

# **PROTECTED SPECIES MONITORING AND MITIGATION RESULTS**

**FOR**

**2015 MARITIME WEAPON SYSTEMS EVALUATION  
PROGRAM OPERATIONAL TESTING**

**EGLIN AIR FORCE BASE, FLORIDA**



## **FINAL REPORT**

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## EXECUTIVE SUMMARY

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This report fulfills requirements of the Biological Opinion (BO) and Incidental Harassment Authorization (IHA) issued by the National Marine Fisheries Service (NMFS) to Eglin Air Force Base (AFB) to conduct live munitions testing in the Eglin Gulf Test and Training Range (EGTTR) for Maritime Weapon Systems Evaluation Program (WSEP) Operational Testing. Between February 9, 2015 and March 19, 2015, two CBU-105s, four AGM-65 Mavericks and six AGM-114 Hellfire missiles were employed against remotely controlled boats approximately 17 miles offshore of Santa Rosa Island. Net explosive weights (NEWs) of the munitions were 86 pounds (Mavericks) and 13 pounds (Hellfires) with detonation occurring at the water surface or up to 10 feet below the surface. The BO and IHA included mitigation and monitoring procedures proposed by Eglin Natural Resources (NR) in order to offset the potential impacts to marine mammals (bottlenose dolphins and Atlantic spotted dolphins) and sea turtles (green, loggerhead, Kemp's ridley, and leatherback sea turtles). This report describes the implementation of the mitigation and monitoring procedures, the results of pre- and post-mission surveys, a summary of each mission day's events, describes any potential take that may or may not have occurred, and analyzes the overall effectiveness of these measures.

Pre-mission surveys were conducted by up to five survey vessels, each containing one captain and two dedicated observers. Survey routes were pre-designed based on monitoring requirements set forth in the IHA. All observers received the Maritime WSEP Marine Species Observer Training/Refresher Course on March 13, 2015. Survey boat captains were provided with GPS points for the transect paths for each scenario designed by Eglin NR. Survey areas encompassed a worst-case mission day scenario for accumulated energy at the Level B Behavioral Harassment level based on recommendations from the Marine Mammal Commission and NMFS during the IHA consultation process. Pre-mission surveys were conducted for at least one hour before each mission.

After pre-mission surveys were completed, all survey vessels had to leave the human safety box and assisted safety vessels with clearing the range of non-participating vessels. Once the safety box was clear of all vessels, a Green Range was declared by the Safety Officer who monitored the mission from Eglin's Central Control Facility (CCF). An Eglin NR representative also sat in CCF and monitored the video feed from the cameras on the instrumentation barge, aircraft pods, and other aerial asset video footage. On each mission day the Eglin NR representative recorded when Green Range was declared, the list of munitions being tested, the time of each detonation, and when the range was re-opened for vessel traffic.

After each mission, survey vessels and other Air Force (AF) support vessels re-entered the human safety box and transited back to the mission location. Post-mission monitoring was conducted for one-half hour, down current of the detonation site. After post-mission surveys were completed, ten AF support vessels cleared debris from the mission site for another two to three hours. Any protected species that were observed in this timeframe were also reported and documented.

Nineteen total sightings were reported during pre-mission surveys. Total protected species observed ranged between 149 and 156 individuals. The majority of the sightings were dolphins

## ***Executive Summary***

and only two sea turtles were observed. For two mission days, pre-mission surveys were extended and the mission was delayed to continue monitoring the protected species that were detected to ensure they cleared the ZOI and were swimming away from the detonation sites. All other protected species were determined to be clear of the ZOI before the pre-mission surveys ended and the mission began.

Execution of the missions did not go as planned and many last minute changes were made to accommodate weather, aircraft mechanical issues, munitions availability, target set-ups, and dealing with non-participating vessels that entered the safety box and fouled the range. The protected species survey team adjusted to the changes to the best of their ability in order to accommodate the mission and still provide reliable survey efforts. Not all munitions were released as proposed in the BA and IHA request. In fact, only 25 percent of planned munitions were deployed.

No sightings were reported during post-mission surveys. Based on these observations, **Eglin NR concluded that no takes occurred as a result of the Maritime WSEP missions.**

Eglin NR believes all mitigation and monitoring measures were successfully implemented and were effective in protecting marine mammals and sea turtles from negative impacts associated with the live detonations from 2015 Maritime WSEP Operational Testing.

## PROTECTED SPECIES MONITORING AND MITIGATION RESULTS FOR MARITIME WEAPON SYSTEMS EVALUATION PROGRAM (WSEP) OPERATIONAL TESTING

### 1. INTRODUCTION

This report has been prepared to fulfill the terms and conditions in the Biological Opinion (BO) and to satisfy the reporting requirements under the Incidental Harassment Authorization (IHA) issued by the National Marine Fisheries Service (NMFS) for Maritime WSEP Operational Testing in the Eglin Gulf Test and Training Range (EGTTR). On December 15, 2014 Eglin Natural Resources (NR) received the BO (Consultation No. SER-2014-14835) from NMFS Southeast Regional Office (SERO) Protected Resources Division (PRD). On February 5, 2015, NMFS's Office of Protected Resources (OPR) issued the IHA for Maritime WSEP Operational Testing Activities to Eglin. The BO addressed the potential for impacts to four sea turtle species and included an Incidental Take Statement (ITS) for lethal and non-lethal "takes" of loggerhead, Kemp's ridley, leatherback, and green sea turtles as defined by the Endangered Species Act (ESA). The anticipated level of take associated with Maritime WSEP activities authorized in the ITS is shown in the table below.

**Table 1-1. Sea Turtle Take Authorizations Included in the ITS of the Maritime WSEP BO**

Species	Lethal Take	Non-Lethal Take
Loggerhead sea turtle	2	96
Kemp's ridley sea turtle	2	77
Leatherback sea turtle	1	30
Green sea turtle	1	78

The IHA addressed the potential for impacts to two species of marine mammals (bottlenose dolphins and Atlantic spotted dolphins) and authorized Eglin for Level A (PTS), Level B (TTS), and Level B (Behavioral) "takes" of bottlenose and Atlantic spotted dolphins as defined by the Marine Mammal Protection Act (MMPA). The total numbers of marine mammal takes authorized in the IHA are shown in the table below.

**Table 1-2. Marine Mammal Takes Authorized in the IHA for the Maritime WSEP Activities**

Species	Level A Harassment (PTS)	Level B Harassment (TTS or Behavioral)
Bottlenose dolphin	33	796
Atlantic spotted dolphin	5	137
Unidentified bottlenose/spotted dolphin	-	9

PTS = permanent threshold shift; TTS = temporary threshold shift

## ***Introduction***

This report will summarize the events of each mission day, describe the implementation of the mitigation and monitoring requirements outlined in the BO and IHA, identify the levels of “take” that occurred, and assess the effectiveness of Eglin’s mitigation and monitoring procedures.

## 2. SUMMARY DESCRIPTION OF MARITIME WSEP ACTIVITIES

Maritime WSEP Operational Testing activities involve the use of several types of live munitions in the EGTTTR against remotely-controlled moving boat targets. Between March 16, 2015 and March 19, 2015, four AGM-65 Mavericks and six AGM-114 Hellfire missiles were employed against remotely controlled boats approximately 17 miles offshore of Santa Rosa Island. Net explosive weights (NEWs) of the munitions were 86 pounds (Mavericks) and 13 pounds (Hellfires) with detonation occurring at the water surface or up to 10 feet below the surface. Maritime WSEP missions are conducted in Warning Area 151A (W-151A) of the EGTTTR. The test location is 17 miles offshore from Santa Rosa Island (SRI) in water depth of about 115 feet (Figure 2-1).

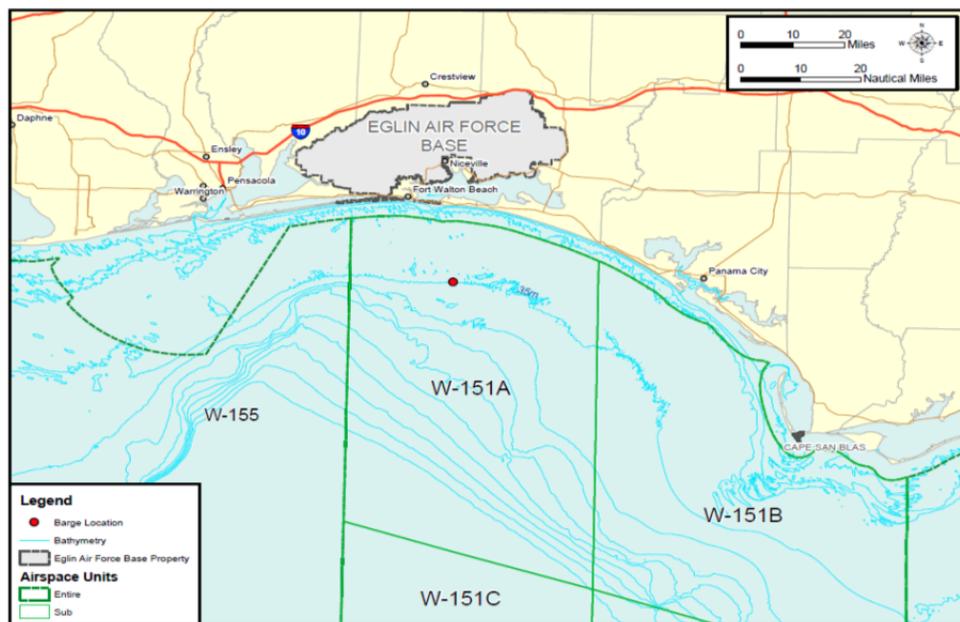


Figure 2-1. Maritime WSEP Test Location

### 2.1 Target Set-Up

The targets consist of remotely controlled boats called high speed maneuverable surface targets (HSMSTs) that tow the actual target boats approximately 300 feet behind them. The proponent set up multiple tracks for the HSMSTs to travel on, specifically called the Hot Track and the Loiter Tracks. The Hot Track refers to the route travelled by the HSMST and tow that is intended to be hit by the munitions released from the aircraft. HSMSTs on this track travel anywhere between 30 and 45 knots, depending on sea state. The Loiter Tracks are located away from the Hot Track where the extra HSMSTs and towed targets run at idle speed until the target on the Hot Track is either destroyed or is nonoperational for one reason or another. All HSMSTs were programmed with specific way points to ensure they stayed on their designated track. Mission personnel on Eglin remotely control the HSMSTs and are able to transfer them from the Loiter

Tracks to the Hot Track, increase their speed and change direction when needed. They are also tracked live with radar so mission personnel can monitor their movements and document speed and direction of travel.

## 2.2 Site Plan and Camera Set-up

The entire mission site is continuously monitored from a variety of platforms before and during the mission. Four video cameras are set up on the instrumentation barge known as the Gulf Range Armament Test Vessel (GRATV) located in the center of the mission site. The cameras are remotely controlled to follow a given target and can zoom in close to capture direct weapon impact, or zoom out to determine whether the target was missed. In addition, the proponent employed an Aerostat balloon with a high definition camera to monitor the test site aerially, from an approximate altitude of 1,000 feet above sea level. The Aerostat is tethered to a vessel that is anchored approximately 1,500 feet due east of the GRATV. The camera on the Aerostat is also remotely controlled to follow the moving targets with zooming capabilities to capture either a wide or narrow field of view. While the main purpose of all cameras is to document weapons performance, they also monitor the area for unauthorized civilian boats and protected marine species to a limited extent before the weapons are deployed. Video feed is transmitted to Eglin's Central Control Facility (CCF) and monitored by Eglin Test, Safety, and NR personnel. In addition, Eglin utilizes the radar from the 300-ft tower at Test Site A-13B on SRI and the E-9 aircraft to assist with clearing the human safety zone from civilian vessels. Radar maps are shown on multiple computer monitors in CCF. This was the standard set-up for all mission days. Figure 2-2 shows the site plan for Maritime WSEP missions.

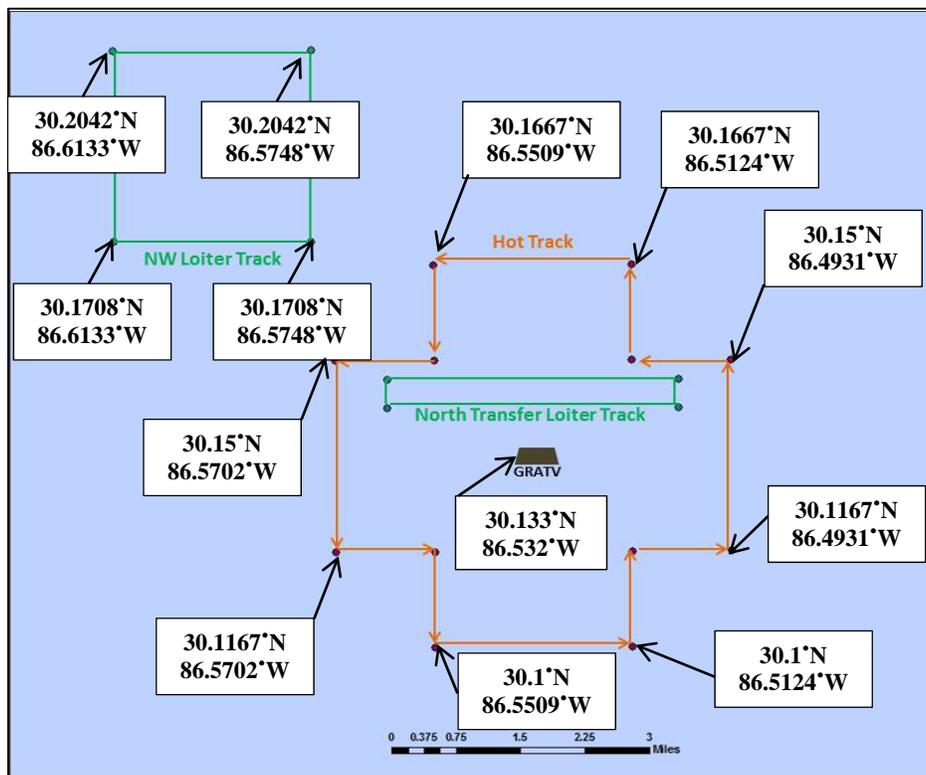


Figure 2-2. Site Plan for Maritime WSEP Missions

### 2.3 Human Safety Zone

One week before Maritime WSEP missions began Eglin issued a Notice to Mariners (NOTMAR) to notify all local vessels of the upcoming activities and included a map showing the boundaries of the human safety zone. All boat captains leaving the East Pass are provided with maps and GPS points of the safety zone before they enter the Gulf. Twenty-five Air Force (AF) vessels conduct range clearing activities for at least two hours before the mission starts to inform and when necessary, escort civilian vessels outside the safety box. This human safety zone restriction also applies to vessels conducting pre-mission surveys for protected marine species and any other AF support personnel. Missions cannot begin until all mission personnel have evacuated the safety zone and all vessels (civilian and AF) are clear of the safety box. Figure 2-3 shows the safety box established around the mission site.

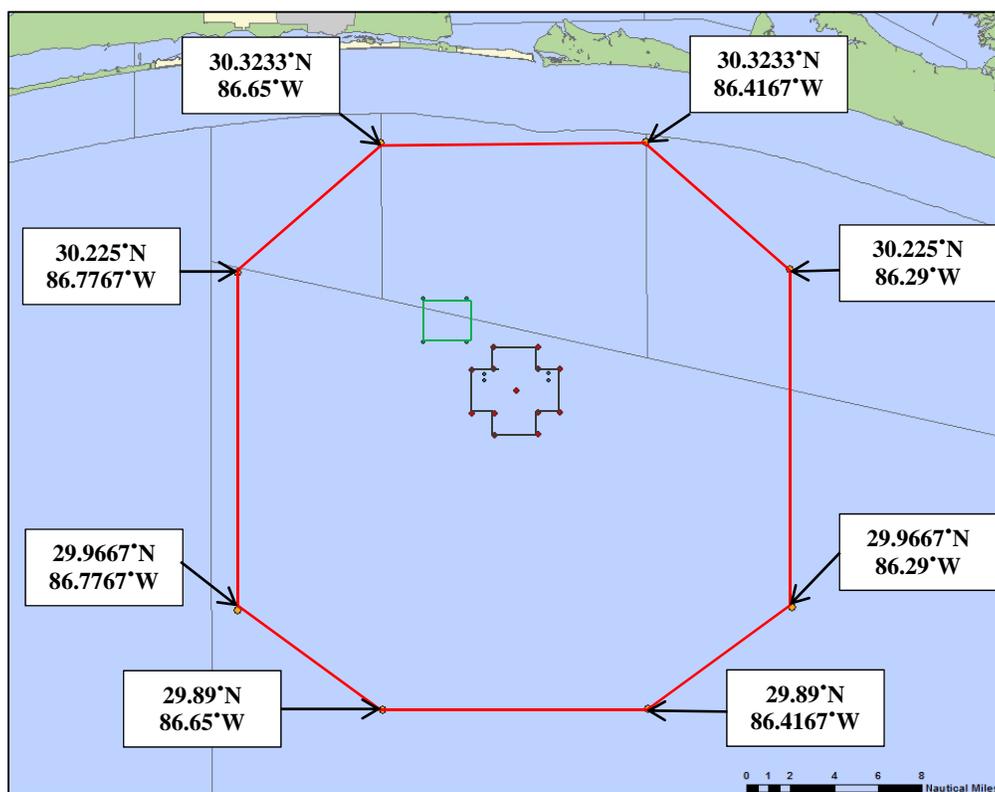


Figure 2-3. Human Safety Box for Maritime WSEP Missions

### 3. MITIGATION AND MONITORING REQUIREMENTS

The following subsections describe the mitigation and monitoring requirements that were developed during consultations with NMFS and implemented during Maritime WSEP missions. To prevent impacts to protected species, Eglin proposed to survey a given area before each mission to ensure it was clear of protected species before live missions begin. Surveys would be conducted by dedicated observers who received training in identifying marine species.

#### 3.1 Determining Survey Areas

The BO and IHA require different monitoring areas to be surveyed during pre-mission surveys. The BO's requirements were based on the size of the zone of influence (ZOI) for the largest munition being released on any given mission day. For sea turtles this equated to an area with a maximum radius of 1.3 kilometers (km) around the potential target site. The IHA requirements, however, incorporated an accumulated energy measurement based on a worst-case scenario mission day. Given the high level of scheduling uncertainty on any given mission day, Eglin NR provided NMFS with a "best guess" of what could be released in a maximum release mission day. Eglin's contracted acoustician calculated the sum of all energies from these detonations and compared them against thresholds with energy metric criteria (Level A PTS Harassment, Level B TTS Harassment, and Level B Behavioral Harassment). These threshold ranges were used as a basis for determining the monitoring area to be surveyed for marine mammal presence before each mission. As a result, Eglin proposed to monitor a 5.1-km radius around the Hot Track, which corresponded to the Level A PTS threshold range for marine mammals from the accumulated energy calculations. This larger radius also encompassed the area required to be surveyed for sea turtles. Figure 3-1 shows the area to be monitored around the Hot Track for marine mammal and sea turtle presence, divided into zones for each survey vessel.

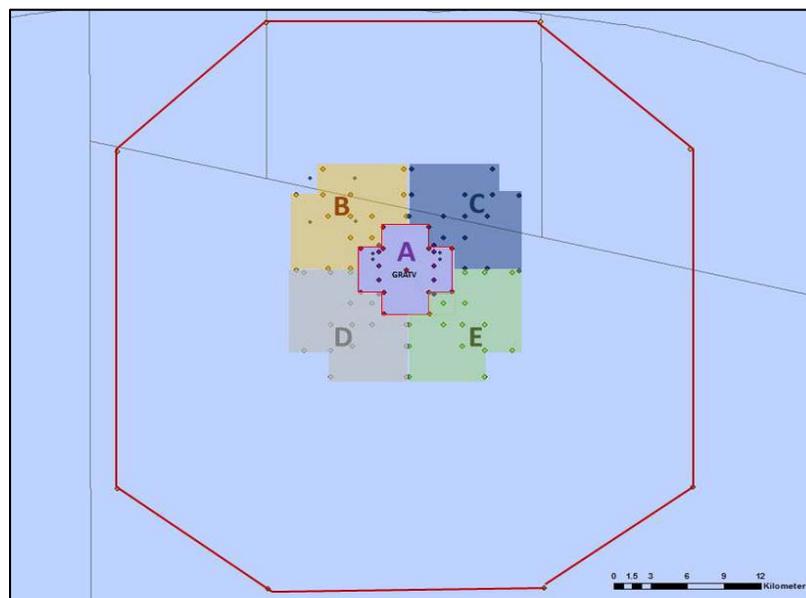


Figure 3-1. Survey Zones for Protected Species

### **3.2 Marine Species Observer Training, Observer Duties**

On Friday, March 13, 2015 Eglin NR personnel met with the boat captains and observers to provide the Marine Species Observer refresher training and discuss logistics for this mission including lines of communication for reporting sightings. The training included a summary of environmental laws, consequences of non-compliance, description of an observer's roles, pictures and descriptions of protected species and protected species indicators, survey routes, recommended equipment, and reporting procedures. Since all observers and boat captains participated in the previous Maritime Strike missions from 2013 and 2014, this training served more as a refresher course with the exception of new survey routes to account for the larger pre-mission monitoring area.

The vessels designated specifically for protected species monitoring were the *Sturgeon 1*, *Sturgeon 2*, *High Life*, *Snafu*, *Miss Daisy*, and *28 BT*. Each vessel had a captain and two dedicated observers monitoring opposite sides of the boats. Although the vessel names are different from ones used for Maritime Strike, the same personnel manned each vessel for Maritime WSEP missions. All boat captains maintained radio contact with each other, the safety vessels, and the Eglin Tower on Test Site A-13B on Santa Rosa Island to provide, receive, and relay information needed to clear the range of protected species and non-participating vessels (NPVs) before each mission could begin. During the missions, all the boats were stationed at specific guard locations on the outside of the human safety box (see Figure 2-3) to prevent NPVs from entering the range and to continue protected species monitoring. After each live mission, some of the survey vessels participated in the afternoon swarm missions in the Choctawhatchee Bay while the others conducted post-mission surveys and assisted with debris clean-up. Notices to Mariners (NOTMARs) were released prior to each mission day to inform the public of live military missions being conducted and where the safety footprint/exclusion zone would be enforced.

For the duration of Maritime WSEP missions, the *Sturgeon 1* vessel captain was designated as the Lead Biologist, to whom all sightings were reported and documented. On any day where the *Sturgeon 1* Captain was not available, the *Sturgeon 2* Captain acted as Lead Biologist. It was the Lead Biologist's responsibility to document each sighting reported to him by the other survey vessel captains and provide recommendations to Eglin Tower on whether a mission needed to be delayed or canceled based on either sea state or protected species activity around the detonation sites. After all missions were completed the Lead Biologist provided all sighting information from pre- and post-mission surveys to Eglin NR.

## 4. DESCRIPTION OF MARITIME WSEP MISSIONS

This chapter describes the events of each live mission day conducted for Maritime WSEP operational testing activities. Each section begins with a general description of the sea state and weather conditions. The Pre-Mission Survey Results subsection contains all sighting information reported by the observers. The Mission Results subsection provides a general timeline such as when the range was declared Green, if there were any delays or cancellations, and when the range was re-opened at the end of the mission. It also contains a table listing each munition that was dropped along with the times and location for each detonation. The Post-Mission Survey Results subsection lists the times when vessels re-entered the mission area and contains any sighting information reported by the survey and AF support vessels. All post-mission surveys were concentrated in areas immediately surround the targets and down-current from the detonation sites. Monitoring was conducted for at least one hour. Finally, the Take Analysis subsection provides a preliminary determination on whether or not any takes occurred during that mission day, based on the information provided from the post-mission survey results.

Due to munition and aircraft availability, no live missions were conducted in February 2015. Only inert munition releases and airbursts (two CBU-105 releases) were conducted, which resulted in no acoustic impacts to protected species. All live munition releases resulting in surface or subsurface detonations were conducted during March and are discussed in the following subsections.

### 4.1 Monday 16 March 2015

Weather and sea state conditions were favorable with clear sunny skies and 0 – 1 ft waves. No protected species were observed while vessels were en route to survey location or upon arrival to mission location.

#### 4.1.1 Pre-Mission Survey Results

The pre-mission survey began at 6:45 AM. Table 4-1 lists all the sightings documented during the survey.

**Table 4-1. Pre-Mission Survey Results from March 16, 2015**

#	Time	Vessel	Sighting	Location	Resolution
1	7:14 AM	<i>Sturgeon 1</i>	School of baitfish	500 m northwest from GRATV	
2	7:23 AM	<i>Snafu</i>	18 spotted dolphins.	2.8 km east from the eastern boundary of the Hot Track	Continued monitoring the pod as the animals followed the vessel on an easterly heading
	7:29 AM	Update on sighting #2		4.8 km east from eastern boundary of Hot Track	Pod continued on an easterly heading and was monitored until the dolphins were outside the ZOI
3	7:42	<i>Sturgeon 2</i>	6 bottlenose dolphins	Approximately 500 m east from the western boundary of the Hot Track traveling	Continued monitoring the animals

*Summary of All Mission Results*

#	Time	Vessel	Sighting	Location	Resolution
				on a S/SE heading	
4	7:43 AM	<i>Sturgeon 1</i>	50 dolphins	Approximately 2 km northeast from the GRATV	Continued monitoring the animals
	7:49	Update on sighting #3		Updated number of dolphins to 10. Pod still traveling slowly on same heading.	<i>Sturgeon 2</i> continued monitoring this large pod until the Captain could confirm the dolphins were outside the ZOI.
5	8:01 AM	<i>Snafu</i>	1 small sea turtle	On the outer edge of the eastern boundary of the ZOI, approximately 5.4 km away from the Hot Track. Sea turtle was swimming on a NE heading away from the Hot Track	No further action required
6	8:02 AM	<i>Sturgeon 1</i>	1 dolphin	Approximately 3.6 km away from the NE corner of the Hot Track traveling on a NE heading.	Continued monitoring the dolphin until it was outside the ZOI
<b>8:20 AM</b>		<b>Pre-mission survey ended – All observed protected species confirmed to be outside the ZOI</b>			
7	8:26 AM	<i>Sturgeon 1</i>	4 bottlenose dolphins	Outside ZOI swimming on a NE heading away from the Hot Track	No action required

**4.1.2 Mission Results**

Due to lost microwave link to remotely controlled HSMSTs and target boats, no live detonations occurred on this day.

**4.1.3 Post-Mission Survey Results**

Survey vessels arrived at test site at 12:50 and completed post mission survey because it was assumed that live munitions were dropped as planned. No protected species sightings were reported.

**4.1.4 Take Analysis**

No takes of protected species occurred.

**4.2 Tuesday 17 March 2015**

Excellent visibility. Weather and sea state conditions were favorable with clear sunny skies and 1-2 ft waves. No protected species were observed while vessels were en route to survey location or upon arrival to mission location.

**4.2.1 Pre-Mission Survey Results**

The pre-mission survey began at 6:50 AM and ended at 8:15 AM. No protected species were observed during the surveys, however there were multiple sightings documented while en route to the safety box perimeter. Those sightings are listed in Table 4-2.

**Table 4-2. En Route Sightings after Pre-Mission Sureys from March 17, 2015**

#	Time	Vessel	Sighting	Location	Resolution
1	8:25 AM	Sturgeon 1	3 bottlenose dolphin	Approximately 2.5 km east from the eastern boundary of the ZOI traveling on a NE heading, away from the mission site.	Continued monitoring this pod of 3 until the Captain could confirm the dolphins remained outside the ZOI.
2	8:32 AM	Sturgeon 1	10 bottlenose dolphin	Approximately 7 km NE from the NE corner of the ZOI. Pod was traveling on an E heading away from the mission site.	Continued monitoring this pod of 10 until the Captain could confirm the dolphins remained outside the ZOI and did not change travel direction.
3	8:35 AM	Sturgeon 1	flock of birds	Resting on water. Not eating.	Birds left the area shortly after being observed.
<b>8:55 AM</b>		<b>All observed protected species confirmed to be outside the ZOI. Mission was delayed due to the protected species sightings observed after pre-mission surveys were completed.</b>			

#### 4.2.2 Mission Results

Two Hellfire missiles were detonated as planned. Two live Maverick missiles were also planned to be released. However a civilian vessel had entered the human safety box, subsequently had mechanical issues, and had to be towed out of the box by one of the AF range clearing boats. Aircraft could not release the Mavericks until the vessels had cleared the safety box, so they were moved to the land range at B-70.

#### 4.2.3 Post-Mission Survey Results

Survey vessels re-entered the safety box and arrived at the detonation site at 12:45 and began surveys. No sightings were reported.

#### 4.2.4 Take Analysis

Since no protected species were observed during post-mission surveys or during debris clean-up activities, no takes were documented during this day’s missions.

### 4.3 Wednesday 18 March 2015

Weather and sea state conditions were favorable with clear skies and 2-3 ft waves. No protected species were observed while vessels were en route to survey location or upon arrival to mission location.

#### 4.3.1 Pre-Mission Survey Results

The pre-mission survey began at 6:35 AM. Table 4-3 lists all the sightings documented during the survey.

**Table 4-3. Pre-Mission Survey Results from March 18, 2015**

#	Time	Vessel	Sighting	Location	Resolution
1	6:52 AM	Sturgeon 1	6 bottlenose dolphin	Approximately 2 km SW of the GRATV. Lingered around/following vessel	Continued monitoring this pod and followed for 20 min until outside the ZOI
2	7:06 AM	Sturgeon 2	5 spotted dolphin	Approximately 3 km NW of the GRATV traveling E	Continued monitoring this pod until it was seen outside the ZOI
3	7:13 AM	Sturgeon 1	5 spotted & bottlenose	About 2.5 km N/NW of the GRATV. Animals were feeding and mostly stationary	Continued monitoring this pod and followed for 20 min until outside the ZOI
4	7:24 AM	SNAFU	12 spotted dolphin	About 0.850 km N of the northern boundary of the Hot Track. Pod was heading N away from mission site.	Continued monitoring pod
	7:55 AM	Update on Sighting #4		Approximately 2.5 km north from previous location, still traveling N.	Continued monitoring pod until it was outside ZOI,
<b>8:20 AM</b>		<b>Pre-mission survey ended – All observed protected species confirmed to be outside the ZOI</b>			

#### 4.3.2 Mission Results

Two Hellfire missiles and two Mavericks were released and detonated as planned.

#### 4.3.3 Post-Mission Survey Results

Survey vessels re-entered the safety box and arrived at the detonation site to begin post-mission surveys at 12:00. No sightings were reported.

#### 4.3.4 Take Analysis

Since no protected species were observed during post-mission surveys or during debris clean-up activities, no takes were documented during this day’s missions.

### 4.4 Thursday 19 March 2015

Weather and sea state conditions were favorable with clear skies and 1 ft waves. No protected species were observed while vessels were en route to survey location or upon arrival to mission location.

#### 4.4.1 Pre-Mission Survey Results

The pre-mission survey began at 6:40 AM. Table 4-4 lists all the sightings documented during the survey.

**Table 4-4. Pre-Mission Survey Results from March 19, 2015**

#	Time	Vessel	Sighting	Location	Resolution
1	7:16 AM	Sturgeon 1	10-12 Spotted and bottlenose	About 0.6 km from the GRATV. Animals observed diving/feeding and followed the vessel on a NE heading	Continued monitoring pod
	7:32 AM	Update to Sighting #1		Approximately 2.7 km NE from previous location. Pod still traveling N/NE between 3 to 5 knots	Continued monitoring pod
	7:36 AM	Update to Sighting #1		Slight change in direction; traveling more towards the N	Continued monitoring pod until outside the ZOI
2	7:36 AM	Sturgeon 2	10 dolphins	About 2.5 km N/NW of GRATV observed traveling. Possibly following an AF support vessel.	Continued monitoring pod and confirmed animals were moving outside the ZOI
3	7:43 AM	Sturgeon 2	4 bottlenose dolphins	Approximately 2 km NW of GRATV. Animals were traveling on a W heading.	Continued monitoring pod
	7:50 AM	Updated to Sighting #3. Increased from 4 dolphins to 6.		About 1.7 km NW of GRATV. Pod was traveling on a NW heading	Continued monitoring pod.
	8:10 AM	Update to Sighting #3		Approximately 4.7 km NW from previous sighting location. Pod still traveling on NW heading between 6 to 7 knots.	Continued monitoring this pod and followed for 10 min until outside the ZOI
<b>8:20 AM</b>		<b>Pre-mission survey ended – All observed protected species confirmed to be outside the ZOI</b>			

#### 4.4.2 Mission Results

Two Hellfire missiles and two Mavericks were released and detonated as planned.

#### 4.4.3 Post-Mission Survey Results

Survey vessels re-entered the safety box and arrived at the detonation site to begin post-mission surveys at 12:15. No sightings were reported.

#### 4.4.4 Take Analysis

Since no protected species were observed during post-mission surveys or during debris clean-up activities, no takes were documented during this day's missions.

### 5. SUMMARY OF ALL MISSION RESULTS

For Maritime WSEP Testing activities that occurred between March 16, 2015 – March 19, 2015, sixteen sightings, updates to previous sightings, and potential indicators were reported during pre-mission surveys. Total protected species observed ranged between 149 and 156 individuals. The majority of the sightings were dolphins and only two sea turtles were observed. For one mission day, pre-mission surveys were extended and the mission was delayed to continue monitoring the protected species that were detected to ensure they cleared the ZOI and were

## Summary of All Mission Results

swimming away from the detonation sites. All other protected species were determined to be clear of the ZOI before the pre-mission surveys ended and the mission began. Post mission surveys did not have any sightings of protected species.

Munitions that were actually dropped are compared to what was authorized in both the IHA and BO in Table 5-1.

**Table 5-1. Comparison of Proposed and Actual Live Munitions Released**

Type of Munition	NEW (lbs)	Detonation Type	Total # in IHA & BO	# Released in 2015
GBU-10 or GBU-24	945 lbs	Surface	2	0
GBU-12 or GBU- 54 (LJDAM)	192 lbs	Surface	6	0
AGM-65 (Maverick)	86 lbs	Surface	6	4
CBU-105 (WCMD)	83 lbs	Airburst	4	2
GBU-38 (Laser Small Diameter Bomb)	37 lbs	Surface	4	0
AGM-114 (Hellfire)	20 lbs	Subsurface (10 ft depth)	15	6
AGM-176 (Griffin)	13 lbs	Surface	10	0
2.75 Rockets	12 lbs	Surface	100	0
PGU-12 HEI 30 mm	0.1 lbs	Surface	1,000	0
.50 cal/7.62 mm	Inert	N/A	5,000	0

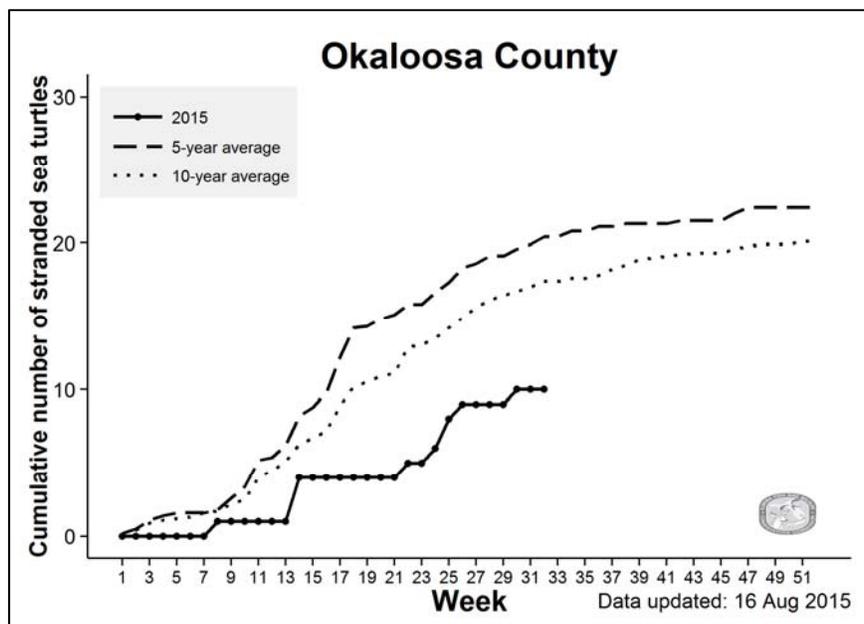
With only a fraction of munitions dropped compared to what was planned, anticipated potential take would be much lower.

## 6. EFFECTIVENESS OF MITIGATION AND MONITORING METHODS

The mitigation and monitoring methods that were proposed in the BA and IHA request were successfully implemented in support of Maritime WSEP testing and Eglin NR believes they were effective in evaluating take. The biologists and trained observers had to be flexible and willing to adapt to real time mission changes and variable weather conditions. Eglin was able to document protected species sightings during pre-mission surveys and could visually confirm that the animals were clear of the ZOI before concluding the pre-mission surveys. In multiple instances, pre-mission surveys were extended to ensure the ZOIs were clear of protected species before concluding the surveys and in one case the mission was delayed due to the high level of protected species presence in the target areas. While aerial surveys are typically preferred, utilizing five boats running on set transect paths proved to be effective in providing sufficient coverage of the ZOI area and spotting protected species, including sea turtles.

*Summary of All Mission Results*

As part of Eglin Natural Resources marine mitigation program, protected marine animal strandings are reviewed and analyzed for potential mission related events. On March 23, 2015 a Kemp's ridley sea turtle washed up severely decomposed on Eglin AFB's public beach between Test Site A-3 and Beasley Park on Okaloosa Island. It was determined by an Eglin NR biologist to be a severely decomposed small juvenile, with no obvious injuries noted or observed. A stranding report was submitted to the Sea Turtle Stranding and Salvage Network by the Eglin NR Biologist. Maritime WSEP missions were concluded five days prior to this stranding which prompted an exploration; however, the advanced stage of decomposition suggests this mortality occurred long before and was unrelated to underwater detonations from Maritime WSEP missions. Juvenile Kemp's ridley sea turtles are known to inhabit nearshore neritic areas where prey species are plentiful and are not likely to occur 17 miles offshore that are devoid of floating *Sargassum* mats or sea grasses. Furthermore, according to the Florida Sea Turtle Stranding and Salvage Network (FLSTSSN) archived stranding data, between 2009 and 2013, on average Okaloosa County has reported 19 total sea turtle strandings per year, 10 (on average) being Kemp's ridley sea turtles (FWC, 2015). To date this year, 10 sea turtle strandings have been reported in Okaloosa County, three of which were Kemp's ridley sea turtles (FLSTSSN, 2015). As shown below, stranding data so far for 2015 appear to be much lower compared to the 5-year and 10-year averages for Okaloosa County.



**Cumulative numbers of stranded sea turtles in Okaloosa County during 2015 (ongoing) and the previous 5-year and 10-year averages.**  
Source: FLSTSSN, 2015

This isolated stranding is consistent with typical stranding trends that are the result of natural causes in the northern Gulf of Mexico annually. Moreover, the advanced stage of decomposition of the turtle and the low likelihood of juvenile occurrence in and around the Maritime WSEP mission area strongly suggests there is no relationship between the juvenile Kemp's ridley sea turtle stranding on March 23, 2015 and Maritime WSEP activities.

## **7. CONCLUSION**

Aside from the unrelated sea turtle mortality discussed above, no additional impacts to protected species have been reported since the mission was completed on March 19, 2015. If any information of this nature is reported, Eglin NR will notify the NMFS immediately and if necessary will re-initiate consultation for these unanticipated impacts. Eglin NR believes this document fulfills the reporting requirements outlined in the BO and IHA. The findings in this report indicate that Eglin successfully implemented all the mitigation and monitoring requirements outlined in the permits.

## **8. REFERENCES**

Florida Fish and Wildlife Conservation Commission (FWC), 2015. FLSTSSN Archived Sea Turtle Stranding Data. Accessed online at <http://myfwc.com/research/wildlife/sea-turtles/mortality/archived-stranding-data/> on August 13, 2015.

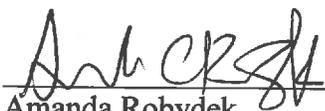
Florida Sea Turtle Stranding and Salvage Network (FLSTEEN), 2015. Current information on stranded sea turtles in Florida. Okaloosa County. Accessed online at <http://ocean.floridamarine.org/SeaTurtle/flstssn/cOkaloosa.html> on August 17, 2015.

9. SIGNATURES

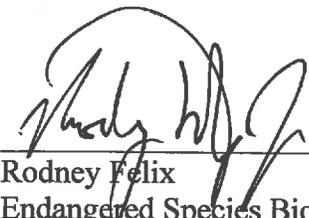
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STRIKE OPERATIONS TACTICS DEVELOPMENT & EVALUATION

FINAL REPORT

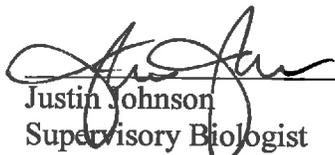
EGLIN AIR FORCE BASE, FLORIDA

Prepared by:   
Amanda Robydek  
Environmental/Marine Scientist  
Eglin Natural Resources/Leidos

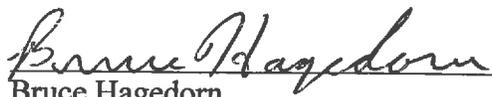
8/25/2015  
Date

Reviewed by:   
Rodney Felix  
Endangered Species Biologist  
Eglin Natural Resources

25 Aug 2015  
Date

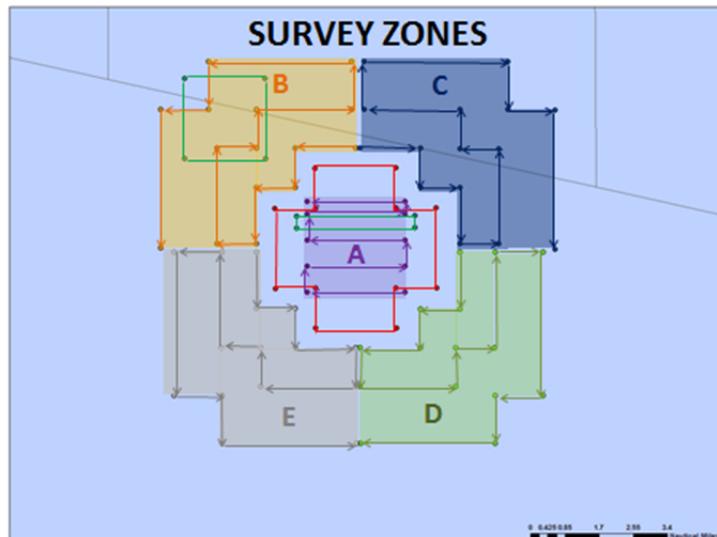
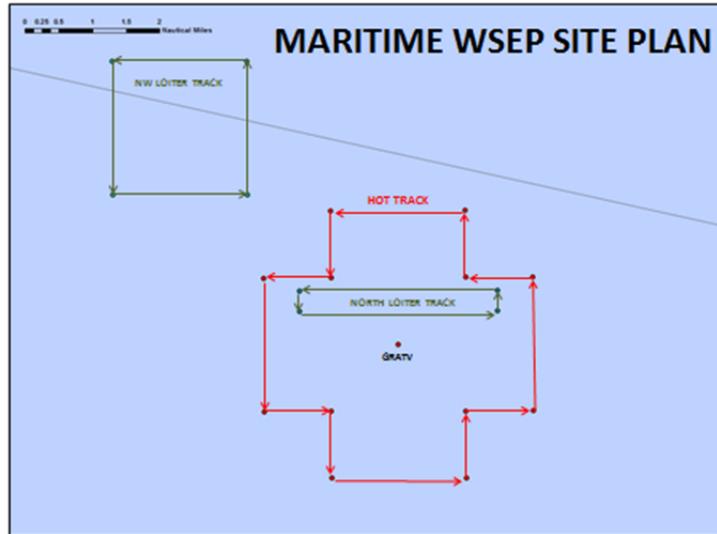
  
Justin Johnson  
Supervisory Biologist  
Eglin Natural Resources

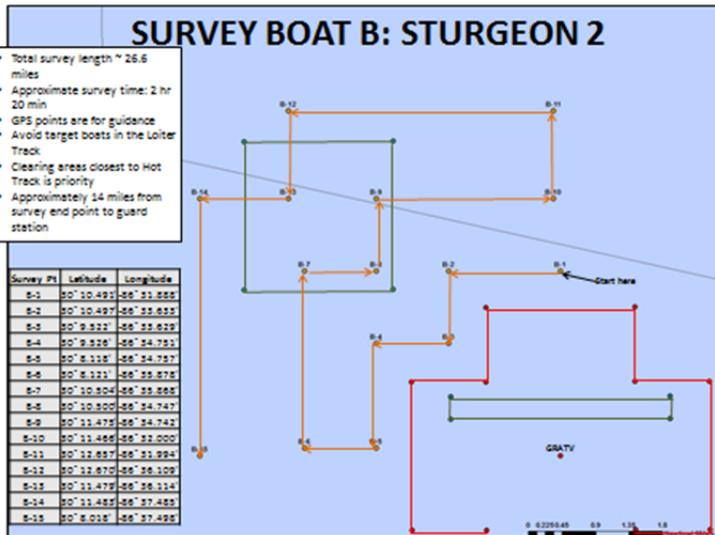
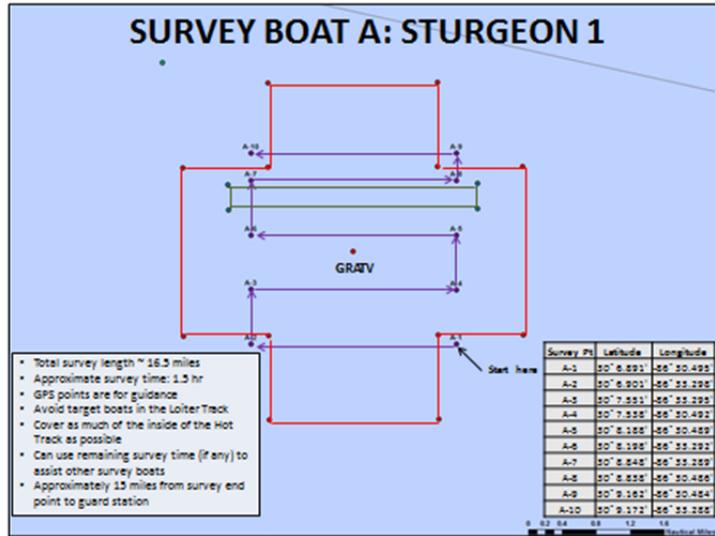
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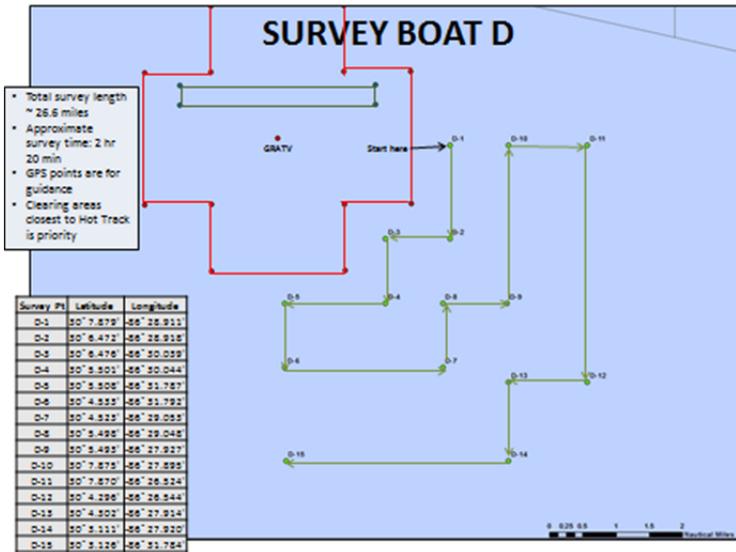
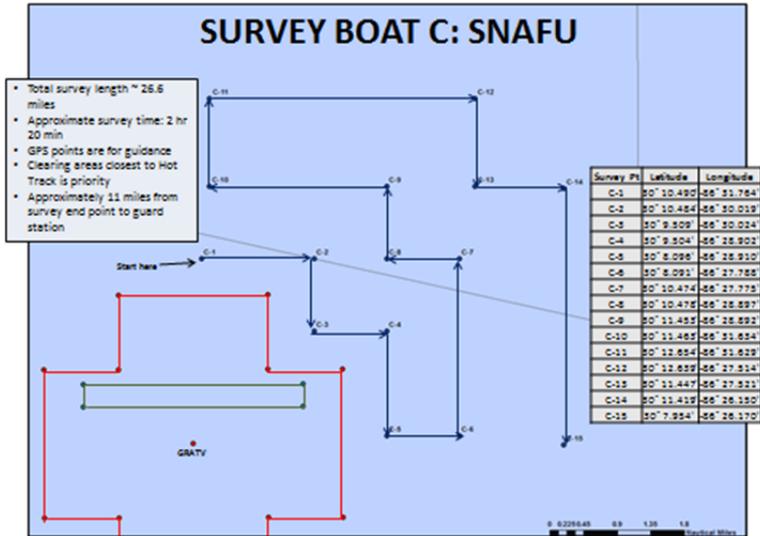
  
Bruce Hagedorn  
Chief, Natural Resources  
Eglin Natural Resources

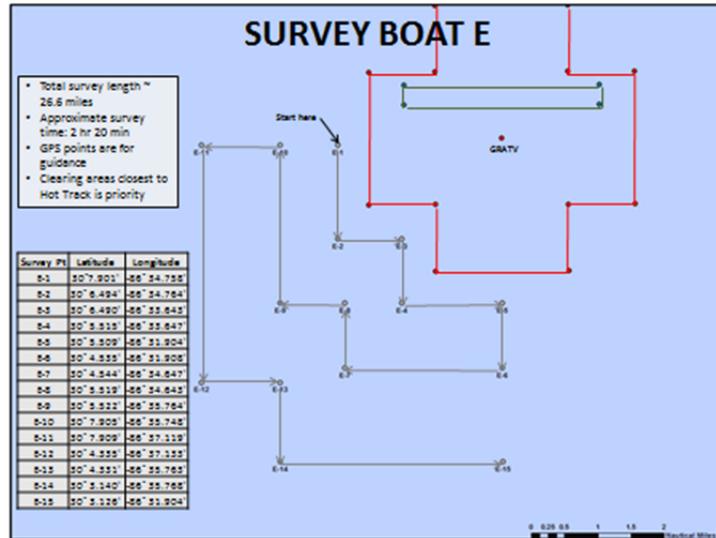
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**APPENDIX A**  
**MAPS OF SURVEY SCENARIOS**









## LINES OF COMMUNICATION

- 0500 – 0630: Use Channel 82 while in transit
- Wait for Sturgeon 1 to switch from Channel 82 to 81 for pre-mission surveys
- Report sightings to Sturgeon 1 Lead Biologist (Brad Boykin) on Channel 81 – see next slide
- Once your quadrant is cleared report to Sturgeon 1 Lead Biologist on Channel 81
- If working Guard Duty, switch to Channel 82 for Range Clearing activities

## INFORMATION TO PROVIDE IF A PROTECTED SPECIES IS OBSERVED

- Identify yourself
- Location of vessel
- Name or describe species/animal seen and # of animals
- Location of animals
  - If possible get GPS coordinates of animal(s), or
  - State boat's GPS position at time of sighting and approximate distance from boat
  - Note any behaviors of interest (i.e., in transit, feeding, bowriding, etc...)
- Animal's heading/direction of travel
- Wait for further instructions from Lead Biologist on Sturgeon 1
  - If animals are heading towards target area, maintain visual contact with the animal until:
    - It is clear of the survey area or
    - It enters another boat's survey quadrant – relay information to appropriate survey vessel so they can track the animal(s) in their quadrant
- Once animals are clear of the survey area, you may proceed with survey route