DEPARTMENT OF THE NAVY
NAVAL UNDERSEA WARFARE CENTER DIVISION
610 DOWELL STREET
KEYPORT, WASHINGTON 98345-7610

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Ser 20/906-11

JAN 10 2012

Mr. James H. Lecky
Director, Office of Protected Resources
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
SSMC3, Room 13821
1315 East-West Highway
Silver Spring, MD 20910-3282

Dear Mr. Lecky:

The Navy is formally submitting to National Marine Fisheries Service (NMFS) the first Marine Mammal Monitoring Report for the Naval Sea Systems Command, Naval Undersea Warfare Center Keyport Range Complex. This report satisfies reporting requirements specified in the NMFS Final Rule of 12 Apr 2011 and the Letter of Authorization of 16 May 2011.

If you have any questions regarding this report, the point of contact is Ms. Shaari Unger at (360) 315-2258.

Sincerely,

S. E. IWANOWICZ

Enclosure: Annual Range Complex Marine Mammal Monitoring Report of January 2012

Prepared for and submitted to:
National Marine Fisheries Service
Office of Protected Resources

Prepared by:
Department of the Navy
In accordance with the Letter of Authorization
Under the MMPA and ITS authorization under the ESA

Annual Range Complex Monitoring Report

YEAR 1

12 April 2011 to 08 November 2011

For The U.S. Navy's
NAVSEA NUWC Keyport Range Complex

January 2012

Enclosure

THE US NAVY'S
NAVSEA NUWC KEYPORT RANGE COMPLEX
YEAR 1 ANNUAL MONITORING REPORT

Introduction

The U.S. Navy (Navy) prepared this Year 1 Annual Range Complex Monitoring Report in compliance with the National Marine Fisheries Service (NMFS) Final Rule under the Marine Mammal Protection Act for the NUWC Keyport Range Complex (reference (a) NMFS 2011a). This report describes the marine mammal monitoring efforts during High Frequency Active Source (HFAS) and Mid-Frequency Active Source (MFAS) events, as well as recommendations for improving future survey design and data collection.

The methodology and results of the marine mammal monitoring efforts, as well as results from the pre- and post-event marine mammal surveys are described in Appendix A. Navy Marine Mammal Observers (NMMO) that supported the first year monitored effort were from Naval Facilities Engineering Command Northwest (NAVFAC NW).

Year One Summary

The Navy met its first year Keyport Range Complex monitoring obligations as specified in the NMFS Final Rule (NMFS 2011a) and subsequent annual Letter of Authorization (NMFS 2011b). This report documents the results of the required HFAS and MFAS events in Dabob Bay Range Complex (DBRC) site which included NMMOs for two specified events.

During this first year there was a limited amount of time from authorization of the NUWC Keyport Range Complex Letter of Authorization on 16 May 2011, the Record of Decision on 7 July 2011, to the end of the first monitoring period through 1 September 2011. To add value to the monitoring reporting process, this report was delayed to include viable event results and recommendations from both the facility and the independent NMMOs. All participants were in place and appropriate range events were used which included HFAS and MFAS components on the Dabob Bay Range site. This provides the opportunity for NMFS and Navy to develop adaptive management recommendations and then proceed with improved monitoring events in 2012.

This document is submitted to provide valuable information for marine mammal observation improvement.

The requirements are described in 50 CFR § 218.174(c)(l)(i). The specification is for the holder of the authorization to conduct a minimum of two special visual surveys per year to monitor HFAS and MFAS, respectively, at the DBRC site. Visual and passive acoustic monitoring is required. NMMO support was provided by NAVFAC NW allowing for Navy observers to provide a perspective outside a range operator.

For the high frequency source event, the observers were used during a torpedo test event to demonstrate torpedo against mobile target. The active sonar levels and output were intermittent and could vary within the S6, S7, and S8 parameters as outlined in the NMFS Final Rule (NMFS 2011a).

For the mid frequency source event, the observers were used while the Underwater Emergency Warning System (UWES) was being operated. It operates at the 700 Hz to 10.6 kHz at a source level of less than 170 dB re 1 microPa @ 1 m. The bandwidth is 18.75 Hz. This is similar to the modeled S4 source.

Year 2 Monitoring 2 September 2011 to 1 September 2012

Adaptive Management For Monitoring In The Keyport Range Complex

NMFS has acknowledged that the Keyport Range Complex monitoring will enhance the understanding of distribution and/or abundance comparisons in times or areas with concentrated HFAS/MFAS versus times or areas without HFAS/MFAS and provide an increased knowledge of the affected species as well as increase our understanding of the effectiveness of certain mitigation and monitoring measures. Additionally, NMFS also pointed out that information gained from the observations associated with the Navy's monitoring may be used in the adaptive management of mitigation or monitoring measures in subsequent NMFS authorizations, if appropriate. Therefore, the Navy's adaptive management of Keyport Range Complex monitoring under its Marine Mammal Protection Act responsibilities involves close coordination with NMFS to align marine mammal monitoring with the overall objectives stated within the Introduction to this report. To date, 2011 monitoring within the Keyport Range Complex represents the first year of a planned five year effort. At this point, Keyport would propose one modification to the prescribed pre and post event monitoring of the monitoring plan as well as the location.

Recommend changing the timing of the shore-based and vessel surveys currently required. Rather than requiring surveys be conducted the day prior and the day following the activity, recommend including the option of surveys the day of the activity before and after the range is utilized. In the inland waters, the marine mammals are resident in the area and the presence or absence of animals in the area the day before may not have any bearing on whether there are animals in the area the day of the event.

The Navy proposes to keep the same level of monitoring effort, with the inclusions of the recommendation above, in the Keyport Range Complex as was committed and accomplished in Year 1.

References

(a) (NMFS 2011a) Taking and Importing Marine Mammals; U.S. Navy' Research, Development, Test and Evaluation Activities Within the Naval Sea Systems command Naval Undersea Warfare Center Keyport Range Complex; Final Rule publish in Federal Register *(50 CFR 20257)*, dated 12 April 2011

(b) (NMFS 2011b) Letter of Authorization issued under the MMPA incidental to Navy's research, development, test and evaluation (RDT&E) activities at the NAVSEA NUWC Keyport Range Complex for the period May 17, 2011, through May 16, 2012, dated 17 May 2011

Appendix A

Summary of Dabob Bay Range Complex Marine Mammal Monitoring During High- and Mid-Frequency Active Sonar, November 2011

Introduction

Under the Marine Mammal Protection Act (MMPA), the United States (U.S.) Navy was issued a Letter of Authorization (LOA) governing the unintentional taking of marine mammals incidental to activities conducted at the Naval Sea Systems Command (NAVSEA) Naval Undersea Warfare Center (NUWC) Keyport Range Complex for the period of May 2011 through May 2012. The NAVSEA NUWC Keyport Range Complex is composed of the Keyport Range Site, the Dabob Bay Range Complex (DBRC) and the Quinault Underwater Tracking Range (QUTR) Site. Together these locations provide NUWC Keyport the air, surface, and subsurface areas necessary for Research, Development, Test, and Evaluation (RDT&E) activities. The DBRC site (Figure 1) is the Navy's premier location within the U.S. for RDT&E of undersea warfare systems such as torpedoes, countermeasure systems, targets, unmanned vehicles, sensors, and acoustic systems. It is at this site that marine mammal surveys were conducted on November 6, 7, and 8, before, during, and after the HFAS and MFAS events..

The Navy must conduct all monitoring and required reporting under the LOA and associated Monitoring Plan which includes: 1) Visual Surveys, 2) Passive Acoustic Monitoring (PAM), and 3) Marine Mammal Observers on range craft or Navy vessels. The marine mammal observers include Navy lookouts and Navy Marine Mammal Observers (NMMOs) who are biologists. Specifically, the LOA and Monitoring Plan require that at least two visual marine mammal surveys be conducted each year to monitor high-frequency active sonar (HFAS) and mid-frequency active sonar (MFAS) at the DBRC. In addition, shore–based and vessel surveys are required one day prior to and one to two days post activity. The Navy was also required to utilize a bottom-moored PAM hydrophone array system during the two special monitoring surveys in DBRC to detect acoustically active marine mammals. Finally, NMMOs were required in addition to the Navy lookouts.

Naval marine mammal lookouts are placed on range vessels to monitor for marine mammals just prior to in-water exercises and to collect data on marine mammals observed. However, the LOA required that in addition to these lookouts, NMMOs also monitor events, collect the same data on marine mammals, and be positioned to view the same area as the Navy lookouts.

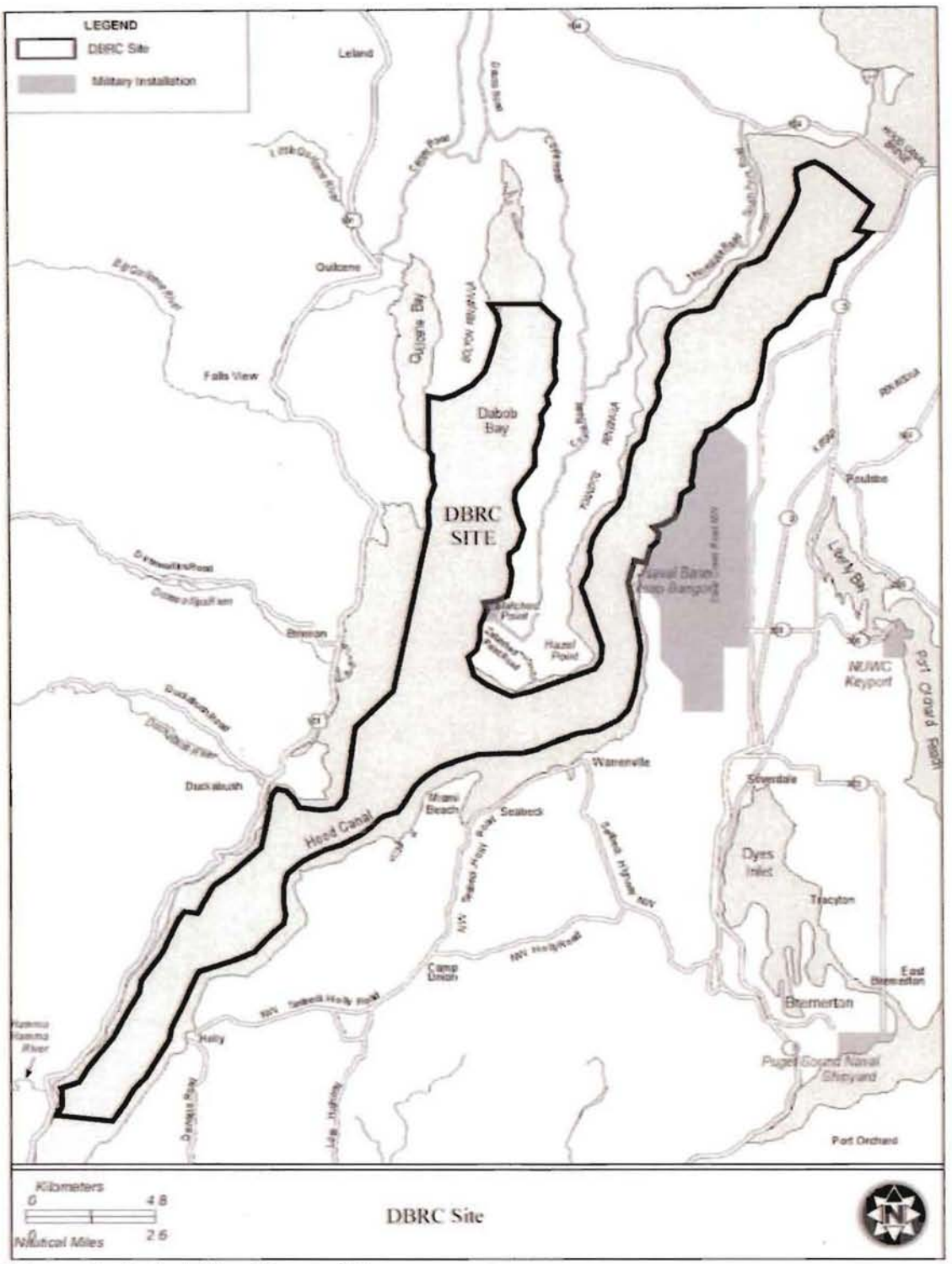

Figure 1. Dabob Bay Range Site

As such, the goals of the November 6-8 surveys were to comply with the requirements in the LOA in conducting two special visual surveys per year to monitor HFAS and MFAS respectively at the DBRC Range site. The plan includes:

1. Conducting shore and vessel based surveys for marine mammals both in the presence and absence of active acoustic energy.
2. Obtaining marine mammal presence data pre and post sonar testing.
3. Obtaining data to characterize the possible exposure of marine species to HFAS and MFAS during the test activity through the use of visual surveys and PAM; and Having NMMOs work alongside the existing Navy lookout team and provide suggestions for improving survey design and data collection for future surveys.

The following describes the methodology and results of the marine mammal monitoring efforts during a HFAS and MFAS test, as well as results from the pre- and post-test marine mammal surveys. Recommendations for improving future survey design and data collection are also provided.

Methodology

Pre and Post Event Marine Mammal Monitoring

Vessel-based and shore-based marine mammal surveys were conducted the day before and the day following the HFAS and MFAS event. The bottom-moored passive acoustic monitoring array was also turned on so the biologists could listen for active vocalizations. The pre and post vessel-based survey consisted of one small craft that was staffed by two observers who transited through the entire instrumented range area. Additionally, the shore facility was staffed by two observers who observed from both the bluff and also from the beach. Each vessel- or land-based monitor recorded the following in the event of a marine mammal sighting:

- Species identification and group size;
- Location (latitude/longitude);
- Distance/Direction to animal(s);
- Direction of travel (if any);
- Behavior of marine mammals sighted;
- Beaufort sea state and general weather conditions; and
- Date, time and visual conditions associated with each observation.

Shore-based Monitoring

Shore-based surveys were conducted both from the Dabob Bay Range complex (DBRC) operations center at the Zelatched Point computer site on the bluff at the 75 foot elevation above the water using big-eyes, audible and LOFAR output from the bottom moored passive acoustic monitor and by walking along the beach and looking for hauled-out, distressed, injured, or stranded marine mammals. The beach surveys covered approximately 500 meters of shoreline along the eastern shore of Dabob Bay which is in addition to the shoreline surveyed via the

vessel-based surveys.

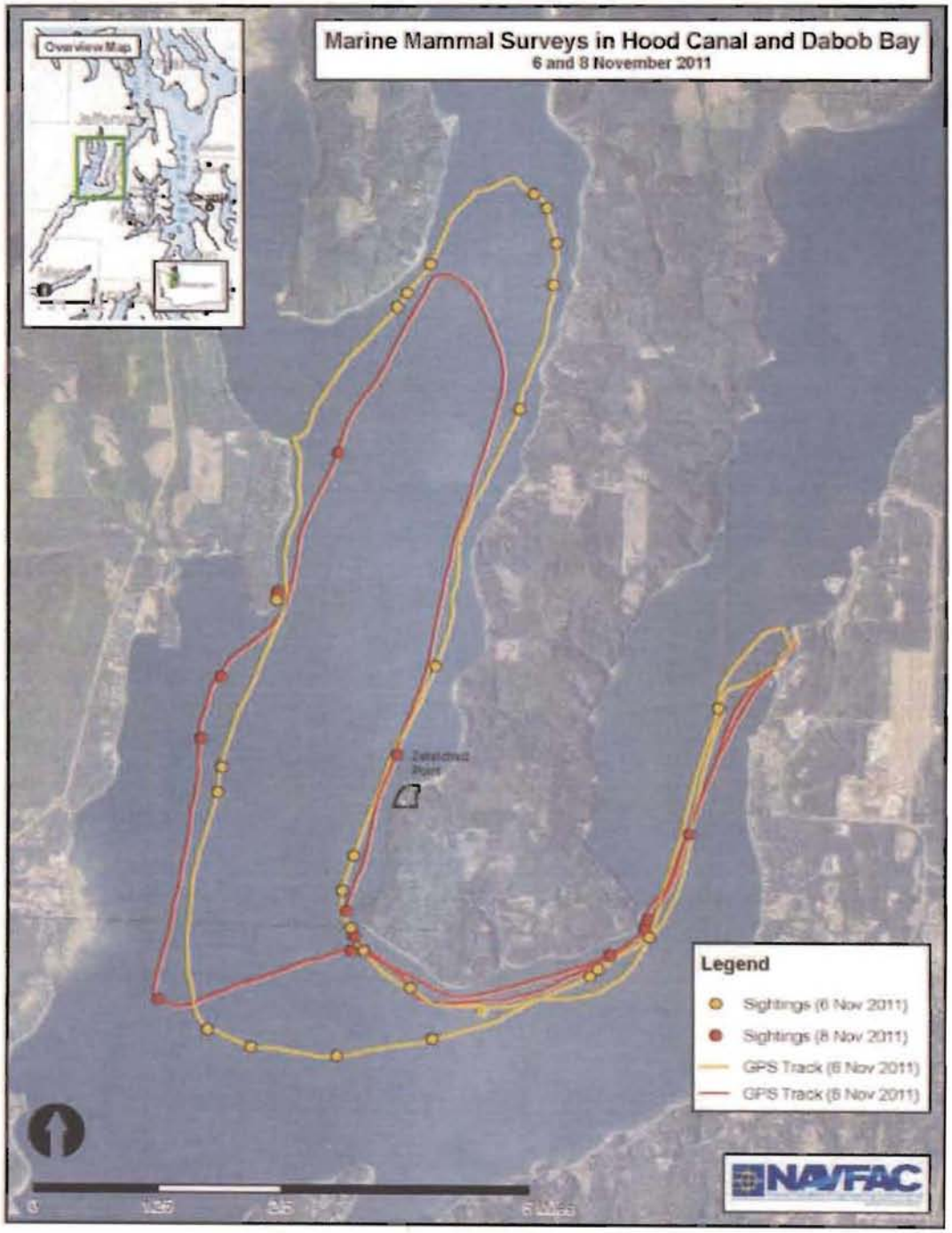

Figure 2 Location of Pre and Post-Event Survey Transects and Sightings

Vessel-based Monitoring

The survey vessel left Naval Base Kitsap (NBK) Bangor in Hood Canal at approximately 0730 for both the pre and post surveys. The survey vessel was the NS-50 small range craft and it was used for pre and post test monitoring. The NS-50 vessel crew consisted of a Craft master, marine mammal lookout, and a NMMO. All three participated in looking for marine mammals. One observer was dedicated to the port side of the vessel and the other observer was responsible for the starboard side. The observers were also responsible for recording the GPS coordinates of all sightings with a handheld GPS unit and logging the information onto datasheets.
Marine mammal observations began immediately after departing Naval Base Kitsap (NBK) Bangor and continued throughout the transit to and from Dabob Bay (Figure 2). Observers used naked eye and 7 X 50 magnification binoculars with reticles to scan the area from dead ahead to dead astern. The survey transects were run from the south to the north on the west side of Dabob Bay and the return was north to south on the east side of Dabob Bay. This route covered the perimeter of Dabob Bay including the area used in the November 7 testing. It is possible to see from shore to shore in the Dabob Bay instrumented range. In addition to surveying over-water, the vessel based monitors also scanned the shoreline for hauled-out, distressed, injured, or stranded marine mammals. Effort and environmental information was collected when the observers began effort each day and as significant weather changes occurred.

Marine Mammal Monitoring During High Frequency Active Sonar (HFAS) and Mid Frequency Active Sonar (MFAS) Events:

Three NMMOs and three Navy lookouts monitored as a team during a HFAS event and a MFAS event over the period of one day. One NMMO was paired with an escort Navy lookout for each of the three designated monitoring locations. The three monitoring locations included two vessels involved in the activity and one shore-based location. The shore-based observer pair (NMMO and Navy lookout) were responsible for coordinating the monitoring activity.

Shore-based Monitoring including PAM

The two shore-based observers (one NMMO and one Navy lookout) were stationed at the Zelatched Point computer site for the following tasks:

- The shore-based NMMO served as the monitoring coordinator and data recorder for all marine mammal sightings;
- The shore-based escort Navy lookout served as a liaison and facilitated effective communication between the Range Officer and the shore-based NMMO on upcoming tests and start/end times;
- Both observers listened to the hydrophone array receiver and watched the LOFARgram (waterfall) displaying frequency and amplitude verses time for acoustically active marine mammals;
- Both observers used 7 X 50 binoculars, Big-Eye binoculars, and the naked eye to search for marine mammals;

- Both observers also conducted beach surveys before and after the each HFAS and MFAS event.

Vessel-based Monitoring

Two large surface vessels (YTT-Class) and several smaller range craft were used during the events. The two YTT vessels (approximately 186 feet long) each had one NMMO onboard in addition to the escort Navy lookout and crew responsible for standard marine mammal observation as part of their duties. The remaining smaller vessels also had Navy lookouts (but not NMMOs) and were used for recovery of test units, control of range security and safety, and other related functions.

The NMMOs and Navy escort lookouts boarded their respective test vessels by 0730 the morning of the activity. Marine mammal observations began once the vessel was underway and en route to Dabob Bay from NBK Bangor. Upon arriving at the instrumented DBRC area, the vessels positioned themselves at their respective launch stations where they remained stationary for the remainder of the activity.

The HFAS originated from an underwater mobile source deployed from one of the two YTTs. This source is characterized in the LOA and Environmental Impact Statement (EIS) with output characteristics within S6, S7, or S8. The YTTs were positioned to face each other on the range and the HFAS source was deployed between the two ships. The area monitored included the area surrounding the track of the source. The Navy lookouts used the range craft set on the southeast, northeast, and west of the expected track as observation points. This allowed them to monitor for incoming animals from any direction. All stations reported to the Range Officer regarding marine mammal presence/absence prior to beginning the launch sequence per range operation procedures.

During the HFAS event, the marine mammal survey was conducted on the port and starboard bridge wings (elevated 66 ft [20 m] above the waterline) of the YTTs. A Navy lookout and NMMO were each on the bridge wings to monitor the area between the ships which was within the track of the HFAS source. Each observer monitored dead ahead to 90 degrees abeam for a total of 180 degrees of coverage during the event (essentially 9pm to 3pm on a clock face, if 12 o'clock is dead ahead). The mobile source did not travel aft of the beam of either vessel. While on effort, observers used naked eye and 7 X 50 magnification binoculars to scan the area from dead ahead to just aft of the beam.

The MFAS originated from an underwater stationery source. This source is characterized in the LOA and EIS as S4. For the MFAS event, one NMMO and one Navy lookout transferred from the YTT to a smaller torpedo weapons retriever. The range craft was then stationed above the source to allow the observers to evaluate the distance from the source to any marine mammals seen. The second NMMO and Navy lookout remained on the YTT vessel still on station. All stations reported to the Range Officer regarding marine mammal presence/absence prior to turning on the MFAS per range operation procedures. The start and stop time of the MFAS source was within a 1 minute period.

When a marine mammal was sighted in the observation area, the vessel Craft master was informed and immediately relayed the information to the DBRC Range Officer. All sightings of marine mammals, whether in or out of the active range area, were also relayed via hand held radios to a NMMO located at the Zelatched Point computer site. For each marine mammal sighting, the following information was relayed:

- Species identification and group size;
- Location (latitude/longitude);
- Distance/Direction to animal(s);
- Direction of travel (if any);
- Behavior of marine mammals sighted;
- Beaufort sea state and general weather conditions; and
- Date, time and visual conditions associated with each observation.

Results of the Pre, During and Post Event Survey Effort

The observers spent approximately 4 hours each (16 hours total) searching for marine species on the day preceding the testing event and the same (4 hours each [16 hours total]) on the day following the exercise (Table 1). Beaufort Sea States ranged from 0 to 3, with the majority of the time occurring in sea states 1 to 2.

The observers spent approximately 21 man hours on effort searching for marine species on the day of the test event (Table 1). Beaufort Sea States ranged from 2 to 5, with the majority of the time occurring in sea states 3 to 4.

Table 1. Effort Hours and Environmental Conditions

Date	Individual MMO Hours On-Effort	Team Hours On-Effort	Beaufort Sea State (range)	% Cloud Cover (range, conditions)	Visibility
6 November	4	16	0-1	5-20	Good to Excellent
7 November	3.5	21	2-5	5-100	Moderate
8 November	4	16	1-3	5-100	Moderate
Total	11.5	53	0-5	5-100	Moderate to Excellent

Pre and Post Event Marine Mammal Sightings

Shore-based Sightings

No marine mammals were seen using this survey method. The PAM device was monitored by the Range Officer and computer site crew for the pre- and post- event monitoring while the observers were surveying the shoreline. The NMMO and escort observer did use the PAM both audibly and visually with a waterfall display when at the Zelatched Point computer center where the sounds can be heard.

Vessel-based Sightings

In total, 38 sightings of marine mammals totaling 84 individuals were recorded during the two days of observation (Table 2). At least 2 species were seen: harbor seals, California sea lions, and 2 unidentified marine mammals. A harbor seal haulout with 16 to 26 individuals was identified on the west side of Dabob Bay just north of Pulali Point. This location has been previously identified in Jeffries et al. 2000 as location ID 256 and consists of intertidal rocks. According to Jeffries et al. 2000 this site has less than 100 individuals at any given time, but it is classified as a high use haulout.

There were 25 sightings on the pre-survey day and 13 sightings on the post-survey day. When comparing the number of animals seen between the 2 days, the pre-survey day identified 45 individuals and the post-survey day identified 39 individuals. When looking at animals identified to species, four sea lions and 39 harbor seals were identified during the pre-survey. Two sea lions and 37 harbor seals were identified during the post-survey. No marine mammal active sounds were detected using the PAM.

The individual sightings along the survey transect for the pre- and post-surveys (including the harbor seal haulout) are shown in Figure 3 and Figure 4, respectively. The harbor seal haulout is the only yellow dot located on land on the west side of Dabob Bay.

Table 2. Pre- and Post-Test Marine Mammal Sightings

	Pre-Event Survey	Post Event Survey	Total
No. of Sightings	25	13	38
No. of Individuals	45	39	84
Harbor Seals	39 (16 on haulout)	37 (26 on haulout)	76
California sea lions	4	2	6
Unidentified	2	0	2

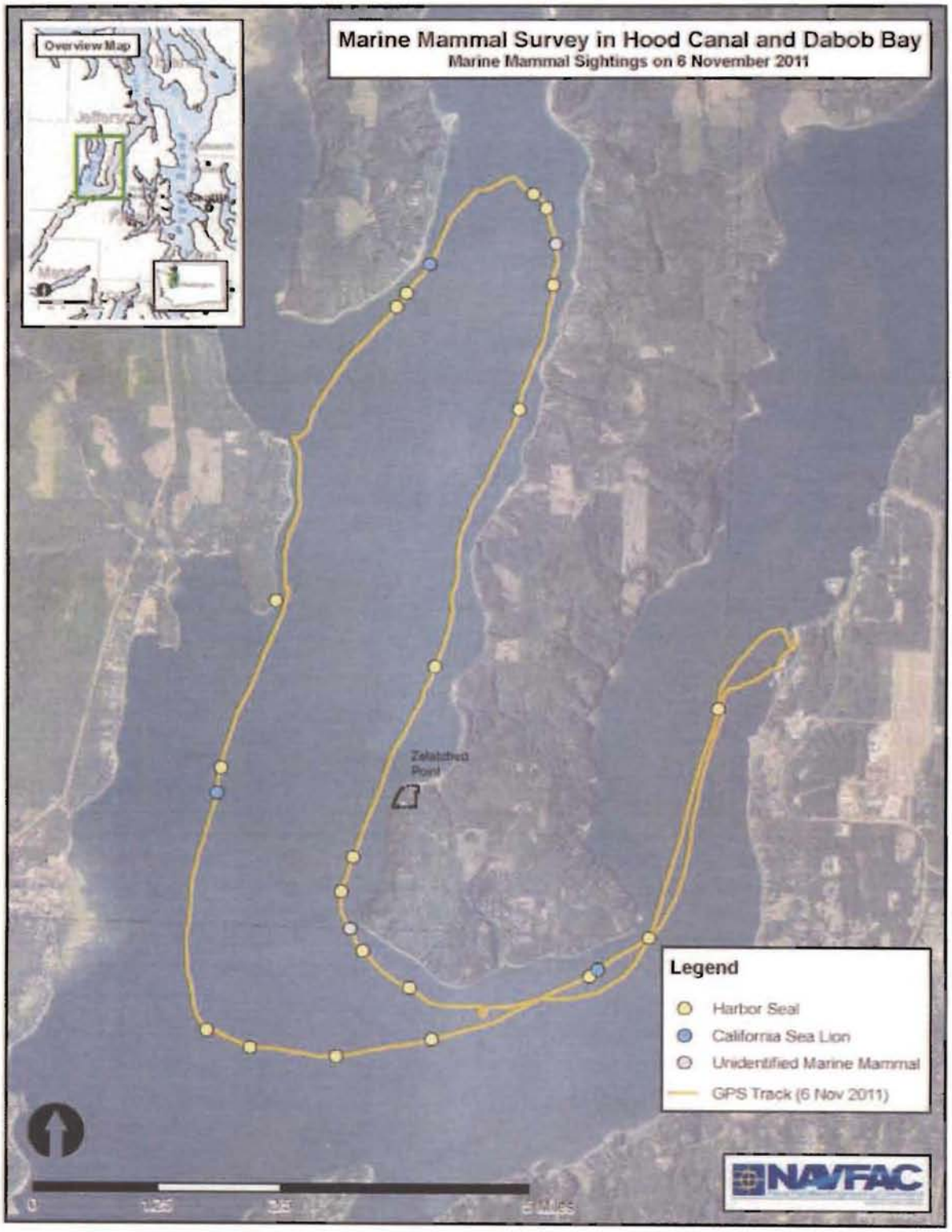

Figure 3. Pre-Test Event Marine Mammal Sightings

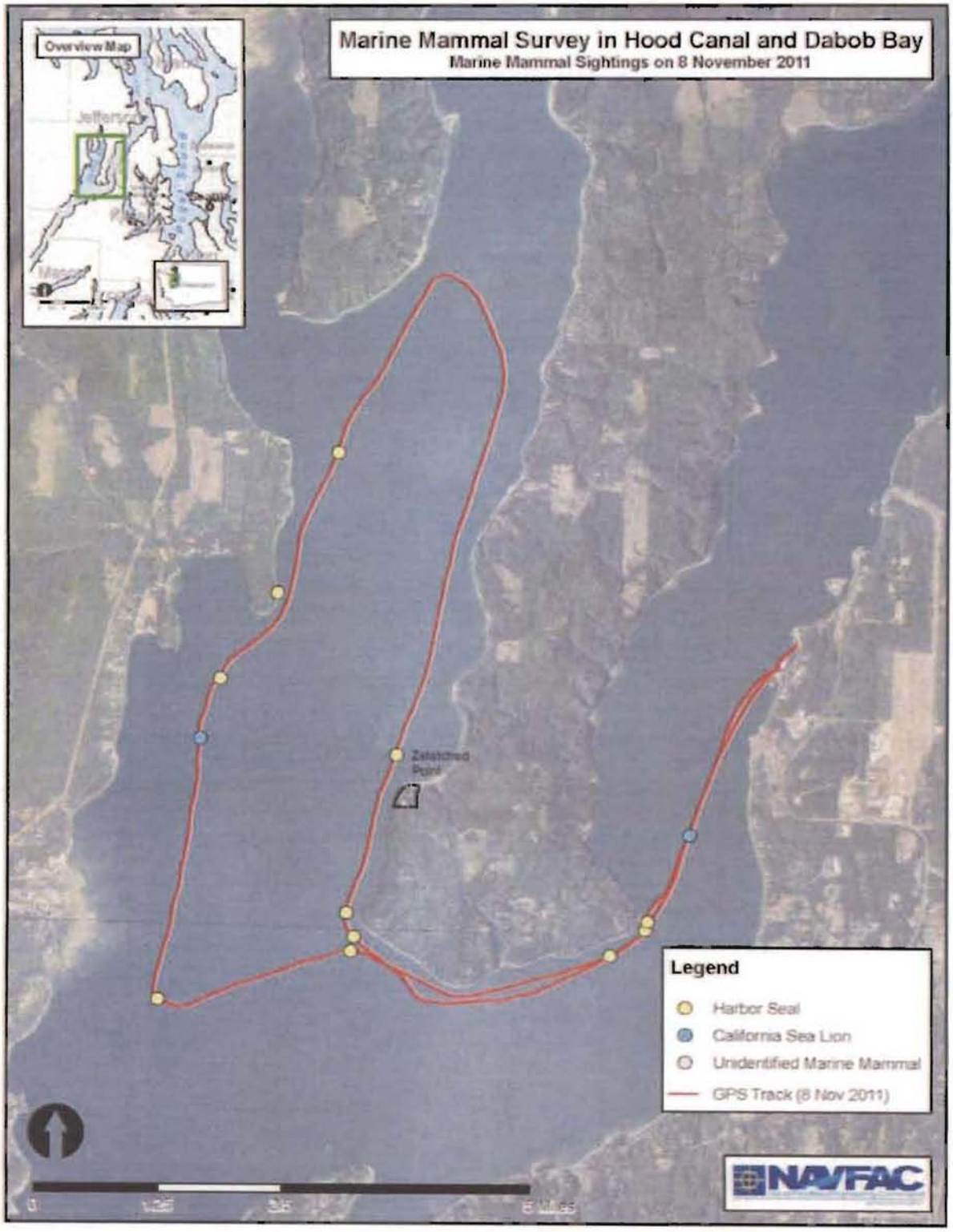

Figure 4. Post-Test Event Marine Mammal Sightings

HFAS AND MFAS Event: Marine Mammal Sightings

Shore-based Sightings

No marine mammals were seen during the beach survey. No marine mammal vocalizations were evident monitoring the PAM either audibly or visually from the waterfall display. The PAM was monitored continuously in real time throughout the day of the event by observers including NMMO, escort Navy observer, Range Officer and other range personnel.

Vessel-based Sightings

There were two sightings approximately 2 hours prior to the HFAS event. One sighting was an unidentified sea lion seen feeding. The second sighting was one minute later in approximately the same location, but this sighting was identified as a harbor seal with 1 to 2 individuals possible. The sighting cues (flipper verses head) allowed the observer to distinguish the difference between the sea lion and the seal. They did not have an obvious direction of travel and mitigation measures were not needed because sonar sources were not active at the time. The sea state was somewhat choppy during the actual HFAS test event and potentially contributed to the lack of marine mammals seen despite the elevated observation platform of the larger vessels. No marine mammals were observed before, during, or after the MFAS event.

Summary Discussion

To improve marine mammal data collection during active sonar testing for future DBRC activities, the following recommendations are suggested and are based on input from Navy lookouts and direct observations of the NMMOs.

Pre and Post-Event Shore Based Surveys

The shoreline-based walking survey from the Zelatched Point facility beach was limited because only a small portion of the shoreline could be surveyed. In contrast, the pre- and post-event day vessel surveys were effective to scan the entire shoreline adjacent to the range. Simultaneous observers at the Zelatched Point computer site on the bluff provided high vantage point and Big-eye survey of the range site.

Pre and Post-Event: Vessel Based Surveys

The vessel-based survey from NBK Bangor to Dabob Bay and back is approximately 4 hours of survey time plus the time at the dock prior to departure and after returning. Therefore, with two observers and one Craft master this is approximately 18 hours per survey (6 hours * 3 people) or 36 hours for both the pre- and post-survey. This survey could be accomplished during the same day as some of the events, especially those that do not last all day. Therefore, the Navy recommends that the pre- and post-surveys be allowed to occur on the same day as the event taking into consideration the following additional information.

The abundance of harbor seals in Hood Canal has stabilized in recent decades, and the population may have reached its carrying capacity in the mid-1990s with an approximate abundance of 1,000 harbor seals (Jeffries et al. 2003). They are routinely seen at the DBRC and known haulout areas exist on the west side of Dabob Bay, both near the mouth of the Dosewallips River and at the haulout identified during the November 6 and 8, 2011 surveys. Therefore, although harbor seals were detected in the pre- and post-event surveys, based on their numbers and residence in the location of DBRC, they would likely be detected on any survey day year-round.

The presence of harbor porpoises and California sea lions is intermittent, and the surveys conducted prior to and after the event did not on these occasions provide additional information on these species or the effects of an active sonar event. Even if California sea lions or harbor porpoises were sighted either the day before or the day after monitoring, linking active sonar activities to species that are intermittently present would not be possible.

HFAS and MFAS Event: Marine Mammal Monitoring

During the actual testing events using MFAS and HFAS all range personnel are charged with observing for marine mammals and will report any sighting through the Craft master to the Range Officer. This provides continuous scanning capability and coverage of the survey area during the long set-up times prior to an event and during the event itself. This would improve the observers' awareness of whether or not animals were on the range just prior to the beginning of the range clearing procedure. For example, the animal may be submerged when the range clearing procedure begins (because it dove), and it may remain underwater during the range clearing procedure, however the observer would know to wait until it resurfaced (maximum of 15 minutes for harbor seals) to make sure it was sighted outside the range before the source goes active.

The escort Navy observers and range personnel are well trained at marine mammal identification and followed the procedures in place. Communication and coordination between the Range Operator and the vessels on the range was precise and effective.

Conclusions

The goals of the LOA and Monitoring Plan were achieved. In summary:

1. Marine mammals were seen on both pre and post test event days without any obvious change in species, numbers, or distribution.
2. The sea state was choppy during the HFAS test event and possibly contributed to the lack of marine mammals seen during the event itself. No marine mammals were seen before, during or after the MFAS event. The PAM was monitored continuously in real time both audibly and visually.
3. Recommend the pre and post event monitoring be optionally conducted during the day of the event.

KPT 5216_01

INTERNAL ROUTE SHEET

NAME OF ORIGINATOR *(Signature)*	CODE	PHONE EXTENSION	DATE
UNGER, Shaari	236	315-2258	9 Dec 11

SUBJECT:

Business Letter to Mr. Lecky, Director, Office of Protected Resources, NMFS

TO	PURPOSE	INITIALS	DATE	REMARKS
236	CN		12/12/11	S UNGER
236	CN		12/12/2011	D RAY
23	CN		12/12/11	T TRAN
20B	CN		12.13	J ARCHULETA
20	CN		14Dec2011	T KELLEY
23PH	A		12/15/11	P HOFFMAN
00L	CN		12/20/11	R JUSKO Per discussion.
00	S			CAPT IWANOWICZ
				CALL WHEN READY FOR P/U 315-5871
23PH	A		1/11/12	P HOFFMAN

Drafter: S Unger Code: 236 Date: 9 Dec 2011

Typist: P Hoffman, Team INDUS, SSIC 5090 Ser 20/906-11

A - TAKE APPROPRIATE ACTION
C - COMMENT & FORWARD ON
CR - COMMENT & RETURN
CN - CONCURRENCE
G - YOUR COGNIZANCE
I - INFORMATION
IR - INFORMATION & RETURN
R - REPLY
O - OTHER
S - SIGNATURE