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**2022 Annual  
Atlantic Fleet Training and Testing (AFTT)  
Study Area  
Training and Testing Report**

**14 November 2021 to 13 November 2022**

**10 FEBRUARY 2023**

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# 2022 ANNUAL AFTT STUDY AREA TRAINING AND TESTING REPORT

## INTRODUCTION

The U.S. Navy prepared this Annual Training and Testing Report covering the period from 14 November 2021 to 13 November 2022 in compliance with the National Marine Fisheries Service (NMFS) Final Rule, Letters of Authorization (LOA), and Incidental Take Statements under the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA) authorizations for the U.S. Navy's Atlantic Fleet Training and Testing (AFTT) Study Area.

This combined report is submitted to present an overview of all U.S. Navy training and testing activities within the AFTT Study Area. This report also includes separately authorized Incidental Harassment Authorization (IHA) reporting requirements for ICEX 2022 (see Section 8).

In the AFTT Final Rule and Letters of Authorization,<sup>1</sup> the following report subsections were specified and are present within this report:

- (1) Major Training Exercises (MTEs)
  - (i) Exercise information (for each MTE)
  - (ii) Individual marine mammal sighting information for each sighting in each exercise when mitigation occurred
  - (iii) Evaluation (based on data gathered during all MTEs) of the effectiveness of mitigation measures designed to minimize the received level to which marine mammals may be exposed. This evaluation must identify the specific observations that support any conclusions the Navy reaches about the effectiveness of the mitigation
- (2) Sinking Exercises (SINKEX)
- (3) Summary of Training Sources Used
  - (i) Total annual hours or quantity (per the LOA) of each bin of sonar or other acoustic sources (pile driving and air gun activities)
  - (ii) Total annual expended/detonated ordnance (missiles, bombs, sonobuoys, etc.) for each explosive bin
  - (iii) Special Reporting Areas for Training Active Sonar & In-Water Explosives
- (4) Geographic Training Information Presentation
- (5) Sonar Exercise Notification

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<sup>1</sup>AFTT Requirements for Monitoring and Reporting, 50 CFR §218.84(b)(1) through (b)(3) and §218.85(e)(1) through (e)(5). The reporting requirements are also delineated in sections 6(b) and 7(e) of both the Training Letter of Authorization and the Testing Letter of Authorization.

(6) Summary of Testing Sources Used

- (i) Total annual hours or quantity (per the LOA) of each bin of sonar or other acoustic sources (pile driving and air gun activities)
- (ii) Total annual expended/detonated ordnance (missiles, bombs, sonobuoys, etc.) for each explosive bin
- (iii) Special Reporting Areas for Testing Active Sonar & In-Water Explosives

(7) Geographic Testing Information Presentation

(8) ICE Exercise (ICEX) 2022 Training and Testing Activities<sup>2</sup>

The information in this report represents the best practical data collection for this period. To provide accounting for the entire seven-year period of the authorization, Navy will also submit a 7-year closeout Training and Testing Report with final totals of authorized usage.

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<sup>2</sup> ICE Exercise 2022 reporting requirements are delineated in section 6(b) of the IHA, 04 February 2022.

## (1) AFTT – Major Training Exercises

This section summarizes authorized sonar use and marine mammal observations from MTEs conducted within the AFTT Study Area during the reporting period. The AFTT MTEs include Large Integrated Anti-Submarine Warfare, which consists of *Composite Training Unit Exercises* (C2X), and Medium Integrated Anti-Submarine Warfare, which consists of *Fleet Exercises* (FLEETEX) and *Sustainment Exercises* (SUSTEX).

### (i) Exercise information

**Table 1-1. MTEs conducted in the AFTT Study Area**

(A) Exercise designator	(B) Date began and ended	(C) Location	(D) Number and types of active sonar sources used	(E) Number and types of passive acoustic sources used	(F) Number and types of vessels, aircraft, and other platforms participating	(G) Total hours of all active sonar source operation	(H) Total hours of each active sonar source bin	(I) Wave height (high, low, average)
FLEETEX <sup>1</sup>	13 Mar – 30 Mar 2022	VCOA/CPOA/JAXOA	*	*	*	*	*	6, 2, 3
C2X	31 May – 01 Jul 2022	VCOA/CPOA/JAXOA						6, 2, 3
FLEETEX <sup>1</sup>	3 Oct – 24 Oct 2022	VCOA/CPOA/JAXOA						6, 2, 3

<sup>1</sup>Task Force Exercise (TFEX) (FLEETEX equivalent exercise)

\*Information is presented in the classified annex to this report.

VCOA=Virginia Capes Operating Area; CPOA=Cherry Point Operating Area; JAXOA=Jacksonville Operating Area

**(ii) Individual marine mammal sighting information for each sighting in each exercise when mitigation occurred**

**Table 1-2. AFTT MTE – Individual Marine Mammal and Sea Turtle Mitigation Sighting Information: TFE<sup>1</sup> 13 Mar – 30 Mar 2022**

(A) Date/time/location of sighting			(B) Species	(C) Number of individuals	(D) Initial detection sensor	(E) Indication of specific type of platform the observation was made from	(F) Length of time observers maintained visual contact with marine mammal(s) (min)	(G) Sea state (Beaufort scale)	(H) Visibility (nm)	(I) Sound source in use at time of sighting (Y/N)	(J) Indication of whether animal is <200 yd, 200-500 yd, 500-1000 yd, 1000-2000 yd, or >2000 yd from sonar source	(K) Mitigation implementation – whether operation of sonar sensor was delayed, or sonar was powered or shutdown, and how long the delay was	(L) If source in use was hull-mounted, true bearing of animal from the vessel, true direction of vessel’s travel, and estimation of animal’s motion relative to vessel	(M) Observed behavior – Lookouts must report, in plain language and without trying to categorize in any way, the observed behavior of the animal(s) and if any calves were present
19-Mar	2012Z	JAXOA	Turtle	1	Vis	DDG	2	1	9	Y	<200	Sonar Shutdown	Turtle bearing 315T, ship course 045T, paralleling ship	Swimming

<sup>1</sup> Task Force Exercise (FLEETEX equivalent exercise)

**Table 1-3. AFTT MTE – Individual Marine Mammal and Sea Turtle Mitigation Sighting Information: C2X 31 May – 01 Jul 2022**

(A) Date/time/location of sighting	(B) Species	(C) Number of individuals	(D) Initial detection sensor	(E) Indication of specific type of platform the observation was made from	(F) Length of time observers maintained visual contact with marine mammal(s) (min)	(G) Sea state (Beaufort scale)	(H) Visibility (nm)	(I) Sound source in use at time of sighting (Y/N)	(J) Indication of whether animal is <200 yd, 200-500 yd, 500-1000 yd, 1000-2000 yd, or >2000 yd from sonar source	(K) Mitigation implementation – whether operation of sonar sensor was delayed, or sonar was powered or shutdown, and how long the delay was	(L) If source in use was hull-mounted, true bearing of animal from the vessel, true direction of vessel’s travel, and estimation of animal’s motion relative to vessel	(M) Observed behavior – Lookouts must report, in plain language and without trying to categorize in any way, the observed behavior of the animal(s) and if any calves were present
No marine mammal mitigation sightings reported during this exercise.												

**Table 1-4. AFTT MTE – Individual Marine Mammal and Sea Turtle Mitigation Sighting Information: TFEX<sup>1</sup> 03 Oct – 24 Oct 2022**

(A) Date/time/location of sighting	(B) Species	(C) Number of individuals	(D) Initial detection sensor	(E) Indication of specific type of platform the observation was made from	(F) Length of time observers maintained visual contact with marine mammal(s) (min)	(G) Sea state (Beaufort scale)	(H) Visibility (nm)	(I) Sound source in use at time of sighting (Y/N)	(J) Indication of whether animal is <200 yd, 200-500 yd, 500-1000 yd, 1000-2000 yd, or >2000 yd from sonar source	(K) Mitigation implementation – whether operation of sonar sensor was delayed, or sonar was powered or shutdown, and how long the delay was	(L) If source in use was hull-mounted, true bearing of animal from the vessel, true direction of vessel's travel, and estimation of animal's motion relative to vessel	(M) Observed behavior – Lookouts must report, in plain language and without trying to categorize in any way, the observed behavior of the animal(s) and if any calves were present
No marine mammal mitigation sightings reported during this exercise.												

<sup>1</sup>Task Force Exercise (FLEETEX equivalent exercise)

**(iii) Evaluation (based on data gathered during all exercises) of effectiveness**

Between 14 November 2021 and 13 November 2022, there were three major training exercises (two FLEETEX and one C2X) in the AFTT Study Area. There was one sighting of a sea turtle reported within the mitigation zone while active sonar was energized during these exercises.

**Table 1-5. AFTT MTEs and Associated Marine Mammal and Sea Turtle Mitigation Sightings**

MTE Type	Month	# of Exercise Days	# of Ships Involved (MFAS and non-MFAS)	# of Mitigation Sightings	# of Animals
FLEETEX	Mar 2022	18	8	1	1
C2X	May – Jul 2022	31	12	0	0
FLEETEX	Oct 2022	22	12	0	0
	<b>Total</b>	<b>71</b>	<b>32</b>	<b>1</b>	<b>1</b>

**Mitigation Effectiveness Discussion**

During the reporting period, the two categories of mitigation measures (Procedural Mitigation and Mitigation Areas) outlined in the AFTT EIS and approved by NMFS were effective in appropriately mitigating exposure of marine mammals and seas turtles to mid-frequency active sonar (MFAS). Fleet commanders and ship watch teams continue to improve individual awareness and enhance reporting practices. This improvement can be attributed to the various pre-exercise conferences, mandatory marine species awareness training, and adjustments made based upon the lessons learned. The mitigation zones were adhered to, and vessels and aircraft applied mitigation measures when marine mammals or sea turtles were visually observed within the requisite zones.

For AFTT MTEs, there was one mitigation event when sonar was shut down during Anti-Submarine Warfare (ASW) training. This event involved one surface ship securing active sonar after observing a sea turtle swimming within the mitigation zone (see Table 1-2).

Animals conducting deep dives were not observed during any of the MTEs. If exposure to any deep-diving animals did occur, Navy assesses that these animals would not be exposed to significant levels for long periods based on the moving nature of ships during active sonar use, and even less so from less frequent and lower power aircraft-deployed active sonar systems such as dipping sonar and sonobuoys. For instance, during a one-hour dive by a beaked whale or sperm whale, a ship moving at a nominal 10 knot speed could transit about 10 nautical miles (nm) from its original location, well beyond ranges predicted to have significant exposures.

Table 1-6 contains all mitigation events where sonar was energized and the observed range was less than 1,000 yards. It should be noted that with or without mitigation, given the relative motion of ships maneuvering at sea and the independent marine animal movement, the time any given animal would be exposed to active sonar from surface ships is likely to be limited, as shown by the distance calculated in Table 1-6 Column 11.



**Table 1-6. Estimated Exposures for Marine Animals in Mitigation Events at Ranges Less than 1,000 Yards**

1) MTE	2) Month	3) Species sighted	4) Number of marine animals sighted	5) Platform	6) Range at which marine animal sighted (yds)	7) Mitigation action	8) Estimate maximum exposure prior to mitigation (dB re 1µPa) <sup>1</sup>	9) Number of minutes sonar mitigation applied	10) Estimate exposure after mitigation (dB re 1µPa) <sup>1</sup>	11) Distance ship would have moved given length of mitigation and nominal 10-knot ship speed (yds)	12) Observed marine animal and vessel direction and estimated relative motion	13) Observed behavior
FLEETEX	Mar	Turtle	1	DDG	<200	Sonar shutdown	<189	10	None	3,333	Turtle bearing 315T, ship course 045T, paralleling ship	Swimming

<sup>1</sup>Estimated exposure based on 20Log[R] spherical spreading propagation loss for ranges less than 1,000 yards and where nominal active sonar Source Level (SL) assumed to be 235 dB for DDGs and CGs. Actual operating parameters and oceanographic condition likely result in lower exposure. This calculation assumes exposure prior to mitigation. Once animal was observed at the range indicated, applied mitigation would have resulted in much lower to no exposures.

## Exposure Assessment

Estimated exposures within 2,000 yards can be determined based on standard formulas of how sound propagates in water. Spherical spreading is generally valid within 1,000 yards from the sound source, and can be expressed as spreading loss (in dB from a source) equals  $20\log R$  (with “R” being range from the source in yards). Spherical spreading loss in the first 1,000 yards equates to 60 dB of loss. At ranges between 1,000 and 2,000 yards a portion of the sound waves can become trapped in a surface duct or by the sea surface and bottom (depending on depth of the sound transmission) and may not expand vertically. The spreading wave in this case then forms an expanding cylinder. Cylindrical spreading loss in dB between two points can be calculated by using the formula  $(10\log R_2/R_1)$ , with “R2” being the longer range, and “R1” being 1,000 yards. Cylindrical spreading loss between 1,000 and 2,000 yards equates to an additional 3 dB of loss. For this assessment, Navy assumes the most conservative case where all the sound between 1,000 and 2,000 yards is trapped. Therefore, by the time the wave has propagated to 2,000 yards, the sonar signal strength has decreased by a minimum total of 63 dB. Using the AN/SQS-53 sonar as an example, transmitting at 235 dB and subtracting the 63 dB of spreading loss equates to an estimated sonar Receive Level (RL) of 172 dB at 2,000 yards. The spreading loss formulas used make very conservative assumptions about potential exposure. The formula is an estimation of spreading losses only and does not take into account other factors that could increase the total propagation losses such as oceanographic conditions, attenuation losses, scattering losses, and Navy-unique MFAS operating parameters which would result in slightly lower sonar transmit levels. Use of this approach to estimate potential RL at any given animal assumes the horizontal range from a visual sighting accounts for an animal across all depths at which an animal travels to predict the maximum, worst-case potential exposure. In other words, this estimated worst-case exposure is presented independent of the animal’s actual depth level, since a) time and depth of current and previous dives cannot be deduced from a limited surface sighting, and b) oceanographic and tactical conditions influence actual sound propagation at different depths. Given the relative motion of ships and animals at sea, the time spent with any given exposure from surface ships is likely to be limited.

Passive sonar is an acoustic device used for listening to underwater sound and does not involve transmitting sound into the water column. Passive sonar use is driven by the tactical nature of an ASW exercise or training event, and is employed whenever possible. Given the nature of passive sonar technology and underwater sound propagation, determining range and absolute position of a marine animal is exceedingly difficult and generally not possible with any single ship-based passive sonar. Skilled operators or unique circumstances could possibly allow real-time or near-real time estimations of

range to a vocalizing marine animal, however it would be at the expense of interrupting the ship’s ASW training at the time. Active sonar, on the other hand, is critical in providing range and bearing to potential underwater submarines and mines. In addition, passive sonar can only detect marine animals that are currently vocalizing (i.e., making underwater sound as part of communication and echolocation). Marine animal vocalization is based on individual needs at a particular moment, species-level foraging, and mating strategies, and other oceanographic or biological factors. For instance, for some species it is believed only males typically vocalize (e.g., humpback whales, blue whales, fin whales, and minke whales). Depending on oceanographic conditions and animal source levels, when marine animals do vocalize, sounds can easily travel one to several tens of kilometers (km) (0.5 nm to tens of nm) for some mid-to-low frequency animals, and tens to hundreds of kilometers for very low frequency baleen whales (i.e., blue and fin whales). These ranges demonstrate that even if the marine animal vocalization can be detected, it does not mean the animal is necessarily close to the passive sonar sensor. Determining when or if a marine animal is within a mitigation zone by passive acoustic detection is not feasible for Navy.

There is no information from which to assess how many, if any, animals not observed by Navy Lookouts may or may not have been exposed to MFAS received levels equal to or greater than the exposure criteria set forth by NMFS. However, many of the ESA-listed species in AFTT, with the exception of the sperm whale, are easier to spot on the surface due to shorter dive times and larger animal size (humpback whale, fin whale, sei whale). Dolphins, the most common cetacean seen in AFTT, often occur in large, visible pods. Beaked whales are difficult to observe at-sea due to deep diving profiles and short surface intervals. Sea turtles are also difficult to observe at-sea due to their size and that they typically swim beneath the ocean surface and have short surface intervals.

**(2) AFTT – Sinking Exercises (SINKEX)**

No SINKEXs were conducted in the AFTT Study Area during the reporting period.

**(3) AFTT – Summary of Training Sources Used**

This section summarizes total annual usage of each type of sound source used for training within AFTT from 14 November 2021 to 13 November 2022, which constitutes Year 4 of the 7-year authorization.

**(i) Total annual hours or quantity of each bin of sonar or other acoustic sources**

**Table 3-1. Annual Training Acoustic Source Usage within the AFTT Study Area by Source Bin**

Authorized sound sources from AFTT Final Rule		Authorized Amount (14Nov21-13Nov22)	Actual Usage (14Nov21-13Nov22)	% Used of Authorized Amount
(i) Acoustic Sources Used During Annual Training				
Pile driving	Pile driving (impact)	238 count	0	0%
Pile removal	Vibratory pile removal	238 count	0	0%
<i>See classified annex for all other acoustic sources</i>				

**(ii) Total annual expended/detonated ordnance for each explosive bin**

**Table 3-2. Annual Training Explosive Source Usage within the AFTT Study Area by Source Bin**

Authorized sound sources from AFTT Final Rule		Authorized Amount (14Nov19-13Nov20)	Actual Usage (14Nov19-13Nov20)	% Used of Authorized Amount
(ii) Explosive Sources Used During Annual Training				
E1	Medium-caliber projectile	7,700 detonations	288	4%
E2	Medium-caliber projectile	214 detonations	0	0%
E3	Large-caliber projectile	4,592 detonations	138	3%
E4	Mine neutralization charge	133 detonations	10	8%
E5	5-inch projectile	1,436 detonations	226	16%
E6	Hellfire missile	602 detonations	62	10%
E7	Demo block / shaped charge	4 detonations	1	25%
E8	Maverick missile	22 detonations	0	0%
E9	500 lb. bomb	66 detonations	54	82%
E10	Harpoon missile / 1000 lb. bomb	90 detonations	40	44%
E11	650 lb. mine	1 detonations	0	0%
E12	2,000 lb. bomb	18 detonations	2	11%

**Table 3-3. 7-year Cumulative Training Acoustic Source and Explosive Source Usage within the AFTT Study Area by Source Bin**

Sound Source Bin	Year 1 Actual Usage (14Nov18-13Nov19)	Year 2 Actual Usage (14Nov19-13Nov20)	Year 3 Actual Usage (14Nov20-13Nov21)	Year 4 Actual Usage (14Nov21-13Nov22)	7-year Authorized Amount (14Nov18-13Nov25)	7-year Cumulative Actual Usage (14Nov18-13Nov25)	% Used of 7-year Authorized Amount
(i) Acoustic Sources Used During Annual Training							
Pile driving	76	0	0	0	1,666	76	5%
Pile removal	76	0	0	0	1,666	76	5%
<i>See classified annex for all other acoustic sources</i>							
(ii) Explosive Sources Used During Annual Training							
E1	165	0	198	288	53,900	651	1%
E2	0	0	0	0	1,486	0	0%
E3	241	171	16	138	32,144	566	2%
E4	0	2	2	10	913	14	2%
E5	252	178	10	226	10,052	666	7%
E6	59	24	8	62	4,214	153	4%
E7	0	4	1	1	28	6	21%
E8	3	0	0	0	154	3	2%
E9	64	62	0	54	462	180	39%
E10	62	23	0	40	630	125	20%
E11	0	0	0	0	7	0	0%
E12	0	0	0	2	126	2	2%

**(iii) Special Reporting Areas for Training Active Sonar & In-Water Explosives****Table 3-4. Training Active Sonar & In-Water Explosive Usage within the Northeast North Atlantic Right Whale Mitigation Area (year-round)**

Authorized sound sources from AFTT Final Rule		Actual Usage (14 Nov 21-13 Nov 22)
Active Sonar	All Source Bins	*
In-Water Explosives	All Explosive Bins	0

\* Information is presented in the classified annex to this report.

**Table 3-5. Training Active Sonar & In-Water Explosive Usage within the Gulf of Maine Planning Awareness Mitigation Area (year-round)**

Authorized sound sources from AFTT Final Rule		Actual Usage (14 Nov 21-13 Nov 22)
Active Sonar	All Source Bins	*
In-Water Explosives	All Explosive Bins	0

\* Information is presented in the classified annex to this report.

**Table 3-6. Training Active Sonar & In-Water Explosive Usage within the Southeast North Atlantic Right Whale Mitigation Area (November 15 through April 15)**

Authorized sound sources from AFTT Final Rule		Actual Usage (15 Nov 21-15 Apr 22)
Active Sonar	All Source Bins	*
In-Water Explosives	All Explosive Bins	0

\* Information is presented in the classified annex to this report.

**Table 3-7. Training Active Sonar & In-Water Explosive Usage within the Southeast North Atlantic Right Whale Critical Habitat Special Reporting Area (November 15 through April 15)**

Authorized sound sources from AFTT Final Rule		Actual Usage (15 Nov 21-15 Apr 22)
Active Sonar	All Source Bins	*
In-Water Explosives	All Explosive Bins	0

\* Information is presented in the classified annex to this report.

**Table 3-8. Training Active Sonar & In-Water Explosive Usage within the Bryde's Whale Mitigation Area (year-round)**

Authorized sound sources from AFTT Final Rule		Actual Usage (14 Nov 21-13 Nov 22)
Active Sonar	All Source Bins	*
In-Water Explosives	All Explosive Bins	0

\* Information is presented in the classified annex to this report.

**(4) AFTT – Geographic Training Information Presentation**

The precise locations and frequency of ASW training are classified. There is currently no method to declassify the sensitivity of this data in order to publish this type of information in an unclassified report. For this reason, the only available method for this information to be disseminated is in the classified annex of this report.

## (5) AFTT – Sonar Exercise Notification

The Navy submitted all required information to NMFS for all MTEs during the reporting period, including location of the exercise, beginning and end dates of the exercise, and type of exercise.

## (6) AFTT – Summary of Testing Sources Used

This section summarizes total annual usage of each type of sound source used for testing within AFTT from 14 November 2021 to 13 November 2022, which constitutes year 4 of the 7-year authorization.

### (i) Total annual hours or quantity of each bin of sonar or other acoustic sources

**Table 6-1. Annual Testing Acoustic Source Usage within the AFTT Study Area by Source Bin**

Authorized sound sources from AFTT Final Rule		Authorized Amount (14Nov21- 13Nov22)	Actual Usage (14Nov21- 13Nov22)	% Used of Authorized Amount
(i) Acoustic Sources Used During Annual Testing				
AG	Small underwater air guns	604 count	0	0%
<i>See classified annex for all other acoustic sources.</i>				

### (ii) Total annual expended/detonated ordnance for each explosive bin

**Table 6-2. Annual Testing Explosive Source Usage within the AFTT Study Area by Source Bin**

Authorized sound sources from AFTT Final Rule		Authorized Amount (14Nov21- 13Nov22)	Actual Usage (14Nov21- 13Nov22)	% Used of Authorized Amount
(ii) Explosive Sources Used During Annual Testing				
E1	Medium-caliber projectile	26,840 detonations	312	1%
E3	Large-caliber projectile	3,422 detonations	59	2%
E4	Mine neutralization charge	800 detonations	0	0%
E5	5-inch projectile	1,325 detonations	0	0%
E6	Hellfire missile	48 detonations	0	0%
E8	Lightweight torpedo	33 detonations	0	0%
E9	500 lb. bomb	4 detonations	0	0%
E10	Harpoon missile	98 detonations	0	0%
E11	650 lb. mine	10 detonations	0	0%
E16 <sup>1</sup>	Littoral Combat Ship full ship shock trial	12 detonations	0	0%
E17 <sup>1</sup>	Aircraft carrier full ship shock trial	4 detonations	0	0%

<sup>1</sup>Shock trials consist of four explosions each. In any given year, there could be 0-3 small ship shock trials (E16) and 0-1 large ship shock trials (E17). Over a 7-year period, there could be three small ship shock trials (E16) and one large ship shock trial (E17).

**Table 6-3. 7-year Cumulative Testing Sound Source and Acoustic Source Usage within the AFTT Study Area by Source Bin**

Sound Source Bin	Year 1 Actual Usage (14 Nov 18-13 Nov 19)	Year 2 Actual Usage (14 Nov 19-13 Nov 20)	Year 3 Actual Usage (14 Nov 20-13 Nov 21)	Year 4 Actual Usage (14 Nov 21-13 Nov 22)	7-year Authorized Amount (14 Nov 18-13 Nov 25)	7-year Cumulative Actual Usage (14 Nov 18-13 Nov 25)	% Used of 7-year Authorized Amount
(i) Acoustic Sources Used During Annual Testing							
AG	10	1	0	0	4,228	11	<1%
<i>See classified annex for all other acoustic sources.</i>							
(ii) Explosive Sources Used During Annual Testing							
E1	0	0	392	312	160,880	704	<1%
E3	0	101	91	59	20,162	251	1%
E4	0	0	0	0	5,330	0	0%
E5	0	0	0	0	9,275	0	0%
E6	0	0	0	0	276	0	0%
E8	0	0	0	0	231	0	0%
E9	0	0	0	0	28	0	0%
E10	0	0	0	0	566	0	0%
E11	0	0	0	0	70	0	0%
E16 <sup>1</sup>	0	0	0	0	12	0	0%
E17 <sup>1</sup>	0	0	3	0	4	3	75%

<sup>1</sup>Shock trials consist of four explosions each. Over a 7-year period, there could be three small ship shock trials (E16) and one large ship shock trial (E17).

**(iii) Special Reporting Areas for Testing Active Sonar & In-Water Explosives**

**Table 6-4. Testing Active Sonar & In-Water Explosive Usage within the Northeast North Atlantic Right Whale Mitigation Area (year-round)**

Authorized sound sources from AFTT Final Rule		Actual Usage (14 Nov 21-13 Nov 22)
Active Sonar	All Source Bins	*
In-Water Explosives	All Explosive Bins	0

\* Information is presented in the classified annex to this report.

**Table 6-5. Testing Active Sonar & In-Water Explosive Usage within the Gulf of Maine Planning Awareness Mitigation Area (year-round)**

Authorized sound sources from AFTT Final Rule		Actual Usage (14 Nov 21-13 Nov 22)
Active Sonar	All Source Bins	*
In-Water Explosives	All Explosive Bins	0

\* Information is presented in the classified annex to this report.

**Table 6-6. Testing Active Sonar & In-Water Explosive Usage within the Southeast North Atlantic Right Whale Mitigation Area (November 15 through April 15)**

Authorized sound sources from AFTT Final Rule		Actual Usage (15 Nov 21-15 Apr 22)
Active Sonar	All Source Bins	*
In-Water Explosives	All Explosive Bins	0

\* Information is presented in the classified annex to this report.

**Table 6-7. Testing Active Sonar & In-Water Explosive Usage within the Southeast North Atlantic Right Whale Critical Habitat Special Reporting Area (November 15 through April 15)**

Authorized sound sources from AFTT Final Rule		Actual Usage (15 Nov 21-15 Apr 22)
Active Sonar	All Source Bins	*
In-Water Explosives	All Explosive Bins	0

\* Information is presented in the classified annex to this report.

**Table 6-8. Testing Active Sonar & In-Water Explosive Usage within the Bryde's Whale Mitigation Area (year-round)**

Authorized sound sources from AFTT Final Rule		Actual Usage (14 Nov 21-13 Nov 22)
Active Sonar	All Source Bins	*
In-Water Explosives	All Explosive Bins	0

\* Information is presented in the classified annex to this report.

## **(7) AFTT – Geographic Testing Information Presentation**

The precise locations and frequency of ASW testing are classified. There is currently no method to declassify the sensitivity of this data in order to publish this type of information in an unclassified report. For this reason, the only available method for this information to be disseminated is in the classified annex of this report.

## **(8) AFTT – ICE Exercise 2022 Training and Testing Activities**

During ICEX 2022, U.S. Navy submarines used active sonar for training and under-ice safety of navigation; and expended five (5) exercise torpedoes (TORP2). No sonar shutdowns were reported during the exercise. Details of active sonar usage are presented in the classified annex of this report.