Delta Mariner docks at the harbor on south VAFB. To allow safe operation of the Delta Mariner within the harbor, maintenance dredging is required on a periodic basis.

All activities discussed in this application have been discussed in the documents required for National Environmental Policy Act compliance:

- *Final Environmental Impact Statement for the Evolved Expendable Launch Vehicle Program* - April 1998 (Record of Decision - June 1998) – United States Air Force (USAF) 1998.
- *Final Supplemental Environmental Impact Statement* (provides analysis of larger solid rocket motors) - March 2000 (Record of Decision - May 2000) – USAF 2000.
- *Final Environmental Assessment (EA) for Harbor Activities Associated with the Delta IV Program at VAFB* - July 2001 (Finding of No Significant Impact August 2001) – ENSR International (ENSR) 2001a.
- *Biological Opinion for the EELV Program at VAFB, Santa Barbara County* (1-8-99-F-27)

All noise measurements specified in this document were obtained in air and expressed as A-weighted decibels (dBA).

1.1 Delta Mariner Operations

The Delta Mariner was specially designed to transport the oversized Delta IV/EELV launch vehicle components. The vessel is 312 feet in length and 84 feet wide. It has an all steel welded hull built for ocean-going service. It is a roll-on, roll-off, self-propelled ship with a totally enclosed, watertight cargo area, superstructure forward, and a stern ramp. The vessel is capable of operating at an 8-foot draft.

Vessel speed reduces to 1.5 to 2 knots once the vessel is within 3 miles of the harbor. The vessel enters the harbor stern first, approaching the wharf and dolphins at less than 0.75 knot. At least one tugboat always accompanies the Delta Mariner during visits to the VAFB harbor. The vessel enters the harbor during daylight hours at high tide. Departure occurs under the same conditions.

Delta Mariner associated noise sources are ventilating propellers used for maneuvering vessel into position and the sound the cargo bay door makes when making contact with the dock ramp (no actual measurements have been taken outside the vessel).

1.2 Harbor Maintenance Dredging

Dredging the harbor involves considerable activity and the use of noisy, heavy equipment. The noise levels expected from the dredging and other construction equipment, as well as the background noise measured at the dock area, are presented in Table 1.2-1. Noise intensity decreases proportional to the square root of the distance from the source. A dredging crane at the

end of the dock producing 88 dBA of noise would still be quite noisy (approximately 72 dBA) at the nearest beach or the end of the breakwater, roughly 250 feet away (Figure 1.2-1). Thus, an animal hauled out on the beach or breakwater could hear the dredge quite clearly.



Figure 1.2-1: Harbor Dredge Area and Harbor Seal Haul-out Location.

Table 1.2-1: Noise Levels of Heavy Equipment

Type of Equipment	Range of Typical Noise Levels (dBA) at 50 feet	Range of Max. Noise Level (dBA) at 250 ft.
Backhoe	84-93	70-79
Water Truck (3,000 gallons)	81-84	67-70
Clamshell Dredge	75-88	61-74
Roll-off truck transporter	82-95	68-81
EPT	56-82*	43-68
Ambient background noise at harbor	35-48**	

* Noise level measured within 20 feet from the engine exhaust (Acentech, Inc. [Acentech] 1998).

** Noise level measured at the dock by Acentech (1998) approximately 250 feet from the beach.

Source of Noise Levels: Acentech 1998; Environmental Protection Agency (EPA) 1971.

1.3 Cargo Movement Activities

The CBCs are 16.4 feet in diameter and between 161 and 170 feet long. The CBC sits 9 feet above the ground while in the transportation cradle/pallets. It is unfueled in its transportation configuration. The removal of the CBC from the Delta Mariner is accomplished using an Elevating Platform Transporter (EPT). The EPT is powered by a diesel engine manufactured by Daimler-Chrysler AG (Mercedes), model OM442A, 340HP. The EPT produces approximately 85 dBA, measured less than 20 feet from the engine exhaust, when the engine is running at mid speed. Prior to movement, the EPT operator sounds the horn to alert personnel in close proximity to the EPT that it is about to operate. The EPT operation procedure requires two short beeps of the horn (approximately 1/3 second each) prior to starting the ignition. Sound level measurements for the horn ranged between 84 and 112 dBA at 25 feet and between 62 and 70 dBA at 200 feet. The highest measurement was taken from the side of the vehicle where the horn is mounted.

Cargo unloading is limited to periods of high tide. It takes approximately 2 hours to remove the first CBC from the cargo bay and 6 hours to remove a complement of three CBCs. Removal of the remaining cargo may take up to 2 additional hours, which may consist of two upper stages, one set of fairings, and one payload attach fitting. The total of 10 hours includes time required to move the flight hardware to the staging area (Figure 1.3-1). Flight hardware items, other than the CBCs, are packaged in containers equipped with retractable casters and tow bars. These containers are towed off the vessel by a standard diesel truck tractor that generates approximately 87 dBA (at a distance of 50 feet) in the operational mode. Noise from the ground support equipment is muted while inside the cargo bay and audible to marine mammals only during the time the equipment is in the harbor area.

2. Dates, Durations, and Affected Geographical Regions

With approximately 153 square miles of mostly undeveloped land and approximately 35 miles of coastline, VAFB is the largest remaining area of relatively undisturbed coastal habitat in south-central California (Halliburton NUS Environmental Corporation [Halliburton] 1993).

West Ocean Avenue bisects VAFB into two main areas, informally known as North Base and South Base. West Ocean Avenue extends westbound from the city of Lompoc to a public beach on the Pacific coast known as Surf Beach. All activities described in this application will take place at the VAFB harbor, located on South Base, approximately 1.43 miles south of Point Arguello (Figure 2.1).

Maintenance dredging, vessel operations and cargo off-loading will be performed periodically as required for launch support.

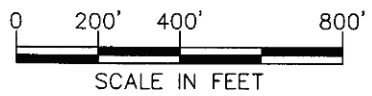
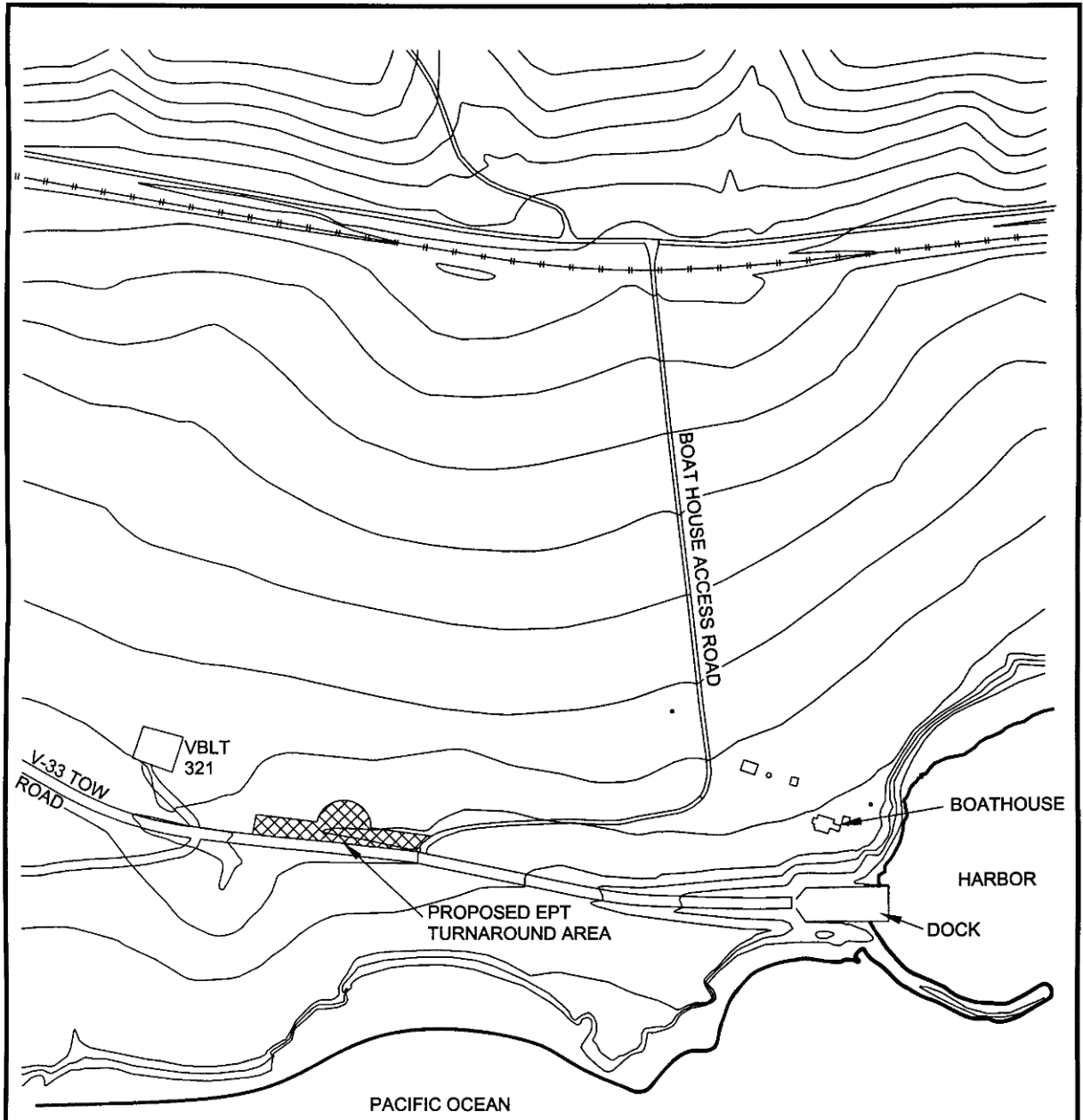


FIGURE 1.3-1
**CARGO STAGING
 LOCATIONS**
 Vandenberg Air Force Base
 California

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Delta IV/EELV Facilities Vandenberg Air Force Base

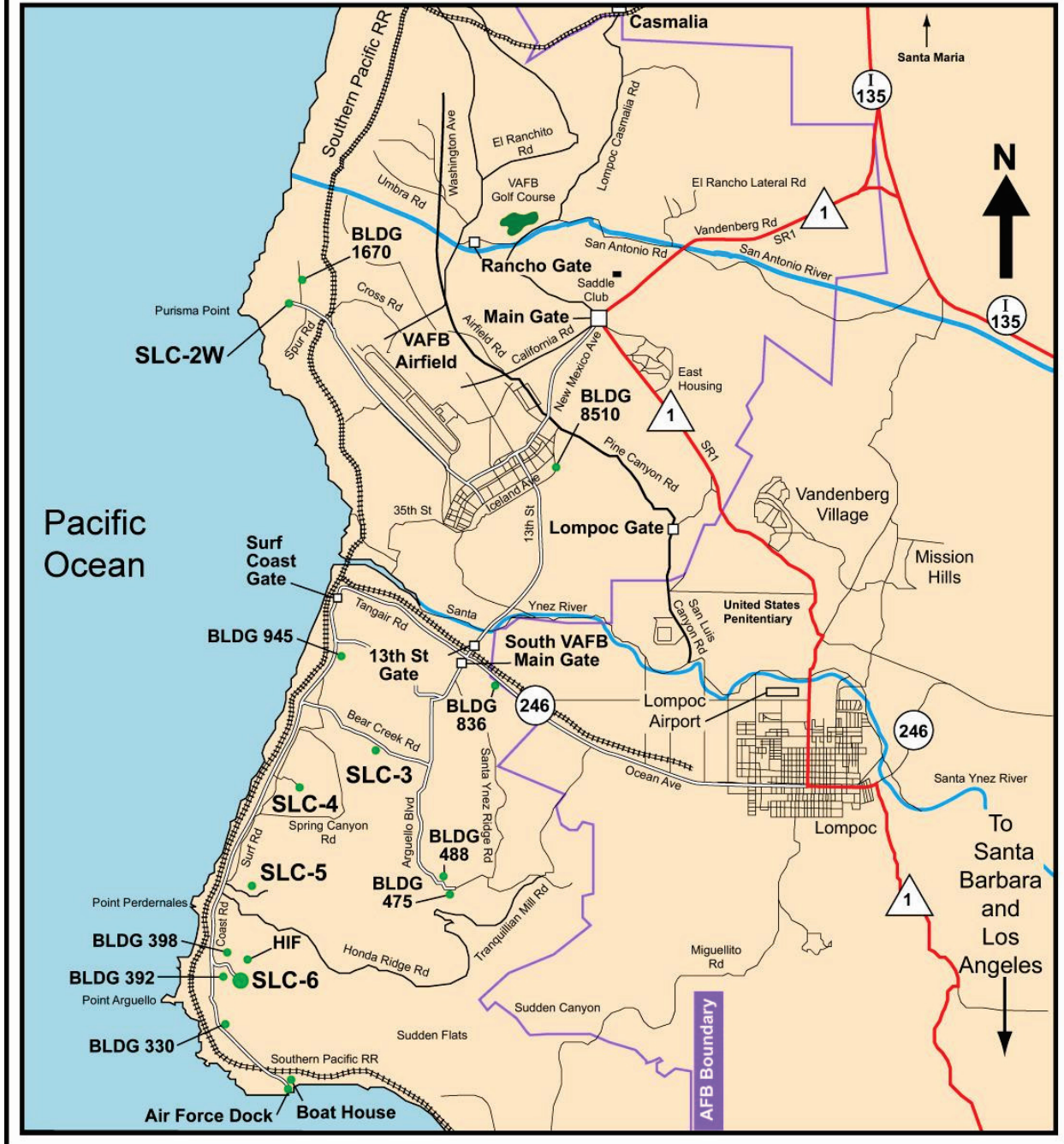


Figure 2.1 Vandenberg Air Force Base

2.1 Delta Mariner Operations

The maximum number of Delta Mariner visits is limited to four per year. The first hardware delivery occurred in January 2003. Another delivery occurred in September 2004. There were no deliveries in 2005, 2006, 2007 or 2008. Flight hardware was delivered to the harbor in September of 2009, June of 2010 and October of 2011.

A fully-loaded vessel can be off-loaded in 10 hours; however, the Delta Mariner may need to leave the dock and return at another time due to tide and wind extremes that may halt the removal of cargo. The Delta Mariner cannot remain in the harbor during periods of low tide due to the shallowness of the harbor. The EPT cannot move the CBC if wind gusts exceed 25 miles per hour.

Baseline marine mammal monitoring is performed prior to all Delta Mariner deliveries. A copy of the monitoring report is submitted after the completion of every dredge and delivery cycle (dredging is not always required). Flight hardware delivery operations are always accomplished during high tide; therefore, no monitoring is done during the actual delivery operation. Flight hardware deliveries were made and monitoring reports were subsequently submitted in November of 2009, July of 2010 and November of 2011. The next delivery is scheduled for November of 2012.

2.2 Cargo Movement Activities

Described above in Section 2.1.

2.3 Harbor Maintenance Dredging

Dredging-related activities normally last between 3 and 5 weeks, including set-up and tear-down activities in the water and on shore. Dredging may proceed 24 hours per day to complete the job as quickly as possible and minimize the disruptive effect on the local animals; however, dredging at VAFB has historically been conducted in the daylight. Sedimentation surveys completed since the initial dredging indicate that maintenance dredging could be required annually, or even twice per year, depending on the hardware delivery schedule. Up to 5,000 cubic yards of sediment are allowed to be removed from the harbor per year by the United States Army Corps of Engineers (ACOE) permit. This quantity may be revised upwards to 10,000 cubic yards during the next renewal of the permit. A survey occurs several months prior to each Delta Mariner visit to assess whether the harbor can be safely navigated. The area to be dredged is shown in Figure 1.2-1. The environmental impacts of the dredging were assessed in the Harbor Activities EA (ENSR 2001a).

3. Species and Numbers of Affected Marine Mammals

Marine mammals present on and around the VAFB coastline and the Northern Channel Islands include 29 species of cetaceans and six species of pinnipeds. Because they are not typically found in the near vicinity of the harbor, cetaceans are not expected to be impacted by the activities in the harbor area. Pinnipeds that may be affected by this action include Pacific harbor

seals and California sea lions. Northern elephant seals (*Mirounga angustirostris*) may occur on VAFB, but do not haul out in the harbor area. Northern fur seals (*Callorhinus ursinus*), Guadalupe fur seals (*Arctocephalus townsendi*), and Steller sea lions (*Eumetopias jubatus*) also occur along the California coast and Northern Channel Islands but are not likely to be found on VAFB. The beaches and rocks in the vicinity of the VAFB Harbor are only used as haul-outs; no breeding, molting, or mating occurs there.

The Pacific harbor seal is the only species that regularly hauls out near the VAFB Harbor area (Figure 1.2-1). Although California sea lions have been observed hauling out on the breakwater, this is thought to be an atypical occurrence. California sea lions occasionally use Rocky Point as a haul-out, which is approximately 1 mile north of the harbor area (USAF 2008). Northern elephant seals and other pinnipeds are unlikely to be present.

During the initial dredging of the VAFB Harbor in September 2001, harbor seals were the only pinniped species present. The greatest number of harbor seals present during that dredging was 23, averaging seven seals per observation period over the duration of the activity (ENSR 2001b). During the wharf modification activity in June-July 2002, the number of harbor seals hauling out increased to a maximum of 43 animals, with an average of 21 seals hauled out during periods when tides were at or below +1 foot MSL. During the December 2002 dredging, harbor seals were only present on two of the 10 days of activities, with a maximum of 19 on one day. No dredging occurred again until July 2009, when the maximum number of harbor seals observed hauled out was 28. The most recent dredging event occurred in July-August 2011; the maximum number of harbor seals observed hauled out during this event was 36 (with two additional seals in the water south of the breakwater).

California sea lions also hauled out in small numbers (up to 6 individuals) on the breakwater during the wharf modifications in June-July 2002 (ENSR 2002a). Sea lions had not regularly used the breakwater as a haul-out prior to that time, and were not observed again until the dredging in July 2009, when two California sea lions were documented hauled out. In 2009, starting in June, sea lions were observed regularly in the vicinity of South Rocky Point, with the birth of short-lived pups occurring in late June at North Rocky Point. Increased sea lion observations that year may have been related to the predicted El Niño event for 2009 (National Oceanic and Atmospheric Administration [NOAA] 2009). This would be consistent with observations of increased numbers of sea lions hauling out at VAFB during previous El Niño events (ManTech SRS Technologies, Inc. [MSRS] 2009a). California sea lions were again documented hauled out at the VAFB Harbor during the dredging that occurred in July-August 2011. On this occasion, one injured and emaciated weaned sea lion pup was documented hauled out at the breakwater and dock area during dredging activities for 1 day, and a second juvenile sea lion, with slight injuries on its chest and left flipper, was observed on a different day hauled out on the breakwater for approximately 2.5 hours (AECOM 2011a).

4. Status and Seasonal Distribution of Affected Marine Mammals

Pacific Harbor Seal. The Pacific harbor seal ranges along the west coast of North America from the central Bering Sea off Alaska to Baja California. The California stock of harbor seals is

not considered threatened or endangered under the Endangered Species Act, and are not depleted or a strategic stock under the Marine Mammal Protection Act (Carretta et al. 2011).

Pacific harbor seals inhabit the entire coast of California, including the offshore islands, forming small stable populations, although they are declining on San Miguel Island. This species is non-migratory, but local movements of short to moderate distances occur in relation to breeding activities and abundance of food resources (California Department of Fish and Game [CDFG] 1990). They breed along the California coast between March and June, occurring in the greatest numbers on land in late spring and early summer during the molt. The preferred breeding habitat of the Pacific harbor seal includes offshore rocks, sandy beaches, gravelly or rocky beaches, and estuarine mud flats (NOAA National Marine Fisheries Service [NMFS] 1997). Molting does not cause Pacific harbor seals to break from their foraging routine although they spend about 20 percent more time on shore (SRS Technologies, Inc. [SRS] 2001). The molt lasts approximately 6 weeks and is completed before September. Between autumn and winter, Pacific harbor seals adopt a semi-pelagic life and spend less time on land, but remain close to shore while at sea.

The main harbor seal haul-outs on VAFB are near Purisima Point and at Lion's Head (approximately 0.4 mile south of Point Sal) on north VAFB, and between the VAFB Harbor north to South Rocky Point Beach on south VAFB (MSRS 2009b). This south VAFB haul-out area is composed of several sand and cobblestone coves, rocky ledges, and offshore rocks. The Rocky Point area is used as breeding habitat; it is approximately 1 mile north of the VAFB harbor (MSRS 2009b). Harbor seals have been reported to haul out on the coast at Sudden Ranch, approximately 0.5 miles south of the harbor.

The minimum harbor seal population in California is 31,600 (Carretta et al. 2011). While harbor seal counts showed a rapid increase from 1972 to 1990, net production rates appeared to decrease from 1982 to 1994 (Carretta et al. 2011). This decrease in population coincides with a decrease in human-caused mortality, which may be indicative that the population is approaching its environmental carrying capacity (Carretta et al. 2011). The VAFB population in 2002 was estimated at 1,115 seals ([SRS 2003). The harbor seal population on VAFB experienced an annual 4.1 percent increase from 2003 to 2006 and appears to be reaching its carrying capacity, as the population shows little change or slight increases between 2005 and 2008 (MSRS 2009b). The 2004 census indicates that the Channel Islands support an estimated 5,647 harbor seals (Lowry et al. 2005).

California Sea Lion. The California sea lion ranges from British Columbia south to Mexico. California sea lions are not considered threatened or endangered under the Endangered Species Act, and are not depleted or a strategic stock under the Marine Mammal Protection Act (Carretta et al. 2011).

During the breeding season, the majority of California sea lions are found in southern California and Mexico. Rookery sites in southern California are limited to San Miguel Island and to the more southerly Channel Islands of San Nicolas, Santa Barbara, and San Clemente (NMFS 1997). Rocky ledges and sandy beaches on offshore islands are the preferred rookery habitat. Breeding season begins in mid-May. The California sea lion molts gradually over several months during late summer and fall. Since the molt is not catastrophic, the California sea lion can enter the water to feed.

California sea lions exhibit annual migratory movements; in the spring, males migrate southward to breeding rookeries in the Channel Islands and Mexico, and then migrate northward in late summer following breeding season. Females do not appear to migrate but remain near breeding rookeries (CDFG 1990). The greatest population on land occurs in September and October during the post-breeding dispersal although many of those sea lions, particularly juveniles and sub-adult and adult males may move north away from the Channel Islands.

The minimum population size of the U.S. stock of California sea lions in 2010 was estimated at 141,842 seals, with a maximum growth rate of 6.52 percent annually (Carretta et al. 2011). Between 1985 and 1987, population data indicated that most of the individuals on the Northern Channel Islands were on San Miguel Island, with a population ranging from 2,235 to over 17,000. In 1994, at the Channel Island breeding rookeries, an estimated 81,000 sea lions were present (Gilardi and Mazet 1999).

Fewer than 100 sea lions are found seasonally on VAFB (USAF 2008). Sea lions may sporadically haul out to rest when foraging or transiting through the area, but generally spend little time there. Areas used for hauling out include Rocky Point, Point Arguello, and Point Pedernales on south VAFB, and Point Sal just north of VAFB (United States Air Force [USAF] 2008).

Northern elephant seal. The Northern elephant seal is found from Alaska to Baja California, and breed and give birth in California (U.S.) and Baja California (Mexico), primarily on offshore islands from December to March. Adults molt on land between March and August and return to feeding areas after molting until the breeding season. The California breeding population is considered a separate stock (Carretta et al. 2011). Northern elephant seals are not considered threatened or endangered under the Endangered Species Act, and are not depleted or a strategic stock under the Marine Mammal Protection Act (Carretta et al. 2011).

The minimum population size is conservatively estimated at 74,913 individuals (Carretta et al. 2011). Pup counts completed at colonies through 2005 indicate that the population continues to grow in California while it is stable or slightly decreasing in Mexico (Carretta et al. 2011).

There has been no verified breeding of northern elephant seals on VAFB or offshore islets; however, some areas of the shoreline are used as haul-outs by juvenile and sub-adult elephant seals, primarily immature males. There are no verified records of elephant seals on VAFB prior to 2003. In April 2003, hauled out elephant seals were first documented at South Rocky Point during the molting season (USAF 2003). A maximum of 188 elephant seals were counted in 2004; however, the numbers observed hauled out since then have been decreasing, with no documented individuals hauled out since 2007 (USAF 2008).

5. Type and Method of Incidental Take Authorization Requested

United Launch Alliance (ULA) requests an IHA allowing only the unintentional incidental harassment of pinnipeds in the VAFB Harbor area. Activities in the harbor area may elicit a head alert in nearby Pacific harbor seals and California sea lions, or cause them to approach the water or flush into the water.

6. Number and Frequency of Marine Mammals Potentially Affected

The principal form of incidental take resulting from the VAFB Harbor activities associated with the Delta IV/EELV program is expected to be infrequent, incidental, and unintentional harassment of pinnipeds resulting from noise and visual activity generated by the short-term operations of recurring maintenance dredging, Delta Mariner operations, and cargo movement. Pinniped mortality is extremely unlikely. Other than periods of elevated noise and visual activity due to the aforementioned activities, no temporary or permanent habitat modifications would occur. No animals would be approached or handled by humans.

Estimates of the numbers of marine mammals that might be affected are based on consideration of the number of animals that could be disturbed appreciably by approximately 43 days of operations. ULA bases these estimates on historical pinniped survey counts from 2001 to 2011 (Table 6-1), and calculates takes by multiplying the average of the maximum abundance by 43 days.

ULA requests an IHA to incidentally harass approximately 1,161 Pacific harbor seals (27 animals by 43 days), 86 California sea lions (2 animals by 43 days), and 43 northern elephant seals (1 animals by 43 days).

Requested Incidental Take of Marine Mammals

<u>Species</u>	<u>Estimate of Incidental Take</u>
Pacific harbor seal	1,161
California sea lion	86
Northern elephant seals	43

Table 6-1: Historical pinniped counts during VAFB Harbor activities associated with the Delta IV/EELV program.

Historical Monitoring	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Pacific Harbor Seals	23	43	0	0	0	0	22	22	28	14	38
California Sea Lions	0	6	0	0	0	0	0	0	2	2	1
Northern Elephant Seals	0	0	0	1	0	0	0	0	0	0	0

Previous monitoring efforts have yielded limited gender and age data for harbor seals. Reproductive condition is dependent on how near to the breeding season harbor activities occur. The nearest pupping sites occur north of the VAFB Harbor area at Rocky Point, approximately 1 mile away. The maximum number of harbor seals present (43 individuals) occurred during the wharf modification in June 2002, and averaged 21 seals per day when tidal conditions were favorable for hauling out (ENSR 2002a). Harbor seals were present in somewhat smaller numbers during the dredging events in 2001, 2002, 2007, 2008, 2009, and 2010, and were closer to the June 2002 numbers in 2011.

The highest number of sea lions present also coincided with the wharf modification in June 2002 when six sea lions were observed, with daily counts ranging between one and six animals (ENSR 2002a). The only other observations of sea lions occurred during the dredging events in 2009 and 2010, when two animals hauled out, and in 2011 when one animal hauled out on two separate occasions.

Northern elephant seals could also be subjected to level B harassment. Although no elephant seals have been observed near the VAFB Harbor area in recent years, they could occur as was the case in 2005 (one individual).

7. Potential Impacts of the Project on Marine Mammals

On VAFB, the Delta IV/EELV harbor activities will mainly affect Pacific harbor seals, and to a lesser extent California sea lions and Northern elephant seals, as these two species haul out at these mainland coastal sites only infrequently and in small numbers. Other pinniped species rarely, if ever, haul out on VAFB coastal sites.

The maintenance dredging events are relatively short in duration. Vessel operations and cargo off load operations would occur a maximum of three times per year and are also short in duration. The affected pinnipeds are highly mobile; thus, potential impacts are expected to be short-term and any animals frightened away from the area by the noise and activity should return after the completion of each task. Due to the sporadic nature and short duration of the activities, no cumulative impacts to marine mammals are expected.

Monitoring of harbor seals and sea lions during wharf modification activities and dredging events that occurred between 2001 and 2011 indicate that marine mammals respond to sudden noises or unexpected visual stimuli with a head alert initially and occasionally will flush from the haul-out. Sea lions appear to be much less sensitive to disturbance than harbor seals, even when they were close to the activity. Visual events that invoke harbor seal responses include the sudden swing of the crane boom, and shadows caused by equipment that was backlit during nighttime dredging activities. Nevertheless, seals and sea lions continued to frequent the VAFB Harbor area during these activities, despite the presence of noise and activity (ENSR 2001b, 2002a; MSRS 2009a, 2010; AECOM 2011a, 2011b).

Past studies have found that disturbance events that flush seals into the water result in a return to previous numbers only 39 percent of the time (Suryan and Harvey 1999, Allen et al. 1984, Becker et al. 2009). A scientific research program conducted at VAFB to study the haul-out behavior of Pacific harbor seals indicated that the main influence on daily haul-out patterns of harbor seals on south VAFB is the time of day rather than tide height, as the peak number of seals hauled out occurred daily between 1100 and 1700 hours (USAF 2008). Haul-out behavior was also influenced by combinations of high tide and large swell, or high temperature and no wind. Monitoring of pinniped behavior during harbor activities between 2001 and 2011 and post-activity surveys conducted after each disturbance period indicate that the VAFB Harbor haul-out site continues to be used and the temporary disturbances do not deter animals from returning to the area after activities conclude (AECOM 2011a, 2011b). The trend indicated by

Suryan and Harvey (1999) and Allen et al. (1984) is not repeated with the Delta IV/EELV activities at the VAFB Harbor.

The short-term effects of these disturbances on individual animals are likely limited to minor increases in energetic expenditure and stress responses due to increased vigilance and evasive behaviors, and potentially increased time in the water. Alternative haul-out sites occur near the VAFB Harbor area away from where disturbances occur during dredging and Delta Mariner operations, where displaced animals can haul out if the need is great enough during a specific tide cycle. Whether these short-term effects can accumulate into long-term effects on survival and reproduction depend on the long-term foraging success and nutritional status of individual animals; unless conditions are relatively poor such that an individual has no margin to recoup small energetic losses from disturbance, there should be no significant long-term effects on survival or reproduction.

8. Impact on Marine Mammal Availability for Subsistence

There is no subsistence hunting of marine mammals in the project area; therefore, activities at the VAFB Harbor would not be expected to impact marine mammal availability for subsistence.

9. Anticipated Impact on Marine Mammal Habitat

There will be no loss of habitat resulting from the Delta IV/EELV related VAFB Harbor activities over the period covered by the requested IHA. Harbor seals are known to use offshore rocks, rocky ledges and sandy beaches between South Rocky Point and the boat dock area. (USAF 2008).

As indicated in Section 1 of this application, impacts to marine mammal habitat will be limited to occasional brief periods of noise and visual activity presenting a temporary impact to harbor seals and sea lions in the VAFB Harbor area. These activities will not result in loss of habitat.

10. Anticipated Impact of Habitat Modification on Marine Mammal Stocks

There will be no loss of habitat resulting from Delta IV/EELV related harbor activities; therefore, there would be no impact from habitat loss to marine mammal populations.

11. Mitigation Measures

Since there will be no long-term or cumulative impacts to marine mammal habitat, there will be no anticipated requirement for mitigation with respect to habitat. Harbor activities described in

Section 1 will have no impact on breeding, molting or pupping because those pinniped activities do not occur in the vicinity of the VAFB Harbor area.

Past measures implemented during Delta IV/EELV activities at the VAFB Harbor have reduced disturbances to pinnipeds present within the vicinity by limiting the level of the disturbance or maintaining a constant level that diminished the intensity of disturbance and the potential for startling reactions from the animals. ULA considers these measures beneficial for the species and will continue to implement such measures. Mitigation measures to be implemented for Delta IV/EELV activities occurring at the VAFB Harbor include:

- If activities occur during nighttime hours, lighting will be turned on before dusk and remain on the entire night to avoid startling pinnipeds at night.
- Activities will be initiated before dusk.
- Construction noises will be kept constant (i.e., activities will not be interrupted by periods of quiet in excess of 30 minutes) while pinnipeds are present.
- Start-up of activities (either initially or if activities have ceased for more than 30 minutes) will include a gradual increase in noise levels if pinnipeds are in the area.
- ULA will employ a NOAA-NMFS qualified marine mammal observer to visually monitor the pinnipeds on the beach adjacent to the harbor and on the rocks for any flushing or other behaviors that result from activities at the VAFB Harbor. During nighttime activities, the harbor area will be illuminated, and the monitor will use a night vision scope.
- To the extent possible, the Delta Mariner and accompanying vessels will enter the harbor only when the tide is too high for pinnipeds to haul out on the rocks. The vessel will reduce speed to 1.5 to 2 knots (1.5-2.0 nm/hr; 2.8-3.7 km/hr) once the vessel is within 3 miles (4.83 km) of the harbor. The vessel will enter the harbor stern first, approaching the wharf and mooring dolphins at less than 0.75 knot (1.4 km/hr).

12. Arctic Subsistence Plan of Cooperation

These activities do not take place in or near any traditional Arctic subsistence hunting area; therefore, a cooperation plan is not required.

13. Monitoring and Reporting

ULA will notify the NOAA-NMFS 2 weeks prior to the initiation of each activity discussed in Section 1.

Monitoring will be conducted by a sufficient number of biologically-trained, on-site individual(s), approved in advance by the NOAA-NMFS Southwest Regional Office.

Monitoring for any given harbor activity will consist of the following:

- Prior to each day's activities, conduct baseline observations on the number, type(s), location(s), and behavior of marine mammals in the project area.
- Conduct and record observations of harbor seals in the vicinity of the harbor for the duration of the activity occurring when tides are low enough for harbor seals to haul out (+ 2 feet. MSL, or less).
- If sea lions haul out in the harbor vicinity, observations on sea lions will be conducted and recorded for the duration of the activity, regardless of tidal conditions.
- After each day's activities, conduct observations of pinniped haul-outs in the project area and record information on the number, type(s), location(s), and behavior of marine mammals.
- During nighttime activities, the harbor area will be lit and the monitor will observe animals using a night vision scope.

A report will be submitted at the frequency specified by the NOAA-NMFS. This report will include the following:

- Date, time, and duration of activity;
- Weather;
- Tide state;
- Composition (species, gender, and age class) and locations of haul-out group(s);
- Horizontal visibility;
- Results of the monitoring program:
 - Number and species of pinnipeds present on haulout(s) prior to start of activity and behavioral patterns.
 - Number and species of pinnipeds that may have been harassed as noted by the number of pinnipeds estimated to have entered the water as a result of noise related to the activity.
 - Brief description of any activity/action that causes animal(s) to flush;
 - Length of time(s) pinnipeds remained off the haul-out or rookery.
 - Noted behavioral modifications by pinnipeds that were likely the result of the activity in the harbor.

14. Planned Research and Learning Activities

ULA will continue to coordinate monitoring of pinnipeds during Delta IV/EELV activities at the VAFB Harbor with VAFB Asset Management staff and other pinniped monitoring activities occurring on VAFB. All information collected during Delta IV/EELV pinniped monitoring events is submitted to VAFB Asset Management staff for incorporation into the basewide monitoring plan to enhance and assist in the increased knowledge and understanding of pinniped populations that occur on the VAFB coastline. The information collected during these monitoring events, along with the information collected by VAFB for monthly monitoring of pinniped populations and during space vehicle and missile launches is essential for a solid understanding of the trends of these populations of marine mammals and the effects activities on VAFB have on their continued presence.

Pursuant to the IHA requirements, data collected during Delta IV/EELV activities is submitted in the form of a report to the NOAA-NMFS Office of Protected Resources (Silver Spring, MD) and a copy provided to the VAFB Asset Management Flight, and at the discretion of these agencies, made available for interested parties and researchers.

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