The Mariana Islands Training and Testing

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Training and Testing Activities
Final Environmental Impact Statement/
Overseas Environmental Impact Statement

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D AIR QUALITY EMISSIONS CALCULATIONS

This appendix discusses emission factors, calculations, and assumptions used in the air quality analyses presented in the Air Quality section of Chapter 3 (see Section 3.2).

D.1 SURFACE OPERATIONS EMISSIONS

Surface operations are activities associated with vessel movements. Training and testing activities use a variety of marine vessels, including cruisers, destroyers, frigates, carriers, submarines, amphibious vessels, and small boats. These vessels use a variety of propulsion methods, including marine outboard engines, diesel engines, and gas turbines.

Marine Outboard Engines:

The United States Environmental Protection Agency (USEPA) has published emissions factors for air pollutants produced by several types of two-stroke and four-stroke outboard engines. The most conservative emission factors for two-stroke engines of various horsepower are presented in Table D.1-1.

Table D.1-1: Emission Factors for Two Stroke Engines

USEPA Outboard Engine Emissions Factors (grams/hp-hr.)			
NO_x	CO	VOC	SO_x
0.018	0.63	0.25	0.00108

Notes: CO = carbon monoxide, hp = horsepower, hr. = hour, NO_x = nitrogen oxides, SO_x = sulfur oxides, USEPA = United States Environmental Protection Agency, VOC = volatile organic compounds

Source: USEPA 1999, Exhaust Emissions Factors for Non-Road Engine Modeling-Spark Ignition. Report No. NR-010b; Office of Mobile Sources, Assessment and Modeling Division, EPA-R-99-009.

Emissions for surface craft using outboard engines were calculated using USEPA AP-42 factors, and multiplied by the engine horsepower and hours of operation.

$$Emissions = HP \times HR/YR \times EF \times ENG$$

Where:

Emissions = surface craft emissions
HP = horsepower (reflective of a particular load factor/engine power setting)
HR/YR = hours per year
EF = emission factor for specific engine type
ENG = number of engines

To obtain the total criteria pollutant emissions for the Proposed Action, emissions were calculated for each training or testing activity, type of surface vessel, and criteria pollutant. These individual estimates of emissions, in units of tons per year, were then summed by criteria pollutant to obtain the aggregate emissions for surface vessel emissions activities.

Diesel Engines:

Limited data were available for large marine diesel engines. Therefore, USEPA AP-42 emissions factors for industrial reciprocating engines were used to calculate diesel engine emissions. Other sources of vessel emissions factors were previous United States Department of the Navy (Navy) Environmental Impact Statement (EIS)/Overseas EIS (OEIS) documents (citing JJMA 2001). Diesel was assumed to be the

primary fuel to ensure a conservative estimate. Calculation methods similar to those described for Marine Outboard Engines were used to obtain emissions estimates for diesel engines.

$$Emissions = HP \times HR/YR \times EF \times ENG$$

Where:

Emissions = surface craft emissions
HP = horsepower (reflective of a particular load factor/engine power setting)
HR/YR = hours per year
EF = emission factor for specific engine type
ENG = number of engines

Diesel engine emission factors were multiplied by the engine horsepower and annual hours of operation to calculate the pollutant emissions per year.

D.2 AIR OPERATIONS EMISSIONS

Training and testing consists of the activities of various aircraft, including the F/A-18, P-3, SH-60B and other military aircraft. Aircraft operations of concern are those that occur from ground level up to 3,000 feet (ft.) (914 meters [m]) above ground level (AGL). The 3,000 ft. (914 m) AGL ceiling was assumed to be the atmospheric mixing height above which any pollutant generated would not contribute to increased pollutant concentrations at ground level (known as the mixing zone). All pollutant emissions from aircraft generated above 3,000 ft. (914 m) AGL are excluded from analysis for compliance with National Ambient Air Quality Standards. The pollutant emission rate is a function of the aircraft engine's fuel flow rate and efficiency. Emissions for one complete training activity for a particular aircraft are calculated by knowing the specific engine pollutant emission factors for each mode of operation.

For this EIS/OEIS, emission factors for most military engines were obtained from Navy's Aircraft Environmental Support Office (AESO) memoranda and previous Navy EIS/OEIS documentation (primarily citing the Federal Aviation Administration's Emissions and Dispersion Modeling [EDMS] model). For those aircraft for which engine data were unavailable, an applicable surrogate was used. Table D.2-1 is an example of emission factors for the aircraft engines. The table lists the various engine power modes, time in each mode, fuel flow, and corresponding pollutant emission factors.

Table D.2-1: Emission Factors for Military Aircraft

Aircraft Type	Engine Model	Number of Engines	Time in Mode*, hours	Fuel Flow, lb./hr./engine	Emission Factors, lb./1,000 gallons (gal.) of fuel				
					CO	NOx	VOC	SOx	PM
EA-6B	J52-P-408A (2)	2	3.2	3,195	7.99	5.71	1.09	0.40	12.20
FA-18E/F	F414-GE-400 (2)	2	38.4	5,169	0.72	14.75	0.12	0.40	6.56
P-3	T56-A-14 (4)	4	2.4	1,200	1.82	8.43	0.41	0.40	3.97
SH-60B	T700-GE-401C (2)	2	120	600	6.25	6.40	0.55	0.40	4.20

*Time in Mode = time operating below 3,000 ft. during a Joint Expeditionary Exercise

D.3 ORDNANCE AND MUNITIONS EMISSIONS

Available emissions factors (AP-42, *Compilation of Air Pollutant Emission Factors*) were used. These factors were then multiplied by the net weight of the explosive and the number of items that were used per year. This calculation provides estimates of annual emissions.

$$Emissions = EXP/YR \times EF \times Net\ Wt$$

Where:

Emissions = ordnance emissions
EXP/YR = explosives, propellants, and pyrotechnics used per year
EF = emissions factor
Net Wt = net weight of explosive

D.4 EMISSIONS FROM VEHICLES AND OTHER EQUIPMENT

Available emissions factors (AP-42, *Compilation of Air Pollutant Emission Factors* and other sources) were used. These factors were then multiplied by the fuel usage for the vehicle or the equipment.

$$Emissions = EF \times fuel\ usage$$

Where:

Emissions = vehicle/equipment emissions
Fuel usage = lb./year
EF = emissions factor

D.5 EMISSIONS ESTIMATES SPREADSHEETS

Tables D.5-1 to D.5-22 presented after the Record of Non-Applicability contain the emission factors and the emissions calculations for aircraft, vessels, ordnance, vehicles and other equipment for training and testing. The emissions are provided in total as well as by geographical jurisdiction (onshore and within state waters, federal waters, and beyond federal waters) for surface vessels and aircraft. Table D.5-23

presents the emissions from activities that will occur in Guam's sulfur oxide non-attainment areas, which are also included for purposes of the conformity analysis.

D.6 RECORD OF NON-APPLICABILITY

The following are the Record of Non-Applicability memorandum (Figure D.6-1), the Navy Record of Non-Applicability (Figure D.6-2) and the Conformity Analysis (Figure D.6-3). The conformity analysis is included in Section 3.2, Air Quality.

MEMORANDUM FOR THE RECORD

From: Commander, U.S. Pacific Fleet

Subj: Applicability Analyses for Mariana Islands Training and Testing (MITT) Environmental Impact Statement/Overseas Environmental Impact Statement – Military Readiness Activities in Waters of the Territory of Guam

Ref: (a) 40 CFR, Part 93, Subpart B: Determining Conformity of General Federal Actions to State or Federal Implementation Plans

Encl: (1) Record of Non-Applicability for Mariana Islands Training and Testing Activities in Waters of the Territory of Guam;

(2) Conformity Analyses for Preferred Alternative in Waters of the Territory of Guam

1. Enclosure (1) is a Record of Non-Applicability for those activities associated with Pacific Fleet training and testing activities that are expected to occur annually in waters of the Territory of Guam. SO_x emissions of the Preferred Alternative are included in Enclosure (2). Comparison of the calculated values in Enclosure 2 with those in 40 C.F.R. 93.153(b) show that this project is below the *de minimis* levels.

2. If there are any questions or if additional information is needed, please call John VanName at (808) 471-1714.

Figure D.6-1: Record of Non-Applicability Memorandum

NAVY RECORD OF NON-APPLICABILITY FOR CLEAN AIR ACT CONFORMITY

The Proposed Action falls under the Record of Non-Applicability (RONA) category, and is documented with this RONA.

Action Proponents: United States Pacific Fleet
Naval Sea Systems Command
Naval Air Systems Command
Space and Naval Warfare Systems Command
Office of Naval Research

Proposed Action Name: Mariana Islands Training and Testing (MITT)

Proposed Action Location: Mariana Islands Range Complex, Guam

Proposed Action and Emissions Summary:

See attached Conformity Analysis

Affected Air Basin: Guam Air Basin

Date RONA prepared: April 17, 2015

RONA prepared by: Naval Facilities Engineering Command, Pacific

Attainment Area Status and Emissions Evaluation Conclusion:

To the best of my knowledge and belief, the information contained within this General Conformity Applicability Analysis is correct and accurate. By signing this statement, I am in agreement with the finding that the total of all reasonably foreseeable direct and indirect emissions that will result from this action is below the *de minimis* threshold set forth in 40 C.F.R. 93.153(b). Accordingly, it is the Navy's determination that this action conforms to the applicable State Implementation Plan (SIP).

RONA Approval:

Signature: Larry M. Foster Date: 21 APR 2015

Name/Rank: Mr. Larry Foster

Position: Director, Fleet Environmental

Activity: Commander, U.S. Pacific Fleet

Enclosure 1

Figure D.6-2: Record of Non-Applicability Form

Subject: Conformity Analysis for Navy Training and Testing

The Proposed Action falls under the Record of Non-Availability (RONA) category pursuant to 40 Code of Federal Regulations (CFR) Parts 52 and 93, and the basis for exemption from conformity requirements is documented with this RONA.

The MITT EIS/OEIS has been prepared to assess current and future training and testing activities. The Study Area includes the waters of the Territory of Guam. The training and testing activities generally will involve a variety of boats and other watercraft. Aircraft overflights and vessel operations during portions of anti-submarine warfare and anti-surface warfare training and testing events would occur within the waters of the Territory of Guam.

Table 1 lists the emission sources, their engines, and their fuels that will operate in the non-attainment areas of Guam. This and other engine information were used to calculate the potential emissions of sulfur oxides.

Table 1: List of Emission Sources, Engines, and Fuels

Boat or Source	Fuel	Number of Engines and Engine Size
Cruiser	Distillate Oil	Four – 33,600 hp
Amphibious assault ship	Distillate Oil	Two boilers, two turbines – 70,000 hp total
Amphibious transport dock	Distillate Oil	Two boilers, two turbines – 24,000 hp total
Guided missile frigate	Distillate Oil	Two – 41,000 hp total
Landing craft – utility	Distillate Oil	Two – 680 hp
Landing craft – air cushioned	Distillate Oil	Four – 16,000 hp total
Rigid hull inflatable boat	Gasoline	Two – 300 hp
Combat rubber raiding craft	Gasoline	One – 55 hp
CH-46	Jet Fuel	Two – 1870 hp
CH-53	Jet Fuel	Two – 3925 hp
MH-53	Jet Fuel	Three – 4380 hp
MV-22	Jet Fuel	Two – 6150 hp
UH-1	Jet Fuel	One – 1,100 hp
AH-1	Jet Fuel	Two – 1690 hp
AV-8	Jet Fuel	One – 23,500 pound force
AV-8B	Jet Fuel	One – 23,500 pound force
H-60	Jet Fuel	Two – 1890 hp
SH-60B	Jet Fuel	Two – 1890 hp
C-130	Jet Fuel	Four – 4590 hp
MQ-4C	Jet Fuel	One – 8,917 pound force
Light armored vehicle	Distillate Oil	One – 19.5 hp
Assault Amphibious Vehicle	Distillate Oil	One – 400 hp
High Mobility Multi-Purpose Wheeled Vehicle	Distillate Oil	One – 190 hp
Truck	Distillate Oil	One – 170 hp
Dozer	Distillate Oil	One – 420 hp
Forklift	Distillate Oil	One – 120 hp
Generator	Distillate Oil	One – 120 hp
Reverse Osmosis Water Purification Unit	Distillate Oil	One – 120 hp

Note: hp = horsepower

Enclosure 2

Figure D.6-3: Conformity Analysis

In addition to the engine information for each vessel, the annual hours of operation for each vessel was needed to estimate the emissions of SO_x. Using the engine and fuel information and proposed hours of operation, the appropriate emission factors were identified from various U.S. Environmental Protection Agency documents for marine engines. These documents included:

1. Draft Regulatory Impact Analysis: Control of Emissions of Air Pollution from Locomotive Engines and Marine Compression-Ignition Engines Less than 30 Liters per Cylinder, EPA420-D-007-001, March 2007.
2. USEPA Memorandum, "Emission Factors for Recreational Marine Diesel Engines," EPA Doc No. EPA420-F-02-044, dated 09 September 2002.
3. Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling – Compression-Ignition EPA 420-P-04-009. April 2004.
4. "Conversion Factors for Hydrocarbon Emission Components" EPA420-R-05-015. December 2005, NR-002c.

For each source, the appropriate emission factor is multiplied by the period of use and the engine size to estimate emissions. Similar methods were applied to calculate aircraft emissions. The emissions of sulfur oxides from all sources were added. Appendix D of the EIS/OEIS contains the information from which these emissions estimates were calculated. The emissions estimates for sulfur oxides for each alternative are provided in Table 2 below.

Table 2: Emissions Estimates for the Preferred Alternative for Training and Testing Activities in the Non-Attainment Areas of Guam

Estimated Annual Air Pollutant Emissions in the Study Area (within 3 nm), Alternative 1			
Emissions by Air Pollutant (TPY)			
		SOx	
No Action Alternative		**172**	
Alternative 1			
Aircraft		9	
Vessels		254	
Ordnance		0	
Other		0	
Alternative 1 Total		**263**	
Change		**91**	
De Minimis Threshold		100	
Exceeds Threshold?		No	

Enclosure 2 (continued)

Figure D.6-3: Conformity Analysis (continued)

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Table D.5 -1 Surface Ship Emission Factors

Surface Ship	Emissions Factors (lb/hr) Propulsion Engines + Generators				
	CO	NOx	HC	SOx	PM10
CG-3	114.75	65.22	7.67	33.55	3.44
DDG-3	106.67	53.84	7.84	21.22	2.80
FFG-3	120.04	78.11	11.64	16.08	4.30
TRB-3	6.47	56.22	1.55	7.40	1.18
AOE-2	6.67	39.37	5	119.43	23.77
USCG	5.74	57.91	0.88	11.55	0.21
LHA-1	7.38	43.53	5.53	130.97	26.29
LHD-2	6.80	40.12	5.10	120.70	24.23
LPD-2	2.94	17.32	2.20	52.11	10.46
LCAC	25.41	55.32	0.72	43.30	3.89
LCU	36.21	44.95	0.52	3.11	1.57
AAV-2	0.76	6.22	0.82	1.25	0.26
AAAV					
PC-2	17.21	38.14	2.94	8.23	0.92
MK V-2	3.86	29.49	0.99	4.73	0.40
RIB-4	0.34	9.14	0.06	1.44	0.15
CRRC-5		0.15	12.90		
AE-2	20.17	20.93	0.99	5.97	1.57
BW-3		0.26	26.30		
SSN	0	0	0	0	0
SSGN	0	0	0	0	0
T-AGO(LFA)	6.67	39.37	5	119.43	23.77
CG-PARTNER	107.79	47.1	9.9	21	2.6
DDG-PARTNER	103.99	49.9	9	17.9	2.5
SS-PARTNER	2.94	17.32	2.2	52.11	10.46

Table D.5-2 Aircraft Emission Factors

Aircraft	Emission Indices, lb/1,000 lb fuel					Emissions Factors (lb/hr)				
	CO	NOx	VOC	SOx	PM	CO	NOx	VOC	SOx	PM
AH-1W	11.21	5.44	0.57	0.4	4.2	9.10252	4.41728	0.46284	0.3248	3.4104
AV-8B	8.8	6.71	0.28	0.4	7.1	52.8	40.26	1.68	2.4	42.6
C-130 F/R/T	2.07	8.16	0.47	0.4	3.97	9.315	36.72	2.115	1.8	17.865
CH-46	17.04	4.12	2.64	0.4	1.78	20.448	4.944	3.168	0.48	2.136
CH-53	2.13	8.08	0.15	0.4	2.21	9.50832	36.06912	0.6696	1.7856	9.86544
E-2 / E-2C	2.16	8.06	0.49	0.4	3.97	4.752	17.732	1.078	0.88	8.734
EA-18G	0.72	14.75	0.12	0.4	6.56	7.44336	152.4855	1.24056	4.1352	67.81728
EA-6B	7.99	5.71	1.09	0.4	12.12	51.0561	36.4869	6.9651	2.556	77.4468
EP-3	3.7	7.8	0.5	0.4	3	15.5844	32.8536	2.106	1.6848	12.636
F-15	3.62	46.72	0.65	0.4	8.15	22.42952	289.4771	4.0274	2.4784	50.4974
FA-18A/C	2.44	6.74	0.44	0.4	6.36	16.19184	44.72664	2.91984	2.6544	42.20496
FA-18E/F	0.72	14.75	0.12	0.4	6.56	7.44336	152.4855	1.24056	4.1352	67.81728
HH-60	6.25	6.4	0.55	0.4	4.2	7.5	7.68	0.66	0.48	5.04
Learjet	22.38	5.9	4.26	0.4	1.27	23.81232	6.2776	4.53264	0.4256	1.35128
MH-60R/S	6.25	6.4	0.55	0.4	4.2	7.5	7.68	0.66	0.48	5.04
P-3C	1.82	8.43	0.41	0.4	3.97	8.736	40.464	1.968	1.92	19.056
P-8 MMA	1.24	9.26	0.28	0.4	0.56	4.045624	30.21168	0.913528	1.30504	1.827056
S-3	14.1	4.07	1.86	0.4	3.62	32.289	9.3203	4.2594	0.916	8.2898
S-3B	14.1	4.07	1.86	0.4	3.62	32.289	9.3203	4.2594	0.916	8.2898
SH-60	6.25	6.4	0.55	0.4	4.2	7.5	7.68	0.66	0.48	5.04
SH-60B	6.25	6.4	0.55	0.4	4.2	7.5	7.68	0.66	0.48	5.04
SH-60B/F	6.25	6.4	0.55	0.4	4.2	7.5	7.68	0.66	0.48	5.04
SH-60F	6.25	6.4	0.55	0.4	4.2	7.5	7.68	0.66	0.48	5.04
UH-1N	3.34	4.72	0.17	0.4	4.2	1.8036	2.5488	0.0918	0.216	2.268
A-10	4	8.83	0.4	0.4	2.67	12.104	26.71958	1.2104	1.2104	8.07942
B-1B	0.84	13.12	0.11	0.4	0.14	5.5776	87.1168	0.7304	2.656	0.9296
E-2	0.65	10.45	0.16	0.4	3.97	2.8847	46.3771	0.71008	1.7752	17.61886
E-3	2.07	8.45	0.31	0.4	0.26	67.65588	276.1798	10.13204	13.0736	8.49784
KC-135	1.34	13.5	0.03	0.4	0.13	30.66992	308.988	0.68664	9.1552	2.97544
MQ-4C						2.1	38.84	0.66	3.54	0.61
MV-22	19.74	3.94	3.43	0.4	1.78	22.1088	4.4128	3.8416	0.448	1.9936

Table D.5-3 Ordnance Emission Factors

Ordnance Type	Ordnance	Emission Factor (lb per lb)							Emission Factor (lb/item)						
		CO_2	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	Lead	CO_2	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	Lead
BOMB	CBU MK20 ROCKEYE									0.00					
	GBU32I JDAM		0.1482							57.06					
	LGTR									0.00					
	MK76		0.085							0.26					
	BDU 48		0.085							0.26					
	MK82 HE		0.3184							61					
	GBU12 - Paveway II		0.3184							61					
	MK82 INERT		0.085							0.26					
	BDU 45		0.085							0.26					
	MK83 HE		0.1482							62					
	GBU 16		0.1482							66					
	MK84		0.1482							140					
	MK83 INERT		0.085							0.26					
OTHER ORD	**Type**														
	EER/IEER AN/SQQ-110	1.2	0.0044	0.011				0.00004		0.02					
	BLASTING CAP MK11								1.80E-03	3.10E-04	4.50E-05	4.60E-04	2.90E-04		1.30E-04
	Detonator														
	FIRING DEVICE														
	FUSE														
	GRENADE SIMULATOR								4.10E-03	0.0004	5.60E-03	0.12		4.70E-04	1.40E-06
	Grenades	6.30E-01	0.021	6.30E-03	2.10E-02	1.50E-02	1.20E-04	1.40E-04		0.00					
	Haversacks	6.30E-01	0.021	6.30E-03	2.10E-02	1.50E-02	1.20E-04	1.40E-04		0.42					
	K143 Antipersonnel Mine	6.30E-01	0.021	6.30E-03	2.10E-02	1.50E-02	1.20E-04	1.40E-04		0.03					
	M1A2 BANGALORE TORP	6.30E-01	0.021	6.30E-03	2.10E-02	1.50E-02	1.20E-04	1.40E-04		0.21					
	M7 BANDOLEER MK57 (Claymore mine)		0.15108												

Table D.5-3 Ordnance Emission Factors

Ordnance Type	Ordnance	Emission Factor (lb per lb)							Emission Factor (lb/item)						
		CO_2	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	Lead	CO_2	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	Lead
	M112 DEMO CHARGE								7.90E-01	2.60E-02	7.90E-03	2.60E-02	1.90E-02		1.70E-04
	M700 BLASTING FUSE		0.149						0.0008	0.0003	0.0002	0.00009	0.00009	0.000002	0
	Flare, Aircraft Parachute														
		0.039	0.021	0.054	0.1	0.092	0.00018			5.91E-05	0.000152	0.000282	0.000259	5.07E-07	
	Chaff	0.039	0.021	0.054	0.1	0.092	0.00018			5.91E-05	0.000152	0.000282	0.000259	5.07E-07	
	MK36 M0 DEMO CHARGE														
	MK75 CHARGE														
	MK84 [86] EOD Shaped Charge														
	MK120 NONELEC DET (ft)														
	MK123 NONELEC DET (ft)														
	MK138 DEMO CHG ASSEMBLY	6.30E-01	0.021	6.30E-03	2.10E-02	1.50E-02	1.20E-04	1.40E-04							
	MK140 FLEXIBLE CHARGE														
	PBXN-109 TEST Det Cord														
	SIGNAL MK 18(G950) SMOKE														
	C4 1.25 LB	6.30E-01	0.021	6.30E-03	2.10E-02	1.50E-02	1.20E-04	1.40E-04		0.02625	0.007875	0.02625	0.01875	0.00015	
	C4 5 LB	6.30E-01	0.021	6.30E-03	2.10E-02	1.50E-02	1.20E-04	1.40E-04		0.105	0.0315	0.105	0.075	0.0006	
	C4 15 LB	6.30E-01	0.021	6.30E-03	2.10E-02	1.50E-02	1.20E-04	1.40E-04		0.315	0.0945	0.315	0.225	0.0018	
	C4 40 LB	6.30E-01	0.021	6.30E-03	2.10E-02	1.50E-02	1.20E-04	1.40E-04		0.84	0.252	0.84	0.6	0.0048	0.0056
	C4 100 LB	6.30E-01	0.021	6.30E-03	2.10E-02	1.50E-02	1.20E-04	1.40E-04		2.1	0.63	2.1	1.5	0.012	0.014

Table D.5-3 Ordnance Emission Factors

Ordnance Type	Ordnance	Emission Factor (lb per lb)							Emission Factor (lb/item)						
		CO_2	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	Lead	CO_2	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	Lead
	C4 300 LB	6.30E-01	0.021	6.30E-03	2.10E-02	1.50E-02	1.20E-04	1.40E-04		0.021	0.0063	0.021	0.015	0.00012	0.00014
	C4 500 LB	6.30E-01	0.021	6.30E-03	2.10E-02	1.50E-02	1.20E-04	1.40E-04		0.021	0.0063	0.021	0.015	0.00012	0.00014
	TNT Blocks 0.5 lbd		0.398												
	DEMO SHEET														
	DETONATING CORD														
	DEMO CHARGE														
	SIMULATED ARTILLERY	6.30E-01	0.021	6.30E-03	2.10E-02	1.50E-02	1.20E-04	1.40E-04		0.002888	0.000866	0.002888	0.002063	1.65E-05	
PROJECTILE (LARGE)	155MM HE	6.51	2.35E+01	1.43E+00	0.496	0.2418		2.26E-03							
	155MM ILL								6.00	8.63	0.087	3.44	0.13	0.0027	0.029
	5"/54 Inert	2.60E-04	3.50E-04	3.60E-05	2.60E-05	2.30E-05		6.70E-04		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5"/54	5"/54 BLP	1.60E-02	2.00E-02		1.20E-03	9.30E-04		6.00E-06							
	5"/54 HCVT+32 (EOD)	1.60E-02	2.00E-02		1.20E-03	9.30E-04		6.00E-06		0.16	0	0.0096	0.00744	0	0.000048
	5"/54 HECVT	1.60E-02	2.00E-02		1.20E-03	9.30E-04		6.00E-06		0.1280	0.1600	0.0096	0.0074		
	5"/54 HEPD	1.60E-02	2.00E-02		1.20E-03	9.30E-04		6.00E-06		0.16	0	0.0096	0.00744	0	0.000048
	5"/54 HEVT	1.60E-02	2.00E-02		1.20E-03	9.30E-04		6.00E-06		1.60E-01	0.00E+00	9.60E-03	7.44E-03	0.00E+00	4.80E-05
	5"/54 ILL	1.50E-02	1.40E-02	3.60E-04	9.20E-04	7.60E-04		1.30E-06		1.12E-01	2.88E-03	7.36E-03	6.08E-03	0.00E+00	1.04E-05
	5"54/54 VTNF	1.60E-02	2.00E-02		1.20E-03	9.30E-04		6.00E-06		1.60E-01	0.00E+00	9.60E-03	7.44E-03	0.00E+00	4.80E-05
5"/62	5"/62	1.60E-02	2.00E-02		1.20E-03	9.30E-04		6.00E-06		1.60E-01	0.00E+00	9.60E-03	7.44E-03	0.00E+00	4.80E-05
	5"/62 HE-MFF	1.60E-02	2.00E-02		1.20E-03	9.30E-04		6.00E-06		1.60E-01	0.00E+00	9.60E-03	7.44E-03	0.00E+00	4.80E-05
	5"/62 HECVT	1.60E-02	2.00E-02		1.20E-03	9.30E-04		6.00E-06		1.60E-01	0.00E+00	9.60E-03	7.44E-03	0.00E+00	4.80E-05
	5"/62 HEET	1.60E-02	2.00E-02		1.20E-03	9.30E-04		6.00E-06		1.60E-01	0.00E+00	9.60E-03	7.44E-03	0.00E+00	4.80E-05
	5"/62 KEET	1.60E-02	2.00E-02		1.20E-03	9.30E-04		6.00E-06		1.60E-01	0.00E+00	9.60E-03	7.44E-03	0.00E+00	4.80E-05
60mm	60MM								0.4	0.06	0.005	0.062	0.03		0.0004
	60MM WP								0.13	0.154	0.0124	0.221	0.494	0.00014	0.001
76mm	76MM BLP	1.44E-02	1.80E-02		1.08E-03	8.37E-04		5.40E-06							
	81MM HE								1.48	0.14	0.016	0.173	0.096		0.0007
	81MM ILL								1.48	0.14	0.016	0.173	0.096		0.0007
CAS	GAU-17 30mm														
PROJECTILE (SMALL)	20MM	0.19	0.38	0.0049	0.0075	0.0053		0.00026	0.016	0.033	0.00043	0.00066	0.00046		0.000023

Table D.5-3 Ordnance Emission Factors

Ordnance Type	Ordnance	Emission Factor (lb per lb)							Emission Factor (lb/item)						
		CO_2	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	Lead	CO_2	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	Lead
	25MM								0.11	0.019	0.00067	0.0027	0.0017		0.000055
	30MM EFV Main Gun	0.14	0.028	0.0063	0.13	0.08		0.00037		7.28E-03	1.64E-03	3.38E-02	2.08E-02	0.00E+00	9.62E-05
	40MM	5.70E-01	6.00E-02	1.30E-02	1.10E-01	5.60E-02		6.20E-04	4.90E-02	4.00E-03	1.30E-03	9.50E-03	5.10E-03	0.00E+00	8.00E-05
	40MM HE	5.70E-01	6.00E-02	1.30E-02	1.10E-01	5.60E-02		6.20E-04	4.90E-02	4.00E-03	1.30E-03	9.50E-03	5.10E-03	0.00E+00	8.00E-05
	40MM ILL	7.20E-02	2.40E-02	6.50E-03	1.40E-01	1.20E-01	0.00019	7.90E-04	0.015	0.005	0.0014	0.029	0.025	0.00004	1.60E-04
	40MM PRACTICE	2.60E-01	2.50E-01	9.50E-03	1.40E-02	1.10E-02		1.10E-03	2.70E-03	2.60E-03	9.70E-05	1.40E-04	1.20E-04	0.00E+00	1.10E-05
	.45 CAL	2.80E-01	3.40E-01	1.00E-02	4.70E-02	4.00E-02		1.60E-02	2.20E-04	2.60E-04	8.10E-06	3.70E-05	3.10E-05		1.20E-05
	5.56	2.40E-01	4.40E-01	1.30E-02	9.20E-03	7.60E-03		3.20E-03	8.70E-04	1.60E-03	8.50E-05	3.90E-05	2.80E-05		5.10E-06
	5.56 BLANK	2.60E-01	3.20E-01	2.30E-02	7.80E-03	6.80E-03	0.00011	1.10E-03	2.30E-04	2.80E-04	2.00E-05	6.90E-06	6.00E-06	9.80E-09	9.70E-07
	.50CAL	1.50E-01	3.30E-01	3.60E-02	9.60E-03	5.60E-03		4.00E-04	5.10E-03	1.10E-02	1.20E-03	3.10E-04	1.90E-04		1.30E-05
	.50CAL	1.50E-01	3.30E-01	3.60E-02	9.60E-03	5.60E-03		4.00E-04	5.10E-03	1.10E-02	1.20E-03	3.10E-04	1.90E-04		1.30E-05
	.50CAL BLANK	3.10E-01	2.70E-01	4.10E-03	1.40E-02	1.30E-02		1.70E-03	5.10E-03	1.10E-02	1.20E-03	3.10E-04	1.90E-04		1.30E-05
	7.62	3.50E-01	2.50E-01	1.60E-02	6.10E-03	5.60E-03	0.00013	9.70E-04	1.20E-03	2.30E-03	9.70E-05	5.10E-05	3.80E-05		4.90E-06
	7.62	3.50E-01	2.50E-01	1.60E-02	6.10E-03	5.60E-03	0.00013	9.70E-04	1.20E-03	2.30E-03	9.70E-05	5.10E-05	3.80E-05		4.90E-06
	9MM								2.00E-04	3.10E-04	1.50E-05	2.40E-05	2.00E-05	8.20E-08	6.80E-06
	.300 WIN MAG								1.90E-03	3.00E-03	1.50E-05	9.40E-05	7.30E-05		1.80E-05
	.223 Rifle Rounds								7.50E-05	8.00E-05	5.00E-06	3.40E-06	2.60E-06		1.90E-06
	.22 Magnum								7.50E-05	8.00E-05	5.00E-06	3.40E-06	2.60E-06		1.90E-06
	.22 Long Rifle								7.50E-05	8.00E-05	5.00E-06	3.40E-06	2.60E-06		1.90E-06
	12 Guage Shotgun	5.10E-03	1.10E-02	1.20E-03	3.10E-04	1.90E-04		1.30E-05							
MINE SHAPE	M18A1	1.6	2.00E-02	1.80E-02	4.90E-02	2.60E-02		5.70E-05							
	MK76														
MISSILE	AGM-114B														
	AGM-65 Maverick														
	AGM-84	0.4		0.06	0.1025	0.1025			140	30.62356	35.574	61.795	61.795		
	AIM-120														
	AIM-7														
	AIM-9														
	BGM-71E **TOW**-A														
	GBU-9														

Table D.5-3 Ordnance Emission Factors

Ordnance Type	Ordnance	Emission Factor (lb per lb)							Emission Factor (lb/item)						
		CO_2	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	Lead	CO_2	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	Lead
	AGM-88 HARM														
	NSM														
	JSOW														
	Japanese Missile Tests														
	Tactical Tomahawk														
	Seasparrow Missile														
	SLAM ER														
	SM2 or equivalent														
ROCKET	2.75" RKT	4.50E-01	5.60E-02	7.10E-03	6.10E-02	3.80E-02		1.20E-03							
	2.75" RKT HE	3.00E-01	1.70E-01	2.40E-03	1.00E-01	5.30E-02		2.60E-04	5.5	0.93	0.0056	0.4	0.29		0.07
	2.75" RKT I	4.50E-01	5.60E-02	7.10E-03	6.10E-02	3.80E-02		1.20E-03							
PYROTECHNICS	MK58 Marine Location Marker	1	1.30E-02	1.20E-02	3.20E-02	1.70E-02	6.10E-05	3.80E-05							
	Smoke Grenade AN-M8								3.30E-02	4.60E-02	1.00E-03	6.80E-01	1.10E-01	1.20E-04	4.70E-04

Table D.5-4 Emission Factors for Other Items

ITEM	EMISSION FACTORS, lb/hr							
	CO	NOx	VOC	SOx	PM10	CO2	N20 (lb/gal)	CH4
AAV	0.61	1.67	0.20	0.00	0.77	151.0000	0.0006	0.0179
LAV	0.61	1.67	0.20	0.00	0.77	151.0000	0.0006	0.0179
HMMWV	0.61	1.67	0.20	0.00	0.77	151.0000	0.0006	0.0179
Trucks	0.61	1.67	0.20	0.00	0.77	151.0000	0.0006	0.0179
Dozer	1.1058	2.3867	0.2854	0.0025	0.0993	239.0000	0.0006	0.0257
Forklift	0.2215	0.3551	0.0497	0.0006	0.0178	54.4000	0.0006	0.0045
ROWPU	0.4857	0.7130	0.1008	0.0009	0.0537	77.9000	0.0006	0.0091
Generator	0.2974	0.5083	0.0702	0.0007	0.0296	61.0000	0.0006	0.0063
Crane	0.4553	1.1066	0.1276	0.0014	0.0466	129.0000	0.0006	0.0115

AAV – Assault Amphibious Vehicle
LAV – Light Armored Vehicle
HMMWV – High Mobility Multipurpose Wheeled Vehicle
ROWPU – Reverse Osmosis Water Purification Unit

Table D.5-5 Emissions from Surface Ships During Training, No Action Alternative

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
ANTI-AIR WARFARE																																			
Air Combat Maneuver	720																																		
Air Defense Exercise	80																																		
Air Intercept Control	0																																		
Gunnery Exercise, A-A (Medium Caliber)	12																																		
Missile Exercise, A-A	12																																		
Gunnery Exercise, S-A (Large Caliber)	0	0	FFG	Guided Missile Frigate	2.00	2.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	79	0	0	0	0	0
Gunnery Exercise, S-A (Medium Caliber)	0	0	FFG	Guided Missile Frigate	2.00	2.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	79	0	0	0	0	0
Missile Exercise, S-A	2	4	FFG	Guided Missile Frigate	2.00	2.0	100%	8.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	79	0	0	0	0	0
STRIKE WARFARE																																			
Bombing Exercise, A-G	1300																																		
Missile Exercise, A-G	60																																		
Gunnery Exercise, A-G	22																																		
Combat Search and Rescue	60																																		
AMPHIBIOUS WARFARE																																			
Fire Support Exercise - Land-Based target	8	8	CG	Cruiser	1	8.0	100%	64.00	64.0	0.0	0.0	7,344	4,174	491	2,147	220	198	0	0	0	0	0	0	0	0	0	0	0	0	184	11,776	247,932	8	7	250,572
Amphibious Rehearsal, No Landing - Marine Air Ground Task Force	0																																		
Amphibious Assault - Marine Air Ground Task Force	4	4	CG	Cruiser	1	8.0	100%	32.0	32.0	0.0	0.0	3,672	2,087	245	1,074	110	99	0	0	0	0	0	0	0	0	0	0	0	0	184	5,888	123,966	4	4	125,286
		4	LHA	Amphib. Assault Ship - Tarawa	1	8.0	100%	32.0	32.0	0.0	0.0	236	1,393	177	4,191	841	757	0	0	0	0	0	0	0	0	0	0	0	0	373	11,936	251,301	8	7	253,977
		8	LPD	Amphibious Transport Dock - Wasp	2	8.0	100%	64.0	64.0	0.0	0.0	188	1,109	141	3,335	669	602	0	0	0	0	0	0	0	0	0	0	0	0	373	23,872	502,601	16	14	507,954
		8	FFG	Guided Missile Frigate	2	8.0	100%	64.0	64.0	0.0	0.0	7,683	4,999	745	1,029	275	248	0	0	0	0	0	0	0	0	0	0	0	0	79	5,056	106,449	3	3	107,583
Amphibious Raid - Special Purpose Marine Air Ground Task Force	2	2	LHA	Amphib. Assault Ship - Tarawa	1	6.0	100%	12.0	12.0	0.0	0.0	89	522	66	1,572	315	284	0	0	0	0	0	0	0	0	0	0	0	0	373	4,476	94,238	3	3	95,241
		4	LPD	Amphibious Transport Dock - Wasp	2	2.5	100%	10.0	10.0	0.0	0.0	29	173	22	521	105	94	0	0	0	0	0	0	0	0	0	0	0	0	373	3,730	78,531	3	2	79,368
Urban Warfare Training	17																																		
Non-Combatant Evacuation Operation	2	2	LHA	Amphib. Assault Ship - Tarawa	1	80.0	100%	160.0	160.0	0.0	0.0	1,181	6,965	885	20,955	4,206	3,786	0	0	0	0	0	0	0	0	0	0	0	0	373	59,680	1,256,503	41	36	1,269,884

Table D.5-5 Emissions from Surface Ships During Training, No Action Alternative

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
		4	LPD	Amphibious Transport Dock - Wasp	2	80.0	100%	320.0	320.0	0.0	0.0	940	5,543	705	16,676	3,347	3,012	0	0	0	0	0	0	0	0	0	0	0	0	373	119,360	2,513,005	82	71	2,539,769
		2	LCU	Landing Craft Utility	1	80.0	100%	160.0	160.0	0.0	0.0	5,794	7,192	83	498	251	226	0	0	0	0	0	0	0	0	0	0	0	0	66	10,560	222,330	7	6	224,698
Humanitarian Assistance/ Disaster Relief Operations	2	2	LHA	Amphib. Assault Ship - Tarawa	1	8.0	100%	16.0	16.0	0.0	0.0	118	696	88	2,096	421	379	0	0	0	0	0	0	0	0	0	0	0	0	373	5,968	125,650	4	4	126,988
		4	LPD	Amphibious Transport Dock - Wasp	2	8.0	100%	32.0	32.0	0.0	0.0	94	554	70	1,668	335	301	0	0	0	0	0	0	0	0	0	0	0	0	373	11,936	251,301	8	7	253,977
		2	LCAC	Landing Craft Air Cushioned	1	8.0	100%	16.0	16.0	0.0	0.0	407	885	12	693	62	56	0	0	0	0	0	0	0	0	0	0	0	0	611	9,776	205,824	7	6	208,016
Unmanned Aerial Vehicle - Intelligence, Surveillance, and Reconaissance	0																																		
ANTI-SURFACE WARFARE																																			
Gunnery Exercise, A-S (Small Caliber) - Ship	220																																		
Gunnery Exercise, A-S (Medium Caliber) - Ship	155																																		
Missile Exercise (A-S) - Rocket	0																																		
Missile Exercise (A-S)	2																																		
Laser Targeting	60																																		
Bombing Exercise (A-S)	28																																		
Torpedo Exercise (Submarine to Surface)	0																																		
Missile Exercise (S-S)	0	0	FFG	Guided Missile Frigate	2.00	2.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	79	0	0	0	0	0
Gunnery Exercise (S-S)- Ship, Large Caliber	12																																		
		3	CG	Cruiser	0.22	2.5	100%	6.6	0.0	1.8	4.8	0	0	0	0	0	0	212	121	14	62	6	6	545	310	36	159	16	15	184	1,214	25,568	1	1	25,840
		5	DDG	Guided Missile Destroyer	0.45	2.5	100%	13.5	0.0	3.8	9.7	0	0	0	0	0	0	403	204	30	80	11	10	1,037	523	76	206	27	24	187	2,525	53,151	2	2	53,717
		2	FFG	Guided Missile Frigate	0.15	2.5	100%	4.5	0.0	1.3	3.2	0	0	0	0	0	0	151	98	15	20	5	5	389	253	38	52	14	13	79	356	7,485	0	0	7,564
		1	Unknown	Other	0.05	2.5	100%	1.5	0.0	0.4	1.1	0	0	0	0	0	0	3	17	2	51	10	9	7	43	6	130	26	24	66	99	2,084	0	0	2,107
		1	USCG	US Coast Guard	0.12	2.5	100%	3.6	0.0	1.0	2.6	0	0	0	0	0	0	6	58	1	12	0	0	15	150	2	30	1	0	66	238	5,002	0	0	5,056
Gunnery Exercise (S-S)- Ship, Medium caliber	5																																		
		1	CG	Cruiser	0.22	2.5	100%	2.8	0.0	0.8	2.0	0	0	0	0	0	0	88	50	6	26	3	2	227	129	15	66	7	6	184	506	10,653	0	0	10,767
		2	DDG	Guided Missile Destroyer	0.45	2.5	100%	5.6	0.0	1.6	4.1	0	0	0	0	0	0	168	85	12	33	4	4	432	218	32	86	11	10	187	1,052	22,146	1	1	22,382

Table D.5-5 Emissions from Surface Ships During Training, No Action Alternative

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
		1	FFG	Guided Missile Frigate	0.15	2.5	100%	1.9	0.0	0.5	1.4	0	0	0	0	0	0	63	41	6	8	2	2	162	105	16	22	6	5	79	148	3,119	0	0	3,152
		1	USCG	US Coast Guard	0.12	2.5	100%	1.5	0.0	0.4	1.1	0	0	0	0	0	0	2	24	0	5	0	0	6	63	1	12	0	0	66	99	2,084	0	0	2,107
Sinking Exercise (SINKEX)	2	10	FFG	Guided Missile Frigate	5.00	16.0	100%	160.0	0.0	0.0	160.0	0	0	0	0	0	0	0	0	0	0	0	0	19,206	12,498	1,862	2,573	688	619	79	12,640	266,123	9	8	268,957
Gunnery Exercise (S-S) Boat – Medium-caliber	0	0	FFG	Guided Missile Frigate	5.00	3.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	79	0	0	0	0	0
Gunnery Exercise (S-S) Small-caliber	32	64	CRRC	Combat Rubber Raiding Craft	2	3.0	100%	192.0	0.0	0.0	192.0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	2,477	0	0	0	3	576	12,127	0	0	12,256
Maritime Security Operations (MSO)	6	6	FFG	Guided Missile Frigate	1	8.0	100%	48.0	0.0	0.0	48.0	0	0	0	0	0	0	0	0	0	0	0	0	5,762	3,749	559	772	206	186	79	3,792	79,837	3	2	80,687
		6	RHIB	Rigid Hulled Inflatable Boat	1	8.0	100%	48.0	0.0	0.0	48.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	16.3	438.7	2.9	69.1	7.2	6	14	672	14,148	0	0	14,299
		6	CRRC	Combat Rubber Raiding Craft	1	8.0	100%	48.0	0.0	0.0	48.0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	619	0	0	0	3	144	3,032	0	0	3,064
ANTI-SUBMARINE WARFARE																																			
Tracking Exercise-Helo	18																																		
Torpedo Exercise-Helo	4																																		
Tracking Exercise-Maritime Patrol Advanced Extended Echo Ranging Sonobuoys	8																																		
Tracking Exercise – Maritime Patrol Aircraft	8																																		
Torpedo Exercise-Maritime Patrol Aircraft	4																																		
Tracking Exercise –Surface	30	30	FFG	Guided Missile Frigate	1	2.0	100%	60.0	0.0	30.0	30.0	0	0	0	0	0	0	3,601	2,343	349	482	129	116	3,601	2,343	349	482	129	116	79	4,740	99,796	3	3	100,859
Torpedo Exercise-Surface	3	3	FFG	Guided Missile Frigate	1	2.0	100%	6.0	0.0	3.0	3.0	0	0	0	0	0	0	360	234	35	48	13	12	360	234	35	48	13	12	79	474	9,980	0	0	10,086
Tracking Exercise–Submarine	10																																		
Torpedo Exercise – Submarine	10																																		
MAJOR TRAINING EVENTS																																			
Joint Expeditionary Exercise	1	1	CVN	Nuclear Carrier (No emissions)	1	80.0	100%	80.0	0.0	80.0	0.0																								
		1	CG		1	80.0	100%	80.0	0.0	80.0	0.0	0	0	0	0	0	0	9,180	5,218	614	2,684	275	248	0	0	0	0	0	0	184	14,720	309,915	10	9	313,215

Table D.5-5 Emissions from Surface Ships During Training, No Action Alternative

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
		2	FFG		2	80.0	100%	160.0	0.0	160.0	0.0	0	0	0	0	0	0	19,206	12,498	1,862	2,573	688	619	0	0	0	0	0	0	79	12,640	266,123	9	8	268,957
		5	DDG		5	80.0	100%	400.0	0.0	400.0	0.0	0	0	0	0	0	0	42,668	21,536	3,136	8,488	1,120	1,008	0	0	0	0	0	0	187	74,800	1,574,839	51	45	1,591,611
		1	LHD/LHA		1	80.0	100%	80.0	0.0	80.0	0.0	0	0	0	0	0	0	590	3,482	442	10,478	2,103	1,893	0	0	0	0	0	0	373	29,840	628,251	20	18	634,942
		2	LSD		2	80.0	100%	160.0	0.0	160.0	0.0	0	0	0	0	0	0	1,088	6,419	816	19,312	3,877	3,489	0	0	0	0	0	0	373	59,680	1,256,503	41	36	1,269,884
		1	LPD		1	80.0	100%	80.0	0.0	80.0	0.0	0	0	0	0	0	0	235	1,386	176	4,169	837	753	0	0	0	0	0	0	373	29,840	628,251	20	18	634,942
		1	TAOE		1	80.0	100%	80.0	0.0	80.0	0.0	0	0	0	0	0	0	534	3,150	400	9,554	1,902	1,711	0	0	0	0	0	0	1,865	149,200	3,141,257	102	89	3,174,711
		1	SSN	Nuclear Carrier (No emissions)	1	80.0	100%	80.0	0.0	80.0	0.0																								
		1	SSGN	Nuclear Carrier (No emissions)	1	80.0	100%	80.0	0.0	80.0	0.0																								
		2	T-AGO(LFA)		2	80.0	100%	160.0	0.0	160.0	0.0	0	0	0	0	0	0	1,067	6,299	800	19,109	3,803	3,423	0	0	0	0	0	0	1,865	298,400	6,282,514	204	178	6,349,422
		1	CG-PARTNER		1	80.0	100%	80.0	0.0	80.0	0.0	0	0	0	0	0	0	8,623	3,768	792	1,680	208	187	0	0	0	0	0	0	184	14,720	309,915	10	9	313,215
		2	DDG-PARTNER		2	80.0	100%	160.0	0.0	160.0	0.0	0	0	0	0	0	0	16,638	7,984	1,440	2,864	400	360	0	0	0	0	0	0	187	29,920	629,936	20	18	636,644
		1	SS-PARTNER		1	80.0	100%	80.0	0.0	80.0	0.0	0	0	0	0	0	0	235	1,386	176	4,169	837	753	0	0	0	0	0	0	373	29,840	628,251	20	18	634,942
		5	LCAC		5	80.0	100%	400.0	0.0	400.0	0.0	0	0	0	0	0	0	10,164	22,128	288	17,320	1,556	1,400	0	0	0	0	0	0	611	244,400	5,145,598	167	145	5,200,398
		2	LCU		2	80.0	100%	160.0	0.0	160.0	0.0	0	0	0	0	0	0	5,794	7,192	83	498	251	226	0	0	0	0	0	0	66	10,560	222,330	7	6	224,698
		19	CRRC		19	80.0	100%	1520.0	0.0	1520.0	0.0	0	0	0	0	0	0	0	226	19,610	0	0	0	0	0	0	0	0	0	3	4,560	96,006	3	3	97,029
		2	RHIB		2	80.0	100%	160.0	0.0	160.0	0.0	0	0	0	0	0	0	54	1,462	10	230	24	22	0	0	0	0	0	0	14	2,240	47,161	2	1	47,663
		14	AAV		14	80.0	100%	1120.0	0.0	1120.0	0.0	0	0	0	0	0	0	851	6,966	918	1,400	291	262	0	0	0	0	0	0	3	3,360	70,741	2	2	71,495
Joint Multi-Strike Group Exercise	1	3	CVN		3	80.0	100%	240.0	0.0	0.0	240.0																								
		3	CG		3	80.0	100%	240.0	0.0	0.0	240.0	0	0	0	0	0	0	0	0	0	0	0	0	27,540	15,653	1,841	8,052	826	743	184	44,160	929,745	30	26	939,646
		3	FFG		3	80.0	100%	240.0	0.0	0.0	240.0	0	0	0	0	0	0	0	0	0	0	0	0	28,810	18,746	2,794	3,859	1,032	929	79	18,960	399,184	13	11	403,435
		12	DDG		12	80.0	100%	960.0	0.0	0.0	960.0	0	0	0	0	0	0	0	0	0	0	0	0	102,403	51,686	7,526	20,371	2,688	2,419	187	179,520	3,779,614	123	107	3,819,867
		3	TAOE		3	80.0	100%	240.0	0.0	0.0	240.0	0	0	0	0	0	0	0	0	0	0	0	0	1,601	9,449	1,200	28,663	5,705	5,134	1,865	447,600	9,423,770	306	266	9,524,134
		5	SSN		5	80.0	100%	400.0	0.0	0.0	400.0																								
		2	T-AGO(LFA)		2	80.0	100%	160.0	0.0	0.0	160.0	0	0	0	0	0	0	0	0	0	0	0	0	1,067	6,299	800	19,109	3,803	3,423	1,865	298,400	6,282,514	204	178	6,349,422
		1	SS-PARTNER		1	80.0	100%	80.0	0.0	0.0	80.0	0	0	0	0	0	0	0	0	0	0	0	0	235	1,386	176	4,169	837	753	373	29,840	628,251	20	18	634,942
Fleet Strike Group Exercise	0	0	CVN	Nuclear Carrier (No emissions)	1	56.0	100%	0.0	0.0	0.0	0.0																								
		0	CG		1	56.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	184	0	0	0	0	0
		0	FFG		1	56.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	79	0	0	0	0	0
		0	DDG		3	56.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	187	0	0	0	0	0
		0	LHD/LHA		1	56.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	373	0	0	0	0	0
		0	TAOE		1	56.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,865	0	0	0	0	0
		0	SSN	Nuclear Carrier (No emissions)	1	56.0	100%	0.0	0.0	0.0	0.0																								
Integrated Anti-Submarine Warfare Exercise	0	0	CVN	Nuclear Carrier (No emissions)	1	40.0	100%	0.0	0.0	0.0	0.0																								
		0	CG		1	40.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	184	0	0	0	0	0
		0	FFG		1	40.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	79	0	0	0	0	0
		0	DDG		3	40.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	187	0	0	0	0	0
		0	SSN	Nuclear Carrier (No emissions)	1	40.0	100%	0.0	0.0	0.0	0.0																								
Ship Squadron Anti-Submarine Warfare Exercise	0																																		
Maritime Homeland Defense / Security Mine Countermeasures	0	0	FFG	Guided Missile Frigate	4	8.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	79	0	0	0	0	0
Marine Air Ground Task Force Exercise (Amphibious)	4	4	LHD/LHA		1	80.0	100%	320.0	320.0	0.0	0.0	2,362	13,930	1,770	41,910	8,413	7,572	0	0	0	0	0	0	0	0	0	0	0	0	373	119,360	2,513,005	82	71	2,539,769

Table D.5-5 Emissions from Surface Ships During Training, No Action Alternative

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
		4	LSD		1	80.0	100%	320.0	320.0	0.0	0.0	2,176	12,838	1,632	38,624	7,754	6,978	0	0	0	0	0	0	0	0	0	0	0	0	373	119,360	2,513,005	82	71	2,539,769
		4	LPD		1	80.0	100%	320.0	320.0	0.0	0.0	940	5,543	705	16,676	3,347	3,012	0	0	0	0	0	0	0	0	0	0	0	0	373	119,360	2,513,005	82	71	2,539,769
Special Purpose Marine Air Ground Task Force Exercise	2	2	LHA	Amphib. Assault Ship - Tarawa	1	80.0	100%	160.0	52.8	52.8	54.4	390	2,298	292	6,915	1,388	1,249	390	2,298	292	6,915	1,388	1,249	401	2,368	301	7,125	1,430	1,287	373	59,680	1,256,503	41	36	1,269,884
		4	LPD	Amphibious Transport Dock - Wasp	2	80.0	100%	320.0	105.6	105.6	108.8	310	1,829	233	5,503	1,105	994	310	1,829	233	5,503	1,105	994	319	1,885	240	5,670	1,138	1,024	373	119,360	2,513,005	82	71	2,539,769
Urban Warfare Exercise	5	5	LHA	Amphib. Assault Ship - Tarawa	1	112.0	100%	560.0	560.0	0.0	0.0	4,133	24,377	3,097	73,343	14,722	13,250	0	0	0	0	0	0	0	0	0	0	0	0	373	208,880	4,397,760	143	124	4,444,596
		10	LPD	Amphibious Transport Dock - Wasp	2	112.0	100%	1120.0	1120.0	0.0	0.0	3,288	19,401	2,466	58,367	11,715	10,543	0	0	0	0	0	0	0	0	0	0	0	0	373	417,760	8,795,519	285	249	8,889,191
ELECTRONIC WARFARE																																			
Electronic Warfare Operations (EW Ops)	72	72	FFG	Guided Missile Frigate	1	4	100%	288.0	0.0	0.0	288.0	0	0	0	0	0	0	0	0	0	0	0	0	34,572	22,496	3,352	4,631	1,238	1,115	79	22,752	479,021	16	14	484,122
Counter Targeting Flare Exercise (FLAREX) - Aircraft	546																																		
Counter Targeting Chaff Exercise (CHAFFEX) - Ship	16	16	FFG	Guided Missile Frigate	1	4	100%	64.0	0.0	0.0	64.0	0	0	0	0	0	0	0	0	0	0	0	0	7,683	4,999	745	1,029	275	248	79	5,056	106,449	3	3	107,583
Counter Targeting Chaff Exercise (CHAFFEX) - Aircraft	546																																		
MINE WARFARE																																			
Submarine Mine Exercise	0	0																																	
Mine Countermeasure Exercise – Sonar (AQS-20, LCS)	0	0	CG	Cruiser	0.2	1.5	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	184	0	0	0	0	0
			DDG	Guided Missile Destroyer	0.14	1.5	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	187	0	0	0	0	0
			FFG	Guided Missile Frigate	0.12	1.5	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	79	0	0	0	0	0
Mine Countermeasure Exercise – Surface (SMCMEX) Sonar (SQQ-32, MCM)	0	0	MCM	MCM Class	1	8	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	373	0	0	0	0	0
Mine Neutralization – Remotely Operated Vehicle Sonar (AQS-235[AQS-20], SLQ-48)	0	0	RHIB	Rigid Hulled Inflatable Boat	1	12	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	0	0
Mine Laying – Aircraft	3																																		
Mine Neutralization – Explosive Ordnance Disposal	20	60	RHIB	Rigid Hulled Inflatable Boat	3	12.0	100%	720.0	720.0	0.0	0.0	244.8	6580.8	43.2	1036.8	108.0	97	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	14	10,080	212,224	7	6	214,485
Limpet Mine Neutralization System/Shock Wave Generator	0	0	RHIB	Rigid Hulled Inflatable Boat	1	4.0	100%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	14	0	0	0	0	0
Mine Countermeasure – Towed Mine Detection	0	0	MCM	MCM Class	1	15.0	100%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	373	0	0	0	0	0
NAVAL SPECIAL WARFARE																																			

Table D.5-5 Emissions from Surface Ships During Training, No Action Alternative

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2e}
Personnel I&E	150	750	RHIB	Rigid Hulled Inflatable Boat	5	8.0	100%	6000.0	6000.0	0.0	0.0	2040.0	54840.0	360.0	8640.0	900.0	810	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	14	84,000	1,768,536	57	50	1,787,371
		900	CRRC	Combat Rubber Raiding Craft	6	8.0	100%	7200.0	7200.0	0.0	0.0	0	1,070	92,890	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	21,600	454,766	15	13	459,610
Parachute Insertion	12																																		
Embassy Reinforcement	50	50	LCAC	Landing Craft Air Cushioned	1	24.0	100%	1200.0	1200.0	0.0	0.0	30,492	66,384	864	51,960	4,668	4,201	0	0	0	0	0	0	0	0	0	0	0	0	611	733,200	15,436,793	501	436	15,601,195
Direct Action (Combat Close Quarters)	40																																		
Direct Action (Breaching)	40																																		
Direct Action (TAC-P)	3																																		
Underwater Demolition Qualifications	30	30	CRRC	Combat Rubber Raiding Craft	1	8.0	100%	240.0	0.0	240.0	0.0	0	0	0	0	0	0	0	36	3,096	0	0	0	0	0	0	0	0	0	3	720	15,159	0	0	15,320
Intelligence, Surveillance, Reconnaissance	16																																		
Urban Warfare Training	8	8	LHA	Amphib. Assault Ship - Tarawa	1	40.0	100%	320.0	320.0	0.0	0.0	2,362	13,930	1,770	41,910	8,413	7,572	0	0	0	0	0	0	0	0	0	0	0	0	373	119,360	2,513,005	82	71	2,539,769
		16	LPD	Amphibious Transport Dock - Wasp	2	40.0	100%	640.0	640.0	0.0	0.0	1,879	11,086	1,409	33,353	6,694	6,025	0	0	0	0	0	0	0	0	0	0	0	0	373	238,720	5,026,011	163	142	5,079,538
Underwater Survey	6	18	RHIB	Rigid Hulled Inflatable Boat	3	8.0	100%	144.0	144.0	0.0	0.0	49.0	1316.2	8.6	207.4	21.6	19	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	14	2,016	42,445	1	1	42,897
		18	CRRC	Combat Rubber Raiding Craft	3	8.0	100%	144.0	144.0	0.0	0.0	0	21	1,858	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	432	9,095	0	0	9,192
OTHER																																			
Surface Ship Sonar Maintenance	0	0	FFG	Guided Missile Frigate	1	4.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	79	0	0	0	0	0
Submarine Sonar Maintenance	0																																		
Small Boat Attack	0	0	CRRC	Combat Rubber Raiding Craft	1	4.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
Search and Rescue at Sea	0																																		
Submarine Navigation	0																																		
Precision Anchoring	0	0	FFG	Guided Missile Frigate	1	4.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	79	0	0	0	0	0
Maneuver (Convoy, Land Navigation)	16																																		
Water Purification	0																																		
Field Training Exercise	100																																		
Force Protection	75																																		
Anti-Terrorism	80																																		
Seize Airfield	12																																		
Airfield Expeditionary	12																																		
Unmanned Aerial Vehicle Operation	0																																		

Table D.5-5 Emissions from Surface Ships During Training, No Action Alternative

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
Land Demolitions (Improvised Explosive Device) Discovery / Disposal	120																																		
Land Demolitions (Unexploded Ordnance) Discovery / Disposal	200																																		
TOTAL TRAINING EMISSIONS (LBS/YEAR)									20,148	5,563	3,634	78,437	271,737	113,127	434,900	80,406	72,365	122,686	118,538	35,655	117,774	20,849	18,764	236,398	156,060	25,101	107,387	20,124	18,112		4,742,184	99,841,942	3,239	2,822	100,905,258
TOTAL TRAINING EMISSIONS (TONS/YEAR)												39	136	57	217	40	36	61	59	18	59	10	9	118	78	13	54	10	9		4,742,184	49,921	2	1	50,453

Table D.5-6 Emissions from Surface Ships During Testing, No Action Alternative

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
ANTI-SURFACE WARFARE																																			
Air to Surface Missile Test	0																																		
ANTI-SUBMARINE WARFARE																																			
Anti-submarine Warfare Tracking Test - MPA	0																																		
Anti-submarine Warfare Torpedo Test	0																																		
Broad Area Maritime Surveillance (BAMS) Testing	1																																		
LIFECYCLE ACTIVITIES TESTING																																			
Ship Signature Testing	0	0	FFG	Guided Missile Frigate	1	4.0	100%	0.00	0.0	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	79	0	0	0	0	0
ANTI-SURFACE WARFARE / ANTI-SUBMARINE WARFARE TESTING																																			
Torpedo Explosive Testing	0	0	DDG		3	4	100%	0.00	0.0	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	187.0	0.0	0	0.00	0.00	0
Countermeasure Testing	0	0	DDG		2.00	2.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	187	0	0	0	0	0
At-Sea Sonar Testing	0	0	SSN	Nuclear Carrier (No emissions)	4.00	2.0	100%	0.0	0.0	0.0	0.0																								
		0	CG		1	2.0	100%	0.00	0.0	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	184	0	0	0	0	0
		0	DDG		4.00	2.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	187	0	0	0	0	0
SHIPBOARD PROTECTION SYSTEMS AND SWIMMER DEFENSE TESTING																																			
Pierside Integrated Swimmer Defense	0	0	FFG	Guided Missile Frigate	1	8.0	100%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	79.0	0	0	0	0	0
NEW SHIP CONSTRUCTION																																			
ASW Mission Package Testing	0	0	LCS	Littoral Combat Ship	1	60.0	100%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	79.0	0	0	0	0	0
MCM Mission Package Testing	0	0	LCS	Littoral Combat Ship	1	60.0	100%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	79.0	0	0	0	0	0
ASUW Mission Package Testing	0	0	LCS	Littoral Combat Ship	1	40.0	100%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	79.0	0	0	0	0	0
OFFICE OF NAVAL RESEARCH																																			
North Pacific Acoustic Lab Philippine Sea 2018-19 Experiment (Deep Water)	1																																		
TOTAL TESTING EMISSIONS (lbs per year)									0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
TOTAL TESTING EMISSIONS (tons per year)												0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0

Table D.5-7 Emissions from Surface Ships During Training, Alternative 1

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
ANTI-AIR WARFARE																																			
Air Combat Maneuver	4800																																		
Air Defense Exercise	100																																		
Air Intercept Control	4800																																		
Gunnery Exercise, A-A (Medium Caliber)	36																																		
Missile Exercise, A-A	18																																		
Gunnery Exercise, S-A (Large Caliber)	5	10	FFG	Guided Missile Frigate	2.00	2.0	100%	20.0	0.0	0.0	20.0	0	0	0	0	0	0	0	0	0	0	0	0	2,401	1,562	233	322	86	77	79	1,580	33,265	1	1	33,620
Gunnery Exercise, S-A (Medium Caliber)	12	24	FFG	Guided Missile Frigate	2.00	2.0	100%	48.0	0.0	0.0	48.0	0	0	0	0	0	0	0	0	0	0	0	0	5,762	3,749	559	772	206	186	79	3,792	79,837	3	2	80,687
Missile Exercise, S-A	15	30	FFG	Guided Missile Frigate	2.00	2.0	100%	60.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	79	0	0	0	0	0
STRIKE WARFARE																																			
Bombing Exercise, A-G	2300																																		
Missile Exercise, A-G	85																																		
Gunnery Exercise, A-G	96																																		
Combat Search and Rescue	80																																		
AMPHIBIOUS WARFARE																																			
Fire Support Exercise - Land-Based target	10	10	CG	Cruiser	1	8.0	100%	80.00	80.0	0.0	0.0	9,180	5,218	614	2,684	275	248	0	0	0	0	0	0	0	0	0	0	0	0	184	14,720	309,915	10	9	313,215
Amphibious Rehearsal, No Landing - Marine Air Ground Task Force	12	48	LHD/LHA		4	24.0	100%	1152.0	1152.0	0.0	0.0	8501.8	50146.6	6370.6	150877.4	30286.1	27257.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	373.0	429696	9046819.584	293.482	255.669	9143168.17
		48	LSD		4	24.0	100%	1152.0	1152.0	0.0	0.0	7833.6	46218.2	5875.2	139046.4	27913.0	25121.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	373.0	429696	9046819.584	293.482	255.669	9143168.17
		48	LPD		4	24.0	100%	1152.0	1152.0	0.0	0.0	3382.2	19955.2	2536.7	60034.6	12049.2	10844.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	373.0	429696	9046819.584	293.482	255.669	9143168.17
Amphibious Assault - Marine Air Ground Task Force	6	6	CG	Cruiser	1	8.0	100%	48.0	48.0	0.0	0.0	5,508	3,131	368	1,610	165	149	0	0	0	0	0	0	0	0	0	0	0	0	184	8,832	185,949	6	5	187,929
		6	LHA	Amphib. Assault Ship - Tarawa	1	8.0	100%	48.0	48.0	0.0	0.0	354	2,089	265	6,287	1,262	1,136	0	0	0	0	0	0	0	0	0	0	0	0	373	17,904	376,951	12	11	380,965
		12	LPD	Amphibious Transport Dock - Wasp	2	8.0	100%	96.0	96.0	0.0	0.0	282	1,663	211	5,003	1,004	904	0	0	0	0	0	0	0	0	0	0	0	0	373	35,808	753,902	24	21	761,931
		12	FFG	Guided Missile Frigate	2	8.0	100%	96.0	96.0	0.0	0.0	1,524	7,499	1,117	1,544	413	372	0	0	0	0	0	0	0	0	0	0	0	0	79	7,584	159,674	5	5	161,374
Amphibious Raid - Special Purpose Marine Air Ground Task Force	6	6	LHA	Amphib. Assault Ship - Tarawa	1	6.0	100%	36.0	36.0	0.0	0.0	266	1,567	199	4,715	946	852	0	0	0	0	0	0	0	0	0	0	0	0	373	13,428	282,713	9	8	285,724
		12	LPD	Amphibious Transport Dock - Wasp	2	2.5	100%	30.0	30.0	0.0	0.0	88	520	66	1,563	314	282	0	0	0	0	0	0	0	0	0	0	0	0	373	11,190	235,594	8	7	238,103
Urban Warfare Training	36																																		
Non-Combatant Evacuation Operation	5	5	LHA	Amphib. Assault Ship - Tarawa	1	80.0	100%	400.0	400.0	0.0	0.0	2,952	17,412	2,212	52,388	10,516	9,464	0	0	0	0	0	0	0	0	0	0	0	0	373	149,200	3,141,257	102	89	3,174,711
		10	LPD	Amphibious Transport Dock - Wasp	2	80.0	100%	800.0	800.0	0.0	0.0	2,349	13,858	1,762	41,691	8,368	7,531	0	0	0	0	0	0	0	0	0	0	0	0	373	298,400	6,282,514	204	178	6,349,422
		5	LCU	Landing Craft Utility	1	80.0	100%	400.0	400.0	0.0	0.0	4,484	17,980	208	1,244	628	565	0	0	0	0	0	0	0	0	0	0	0	0	66	26,400	555,826	18	16	561,745

Table D.5-7 Emissions from Surface Ships During Training, Alternative 1

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
Humanitarian Assistance/ Disaster Relief Operations	5	5	LHA	Amphib. Assault Ship - Tarawa	1	8.0	100%	40.0	40.0	0.0	0.0	295	1,741	221	5,239	1,052	946	0	0	0	0	0	0	0	0	0	0	0	0	373	14,920	314,126	10	9	317,471
		10	LPD	Amphibious Transport Dock - Wasp	2	8.0	100%	80.0	80.0	0.0	0.0	235	1,386	176	4,169	837	753	0	0	0	0	0	0	0	0	0	0	0	0	373	29,840	628,251	20	18	634,942
		5	LCAC	Landing Craft Air Cushioned	1	8.0	100%	40.0	40.0	0.0	0.0	1,016	2,213	29	1,732	156	140	0	0	0	0	0	0	0	0	0	0	0	0	611	24,440	514,560	17	15	520,040
Unmanned Aerial Vehicle - Intelligence, Surveillance, and Reconaissance	100																																		
ANTI-SURFACE WARFARE																																			
Gunnery Exercise, A-S: (Small Caliber) - Ship	242																																		
Gunnery Exercise, A-S: (Medium Caliber) - Ship	295																																		
Missile Exercise (A-S) - Rocket	3																																		
Missile Exercise (A-S)	20																																		
Laser Targeting	600																																		
Bombing Exercise (A-S)	37																																		
Torpedo Exercise (Submarine to Surface)	5																																		
Missile Exercise (S-S)	12	24	FFG	Guided Missile Frigate	2.00	2.0	100%	48.0	0.0	0.0	48.0	0	0	0	0	0	0	0	0	0	0	0	0	5,762	3,749	559	772	206	186	79	3,792	79,837	3	2	80,687
Gunnery Exercise (S-S)- Ship, Large Caliber	140																																		
		31	CG	Cruiser	0.22	2.5	100%	77.0	0.0	21.6	55.4	0	0	0	0	0	0	2,474	1,406	165	723	74	67	6,362	3,616	425	1,860	191	172	184	14,168	298,293	10	8	301,470
		63	DDG	Guided Missile Destroyer	0.45	2.5	100%	157.5	0.0	44.1	113.4	0	0	0	0	0	0	4,704	2,374	346	936	123	111	12,096	6,105	889	2,406	318	286	187	29,453	620,093	20	18	626,697
		21	FFG	Guided Missile Frigate	0.15	2.5	100%	52.5	0.0	14.7	37.8	0	0	0	0	0	0	1,765	1,148	171	236	63	57	4,538	2,953	440	608	163	146	79	4,148	87,321	3	2	88,251
		7	Unknown	Other	0.05	2.5	100%	17.5	0.0	4.9	12.6	0	0	0	0	0	0	33	197	25	591	119	107	86	506	64	1,521	305	275	66	1,155	24,317	1	1	24,576
		17	USCG	US Coast Guard	0.12	2.5	100%	42.0	0.0	11.8	30.2	0	0	0	0	0	0	68	681	10	136	2	2	174	1,751	27	349	6	6	66	2,772	58,362	2	2	58,983
Gunnery Exercise (S-S)- Ship, Medium caliber	100																																		
		22	CG	Cruiser	0.22	2.5	100%	55.0	0.0	15.4	39.6	0	0	0	0	0	0	1,767	1,004	118	517	53	48	4,544	2,583	304	1,329	136	123	184	10,120	213,066	7	6	215,336
		45	DDG	Guided Missile Destroyer	0.45	2.5	100%	112.5	0.0	31.5	81.0	0	0	0	0	0	0	3,360	1,696	247	668	88	79	8,640	4,361	635	1,719	227	204	187	21,038	442,924	14	13	447,641
		15	FFG	Guided Missile Frigate	0.15	2.5	100%	37.5	0.0	10.5	27.0	0	0	0	0	0	0	1,260	820	122	169	45	41	3,241	2,109	314	434	116	104	79	2,963	62,372	2	2	63,037
		1	LPD	Amphibious Transport Dock - Wasp	0.01	2.5	100%	1.5	0.0	0.4	1.1	0	0	0	0	0	0	1	7	1	22	4	4	3	19	2	56	11	10	373	560	11,780	0	0	11,905
		5	Unknown	Other	0.05	2.5	100%	12.5	0.0	3.5	9.0	0	0	0	0	0	0	24	140	18	422	85	76	61	361	46	1,086	218	196	66	825	17,370	1	0	17,555

Table D.5-7 Emissions from Surface Ships During Training, Alternative 1

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
		12	USCG	US Coast Guard	0.12	2.5	100%	30.0	0.0	8.4	21.6	0	0	0	0	0	0	48	486	7	97	2	2	124	1,251	19	249	5	4	66	1,980	41,887	1	1	42,131
Sinking Exercise (SINKEX)	2	10	FFG	Guided Missile Frigate	5.00	16.0	100%	160.0	0.0	0.0	160.0	0	0	0	0	0	0	0	0	0	0	0	0	19,206	12,498	1,862	2,573	688	819	79	12,640	266,123	9	8	268,957
Gunnery Exercise (S-S) Boat – Medium-caliber	10	50	FFG	Guided Missile Frigate	5.00	3.0	100%	150.0	0.0	0.0	150.0	0	0	0	0	0	0	0	0	0	0	0	0	18,006	11,717	1,746	2,412	645	581	79	11,850	249,490	8	7	252,147
Gunnery Exercise (S-S) Small-caliber	40	80	CRRC	Combat Rubber Raiding Craft	2	3.0	100%	240.0	0.0	0.0	240.0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	3,096	0	0	0	3	720	15,159	0	0	15,320
Maritime Security Operations (MSO)	40	40	FFG	Guided Missile Frigate	1	8.0	100%	320.0	0.0	0.0	320.0	0	0	0	0	0	0	0	0	0	0	0	0	38,413	24,995	3,725	5,146	1,376	1,238	79	25,280	532,245	17	15	537,914
		40	RHIB	Rigid Hulled Inflatable Boat	1	8.0	100%	320.0	0.0	0.0	320.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	108.8	2924.8	19.2	460.8	48.0	43	14	4,480	94,322	3	3	95,326
		40	CRRC	Combat Rubber Raiding Craft	1	8.0	100%	320.0	0.0	0.0	320.0	0	0	0	0	0	0	0	0	0	0	0	0	0	48	4,128	0	0	0	3	960	20,212	1	1	20,427
ANTI-SUBMARINE WARFARE																																			
Tracking Exercise-Helo	62																																		
Torpedo Exercise-Helo	4																																		
Tracking Exercise-Maritime Patrol Advanced Extended Echo Ranging Sonobuoys	11																																		
Tracking Exercise -Maritime Patrol Aircraft	34																																		
Torpedo Exercise-Maritime Patrol Aircraft	4																																		
Tracking Exercise –Surface	132	132	FFG	Guided Missile Frigate	1	2.0	100%	264.0	0.0	132.0	132.0	0	0	0	0	0	0	15,845	10,311	1,536	2,123	568	511	15,845	10,311	1,536	2,123	568	511	79	20,856	439,102	14	12	443,779
Torpedo Exercise-Surface	3	3	FFG	Guided Missile Frigate	1	2.0	100%	6.0	0.0	3.0	3.0	0	0	0	0	0	0	360	234	35	48	13	12	360	234	35	48	13	12	79	474	9,980	0	0	10,086
Tracking Exercise–Submarine	12																																		
Torpedo Exercise – Submarine	10																																		
MAJOR TRAINING EVENTS																																			

Table D.5-7 Emissions from Surface Ships During Training, Alternative 1

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
Joint Expeditionary Exercise	1	1	CVN	Nuclear Carrier (No emissions)	1	80.0	100%	80.0	0.0	80.0	0.0																								
		1	CG		1	80.0	100%	80.0	0.0	80.0	0.0	0	0	0	0	0	0	9,180	5,218	614	2,684	275	248	0	0	0	0	0	0	184	14,720	309,915	10	9	313,215
		2	FFG		2	80.0	100%	160.0	0.0	160.0	0.0	0	0	0	0	0	0	19,206	12,498	1,862	2,573	688	619	0	0	0	0	0	0	79	12,640	266,123	9	8	268,957
		5	DDG		5	80.0	100%	400.0	0.0	400.0	0.0	0	0	0	0	0	0	42,668	21,536	3,136	8,488	1,120	1,008	0	0	0	0	0	0	187	74,800	1,574,839	51	45	1,591,611
		1	LHD/LHA		1	80.0	100%	80.0	0.0	80.0	0.0	0	0	0	0	0	0	590	3,482	442	10,478	2,103	1,893	0	0	0	0	0	0	373	29,840	628,251	20	18	634,942
		2	LSD		2	80.0	100%	160.0	0.0	160.0	0.0	0	0	0	0	0	0	1,088	6,419	816	19,312	3,877	3,489	0	0	0	0	0	0	373	59,680	1,256,503	41	36	1,269,884
		1	LPD		1	80.0	100%	80.0	0.0	80.0	0.0	0	0	0	0	0	0	235	1,386	176	4,169	837	753	0	0	0	0	0	0	373	29,840	628,251	20	18	634,942
		1	TAOE		1	80.0	100%	80.0	0.0	80.0	0.0	0	0	0	0	0	0	534	3,150	400	9,554	1,902	1,711	0	0	0	0	0	0	1,865	149,200	3,141,257	102	89	3,174,711
		1	SSN	Nuclear Carrier (No emissions)	1	80.0	100%	80.0	0.0	80.0	0.0																								
		1	SSGN	Nuclear Carrier (No emissions)	1	80.0	100%	80.0	0.0	80.0	0.0																								
		2	T-AGO(LFA)		2	80.0	100%	160.0	0.0	160.0	0.0	0	0	0	0	0	0	1,067	6,299	800	19,109	3,803	3,423	0	0	0	0	0	0	1,865	298,400	6,282,514	204	178	6,349,422
		1	CG-PARTNER		1	80.0	100%	80.0	0.0	80.0	0.0	0	0	0	0	0	0	8,623	3,768	792	1,680	208	187	0	0	0	0	0	0	184	14,720	309,915	10	9	313,215
		2	DDG-PARTNER		2	80.0	100%	160.0	0.0	160.0	0.0	0	0	0	0	0	0	16,638	7,984	1,440	2,864	400	360	0	0	0	0	0	0	187	29,920	629,936	20	18	636,644
		1	SS-PARTNER		1	80.0	100%	80.0	0.0	80.0	0.0	0	0	0	0	0	0	235	1,386	176	4,169	837	753	0	0	0	0	0	0	373	29,840	628,251	20	18	634,942
		5	LCAC		5	80.0	100%	400.0	0.0	400.0	0.0	0	0	0	0	0	0	10,164	22,128	288	17,320	1,556	1,400	0	0	0	0	0	0	611	244,400	5,145,598	167	145	5,200,398
		2	LCU		2	80.0	100%	160.0	0.0	160.0	0.0	0	0	0	0	0	0	5,794	7,192	83	498	251	226	0	0	0	0	0	0	66	10,560	222,330	7	6	224,698
		19	CRRC		19	80.0	100%	1520.0	0.0	1520.0	0.0	0	0	0	0	0	0	0	226	19,610	0	0	0	0	0	0	0	0	0	3	4,560	96,006	3	3	97,029
		2	RHIB		2	80.0	100%	160.0	0.0	160.0	0.0	0	0	0	0	0	0	54	1,462	10	230	24	22	0	0	0	0	0	0	14	2,240	47,161	2	1	47,663
		14	AAV		14	80.0	100%	1120.0	0.0	1120.0	0.0	0	0	0	0	0	0	851	6,966	918	1,400	291	262	0	0	0	0	0	0	3	3,360	70,741	2	2	71,495
Joint Multi-Strike Group Exercise	1	3	CVN		3	80.0	100%	240.0	0.0	0.0	240.0																								
		3	CG		3	80.0	100%	240.0	0.0	0.0	240.0	0	0	0	0	0	0	0	0	0	0	0	0	27,540	15,653	1,841	8,052	826	743	184	44,160	929,745	30	26	939,646
		3	FFG		3	80.0	100%	240.0	0.0	0.0	240.0	0	0	0	0	0	0	0	0	0	0	0	0	28,810	18,746	2,794	3,859	1,032	929	79	18,960	399,184	13	11	403,435
		12	DDG		12	80.0	100%	960.0	0.0	0.0	960.0	0	0	0	0	0	0	0	0	0	0	0	0	102,403	51,686	7,526	20,371	2,688	2,419	187	179,520	3,779,614	123	107	3,819,867
		3	TAOE		3	80.0	100%	240.0	0.0	0.0	240.0	0	0	0	0	0	0	0	0	0	0	0	0	1,601	9,449	1,200	28,663	5,705	5,134	1,865	447,600	9,423,770	306	266	9,524,134
		5	SSN		5	80.0	100%	400.0	0.0	0.0	400.0																								
		2	T-AGO(LFA)		2	80.0	100%	160.0	0.0	0.0	160.0	0	0	0	0	0	0	0	0	0	0	0	0	1,067	6,299	800	19,109	3,803	3,423	1,865	298,400	6,282,514	204	178	6,349,422
		1	SS-PARTNER		1	80.0	100%	80.0	0.0	0.0	80.0	0	0	0	0	0	0	0	0	0	0	0	0	235	1,386	176	4,169	837	753	373	29,840	628,251	20	18	634,942
Fleet Strike Group Exercise	0	0	CVN	Nuclear Carrier (No emissions)	1	56.0	100%	0.0	0.0	0.0	0.0																								
		0	CG		1	56.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	184	0	0	0	0	0
		0	FFG		1	56.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	79	0	0	0	0	0
		0	DDG		3	56.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	187	0	0	0	0	0
		0	LHD/LHA		1	56.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	373	0	0	0	0	0
		0	TAOE		1	56.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,865	0	0	0	0	0
		0	SSN	Nuclear Carrier (No emissions)	1	56.0	100%	0.0	0.0	0.0	0.0																								
Integrated Anti-Submarine Warfare Exercise	0	0	CVN	Nuclear Carrier (No emissions)	1	40.0	100%	0.0	0.0	0.0	0.0																								
		0	CG		1	40.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	184	0	0	0	0	0
		0	FFG		1	40.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	79	0	0	0	0	0
		0	DDG		3	40.0	100%	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	187	0	0	0	0	0
		0	SSN	Nuclear Carrier (No emissions)	1	40.0	100%	0.0	0.0	0.0	0.0																								
Ship Squadron Anti-Submarine Warfare Exercise	1	1	CG		1	40.0	100%	40.0	0.0	40.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4590.0	2608.8	306.8	1342.0	137.6	123.8	0.0	0.0	0.0	0.0	0.0	0.0	184.0	7360	154957.44	5.02688	4.3792	156607.736

Table D.5-7 Emissions from Surface Ships During Training, Alternative 1

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
		1	FFG		1	40.0	100%	40.0	0.0	40.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4801.6	3124.4	465.6	643.2	172.0	154.8	0.0	0.0	0.0	0.0	0.0	0.0	79.0	3160	66530.64	2.15828	1.8802	67239.191
		3	DDG		3	40.0	100%	120.0	0.0	120.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12800.4	6460.8	940.8	2546.4	336.0	302.4	0.0	0.0	0.0	0.0	0.0	0.0	187.0	22440	472451.76	15.3265	13.3518	477483.369
Maritime Homeland Defense / Security Mine Countermeasures	1	4	FFG	Guided Missile Frigate	4	8.0	100%	32.0	32.0	0.0	0.0	3,841	2,500	372	515	138	124	0	0	0	0	0	0	0	0	0	0	0	0	79	2,528	53,225	2	2	53,791
Marine Air Ground Task Force Exercise (Amphibious)	4	4	LHD/LHA		1	80.0	100%	320.0	320.0	0.0	0.0	2,362	13,930	1,770	41,910	8,413	7,572	0	0	0	0	0	0	0	0	0	0	0	0	373	119,360	2,513,005	82	71	2,539,769
		4	LSD		1	80.0	100%	320.0	320.0	0.0	0.0	2,176	12,838	1,632	38,624	7,754	6,978	0	0	0	0	0	0	0	0	0	0	0	0	373	119,360	2,513,005	82	71	2,539,769
		4	LPD		1	80.0	100%	320.0	320.0	0.0	0.0	940	5,543	705	16,676	3,347	3,012	0	0	0	0	0	0	0	0	0	0	0	0	373	119,360	2,513,005	82	71	2,539,769
Special Purpose Marine Air Ground Task Force Exercise	2	2	LHA	Amphib. Assault Ship - Tarawa	1	80.0	100%	160.0	52.8	52.8	54.4	390	2,298	292	6,915	1,388	1,249	390	2,298	292	6,915	1,388	1,249	401	2,368	301	7,125	1,430	1,287	373	59,680	1,256,503	41	36	1,269,884
		4	LPD	Amphibious Transport Dock - Wasp	2	80.0	100%	320.0	105.6	105.6	108.8	310	1,829	233	5,503	1,105	994	310	1,829	233	5,503	1,105	994	319	1,885	240	5,670	1,138	1,024	373	119,360	2,513,005	82	71	2,539,769
Urban Warfare Exercise	5	5	LHA	Amphib. Assault Ship - Tarawa	1	112.0	100%	560.0	560.0	0.0	0.0	4,133	24,377	3,097	73,343	14,722	13,250	0	0	0	0	0	0	0	0	0	0	0	0	373	208,880	4,397,760	143	124	4,444,596
		10	LPD	Amphibious Transport Dock - Wasp	2	112.0	100%	1120.0	1120.0	0.0	0.0	3,288	19,401	2,466	58,367	11,715	10,543	0	0	0	0	0	0	0	0	0	0	0	0	373	417,760	8,795,519	285	249	8,889,191
ELECTRONIC WARFARE																																			
Electronic Warfare Operations (EW Ops)	480	480	FFG	Guided Missile Frigate	1	4	100%	1920.0	0.0	0.0	1920.0	0	0	0	0	0	0	0	0	0	0	0	0	230,477	149,971	22,349	30,874	8,256	7,430	79	151,680	3,193,471	104	90	3,227,481
Counter Targeting Flare Exercise (FLAREX) - Aircraft	3200																																		
Counter Targeting Chaff Exercise (CHAFFEX) - Ship	40	40	FFG	Guided Missile Frigate	1	4	100%	160.0	0.0	0.0	160.0	0	0	0	0	0	0	0	0	0	0	0	0	19,206	12,498	1,862	2,573	688	619	79	12,640	266,123	9	8	268,957
Counter Targeting Chaff Exercise (CHAFFEX) - Aircraft	3200																																		
MINE WARFARE																																			
Submarine Mine Exercise	16																																		
Mine Countermeasure Exercise – Sonar (AQS-20, LCS)	4	1	CG	Cruiser	0.2	1.5	100%	1.2	0.0	0.7	0.5	0.0	0.0	0.0	0.0	0.0	0	85.4	48.5	5.7	25.0	2.6	2	52.3	29.7	3.5	15.3	1.6	1	184	221	4,649	0	0	4,698
		1	DDG	Guided Missile Destroyer	0.14	1.5	100%	0.8	0.0	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0	55.6	28.0	4.1	11.1	1.5	1	34.0	17.2	2.5	6.8	0.9	1	187	157	3,307	0	0	3,342
		1	FFG	Guided Missile Frigate	0.13	1.5	100%	0.8	0.0	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0	58.1	37.8	5.6	7.8	2.1	2	35.6	23.2	3.5	4.8	1.3	1	79	62	1,297	0	0	1,311

Table D.5-7 Emissions from Surface Ships During Training, Alternative 1

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
Mine Countermeasure Exercise – Surface (SMCMEX) Sonar (SQQ-32, MCM)	4	4	MCM	MCM Class	1	8.0	100%	32.0	32.0	0.0	0.0	94.0	554.3	70.5	1667.6	334.7	301	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	373	11,936	251,301	8	7	253,877
Mine Neutralization – Remotely Operated Vehicle Sonar (AQS-235[AQS-20], SLQ-48)	4	4	RHIB	Rigid Hulled Inflatable Boat	1	12.0	100%	48.0	48.0	0.0	0.0	16.3	438.7	2.9	69.1	7.2	6	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	14	672	14,148	0	0	14,299
Mine Laying – Aircraft	4																																		
Mine Neutralization – Explosive Ordnance Disposal	20	60	RHIB	Rigid Hulled Inflatable Boat	3	12.0	100%	720.0	720.0	0.0	0.0	244.8	6580.8	43.2	1036.8	108.0	97	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	14	10,080	212,224	7	6	214,485
Limpet Mine Neutralization System/Shock Wave Generator	40	40	RHIB	Rigid Hulled Inflatable Boat	1	4.0	100%	160.0	160.0	0.0	0.0	54.4	1462.4	9.6	230.4	24.0	22	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	14	2,240	47,161	2	1	47,663
Mine Countermeasure – Towed Mine Detection	4	4	MCM	MCM Class	1	15.0	100%	60.0	60.0	0.0	0.0	176.2	1039.3	132.1	3126.8	627.6	565	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	373	22,380	471,189	15	13	476,207
NAVAL SPECIAL WARFARE																																			
Personnel I&E	240	1200	RHIB	Rigid Hulled Inflatable Boat	5	8.0	100%	9600.0	9600.0	0.0	0.0	3264.0	87744.0	576.0	13824.0	1440.0	1,296	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	14	134,400	2,829,658	92	80	2,859,793
		1440	CRRC	Combat Rubber Raiding Craft	6	8.0	100%	11520.0	11520.0	0.0	0.0	0	1,711	148,625	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	34,560	727,626	24	21	735,375
Parachute Insertion	20																																		
Embassy Reinforcement	50	50	LCAC	Landing Craft Air Cushioned	1	24.0	100%	1200.0	1200.0	0.0	0.0	30,492	66,384	864	51,960	4,668	4,201	0	0	0	0	0	0	0	0	0	0	0	0	611	733,200	15,436,793	501	436	15,601,195
Direct Action (Combat Close Quarters)	72																																		
Direct Action (Breaching)	72																																		
Direct Action (TAC-P)	18																																		
Underwater Demolition Qualifications	30	30	CRRC	Combat Rubber Raiding Craft	1	8.0	100%	240.0	0.0	240.0	0.0	0	0	0	0	0	0	0	36	3,096	0	0	0	0	0	0	0	0	0	3	720	15,159	0	0	15,320
Intelligence, Surveillance, Reconnaissance	16																																		
Urban Warfare Training	18	18	LHA	Amphib. Assault Ship - Tarawa	1	40.0	100%	720.0	720.0	0.0	0.0	5,314	31,342	3,982	94,298	18,929	17,036	0	0	0	0	0	0	0	0	0	0	0	0	373	268,560	5,654,262	183	160	5,714,480
		36	LPD	Amphibious Transport Dock - Wasp	2	40.0	100%	1440.0	1440.0	0.0	0.0	4,228	24,944	3,171	75,043	15,062	13,555	0	0	0	0	0	0	0	0	0	0	0	0	373	537,120	11,308,524	367	320	11,428,960

Table D.5-7 Emissions from Surface Ships During Training, Alternative 1

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
Underwater Survey	16	48	RHIB	Rigid Hulled Inflatable Boat	3	8.0	100%	384.0	384.0	0.0	0.0	130.6	3509.8	23.0	553.0	57.6	52	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	14	5,376	113,186	4	3	114,392
		48	CRRC	Combat Rubber Raiding Craft	3	8.0	100%	384.0	384.0	0.0	0.0	0	57	4,954	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1,152	24,254	1	1	24,513
OTHER																																			
Surface Ship Sonar Maintenance	42	42	FFG	Guided Missile Frigate	1	4.0	100%	168.0	168.0	0.0	0.0	20,167	13,122	1,956	2,701	722	650	0	0	0	0	0	0	0	0	0	0	0	0	79	13,272	279,429	9	8	282,405
Submarine Sonar Maintenance	48																																		
Small Boat Attack	18	18	CRRC	Combat Rubber Raiding Craft	1	4.0	100%	72.0	0.0	72.0	0.0	0	0	0	0	0	0	0	11	929	0	0	0	0	0	0	0	0	0	3	216	4,548	0	0	4,596
Search and Rescue at Sea	40	80	USCG	US Coast Guard	2	40.0	100%	3200.0	0.0	3200.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18368.0	185312.0	2816.0	36960.0	672.0	604.8	0	0	0	0	0	0	66	211200	4446605	144.25	125.66	4,493,961
Submarine Navigation	40																																		
Precision Anchoring	18	18	FFG	Guided Missile Frigate	1	4.0	100%	72.0	72.0	0.0	0.0	8,643	5,624	838	1,158	310	279	0	0	0	0	0	0	0	0	0	0	0	0	79	5,688	119,755	4	3	121,031
Maneuver (Convoy, Land Navigation)	16																																		
Water Purification	16																																		
Field Training Exercise	100																																		
Force Protection	75																																		
Anti-Terrorism	80																																		
Seize Airfield	12																																		
Airfield Expeditionary	12																																		
Unmanned Aerial Vehicle Operation	1000																																		
Land Demolitions (Improvised Explosive Device) Discovery / Disposal	120																																		
Land Demolitions (Unexploded Ordnance) Discovery / Disposal	236																																		
TOTAL TRAINING EMISSIONS (LBS/YEAR)									34,988	9,294	6,994	158,513	519,825	198,044	967,349	187,053	168,348	190,097	333,400	43,461	165,170	23,228	20,905	557,915	367,448	59,762	156,736	31,938	28,744		7,501,337	157,933,149	5,123	4,463	159,615,136
TOTAL TRAINING EMISSIONS (TONS/YEAR)												79	260	99	484	94	84	95	167	22	83	12	10	279	184	30	78	16	14		7,501,337	78,967	3	2	79,808

Table D.5-8 Emissions from Surface Ships During Testing, Alternative 1

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
ANTI-SURFACE WARFARE																																			
Air to Surface Missile Test	8																																		
ANTI-SUBMARINE WARFARE																																			
Anti-submarine Warfare Tracking Test - MPA	188																																		
Anti-submarine Warfare Torpedo Test	40																																		
Broad Area Maritime Surveillance (BAMS) Testing	10																																		
LIFECYCLE ACTIVITIES TESTING																																			
Ship Signature Testing	17	17	FFG	Guided Missile	1	4.0	100%	68.0	22.4	22.4	23.1	2,694	1,753	261	361	96	87	2,694	1,753	261	361	96	87	2,775	1,806	269	372	99	89	79	5,372	113,102	4	3	114,307
ANTI-SURFACE WARFARE / ANTI-SUBMARINE WARFARE TESTING																																			
Torpedo Explosive Testing	2	6	DDG		3	4.0	100%	24.0	0.0	0.0	24.0	0	0	0	0	0	0	0	0	0	0	0	0	2,560	1,292	188	509	67	60	187	4,488	94,490	3	3	95,497
Countermeasure Testing	2	4	DDG		2	2.0	100%	8.0	4.0	4.0	0.0	427	215	31	85	11	10	427	215	31	85	11	10	0	0	0	0	0	0	187	1,496	31,497	1	1	31,832
At-Sea Sonar Testing	20	80	SSN	Nuclear Carrie	4	2.0	100%	160.0	0.0	0.0	160.0																								
		20	CG		1	2.0	100%	40.0	0.0	0.0	40.0	0	0	0	0	0	0	0	0	0	0	0	0	4,590	2,609	307	1,342	138	124	184	7,360	154,957	5	4	156,608
		80	DDG		4	2.0	100%	160.0	0.0	0.0	160.0	0	0	0	0	0	0	0	0	0	0	0	0	17,067	8,614	1,254	3,395	448	403	187	29,920	629,936	20	18	636,644
SHIPBOARD PROTECTION SYSTEMS AND SWIMMER DEFENSE TESTING																																			
Pierside Integrated Swimmer Defense	1	1	FFG	Guided Missile	1	8.0	100%	8.0	8.0	0.0	0.0	960	625	93	129	34	31	0	0	0	0	0	0	0	0	0	0	0	0	79	632	13,306	0	0	13,448
NEW SHIP CONSTRUCTION																																			
ASW Mission Package Testing	33	33	LCS	Littoral Comba	1	60	1	1980	0	1980	0	0	0	0	0	0	0	237679.2	154657.8	23047.2	31838.4	8514	7662.6	0	0	0	0	0	0	79	156420	3293266.68	106.835	93.0699	3328339.955
MCM Mission Package Testing	32	32	LCS	Littoral Comba	1	60	1	1920	0	1920	0	0	0	0	0	0	0	230476.8	149971.2	22348.8	30873.6	8256	7430.4	0	0	0	0	0	0	79	151680	3193470.72	103.597	90.2496	3227481.168
ASUW Mission Package Testing	4	4	LCS	Littoral Comba	1	40	1	160	0	80	80	0	0	0	0	0	0	9603.2	6248.8	931.2	1286.4	344	309.6	9603.2	6248.8	931.2	1286.4	344	309.6	79	12640	266122.56	8.63312	7.5208	268956.764
OFFICE OF NAVAL RESEARCH																																			
North Pacific Acoustic Lab Philippine Sea 2018-19 Experiment (Deep Water)	1																																		
TOTAL TESTING EMISSIONS (LBS/YEAR)									34	4,006	487	4,081	2,593	386	574	142	128	480,880	312,846	46,620	64,444	17,222	15,500	36,596	20,570	2,950	6,905	1,096	987		370,008	7,790,148	253	220	7,873,113
TOTAL TESTING EMISSIONS (TONS/YEAR)												2	1	0	0	0	0	240	156	23	32	9	8	18	10	1	3	1	0		370,008	3,895	0	0	3,937

Table D.5-9. Emissions from Surface Ships During Training, Alternative 2

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
ANTI-AIR WARFARE																																			
Air Combat Maneuver	5300																																		
Air Defense Exercise	100																																		
Air Intercept Control	5300																																		
Gunnery Exercise, A-A (Medium Caliber)	45																																		
Missile Exercise, A-A	24																																		
Gunnery Exercise, S-A (Large Caliber)	5	10	FFG	Guided Missile Frigate	2.00	2.0	100%	20.0	0.0	0.0	20.0	0	0	0	0	0	0	0	0	0	0	0	0	2,401	1,562	233	322	86	77	79	1,580	33,265	1	1	33,620
Gunnery Exercise, S-A (Medium Caliber)	12	24	FFG	Guided Missile Frigate	2.00	2.0	100%	48.0	0.0	0.0	48.0	0	0	0	0	0	0	0	0	0	0	0	0	5,762	3,749	559	772	206	186	79	3,792	79,837	3	2	80,687
Missile Exercise, S-A	15	30	FFG	Guided Missile Frigate	2.00	2.0	100%	60.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	79	0	0	0	0	0
STRIKE WARFARE																																			
Bombing Exercise, A-G	2520																																		
Missile Exercise, A-G	85																																		
Gunnery Exercise, A-G	96																																		
Combat Search and Rescue	80																																		
AMPHIBIOUS WARFARE																																			
Fire Support Exercise - Land Based target	10	10	CG	Cruiser	1	8.0	100%	80.00	80.0	0.0	0.0	9,180	5,218	614	2,684	275	248	0	0	0	0	0	0	0	0	0	0	0	0	184	14,720	309,915	10	9	313,215
Amphibious Reheersal, No Landing - Marine Air Ground Task Force	12	48	LHD/LHA		4	24.0	100%	1152.0	1152.0	0.0	0.0	8501.8	50146.6	6370.6	150877.4	30286.1	27257.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	373.0	429696	9046819.584	293.482	255.669	9143168.17
		48	LSD		4	24.0	100%	1152.0	1152.0	0.0	0.0	7833.6	46218.2	5875.2	139046.4	27913.0	25121.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	373.0	429696	9046819.584	293.482	255.669	9143168.17
		48	LPD		4	24.0	100%	1152.0	1152.0	0.0	0.0	3382.2	19955.2	2536.7	60034.6	12049.2	10844.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	373.0	429696	9046819.584	293.482	255.669	9143168.17
Amphibious Assaut - Marine Air Ground Task Force	6	6	CG	Cruiser	1	8.0	100%	48.0	48.0	0.0	0.0	5,508	3,131	368	1,610	165	149	0	0	0	0	0	0	0	0	0	0	0	0	184	8,832	185,949	6	5	187,929
		6	LHA	Amphib. Assault Ship - Tarawa	1	8.0	100%	48.0	48.0	0.0	0.0	354	2,089	265	6,287	1,262	1,136	0	0	0	0	0	0	0	0	0	0	0	0	373	17,904	376,951	12	11	380,965
		12	LPD	Amphibious Transport Dock - Wasp	2	8.0	100%	96.0	96.0	0.0	0.0	282	1,663	211	5,003	1,004	904	0	0	0	0	0	0	0	0	0	0	0	0	373	35,808	753,902	24	21	761,931
		12	FFG	Guided Missile Frigate	2	8.0	100%	96.0	96.0	0.0	0.0	11,524	7,499	1,117	1,544	413	372	0	0	0	0	0	0	0	0	0	0	0	0	79	7,584	159,674	5	5	161,374
Amphibious Raid - Special Purpose Marine Air Ground Task Force	6	6	LHA	Amphib. Assault Ship - Tarawa	1	6.0	100%	36.0	36.0	0.0	0.0	266	1,567	199	4,715	946	852	0	0	0	0	0	0	0	0	0	0	0	0	373	13,428	282,713	9	8	285,724
		12	LPD	Amphibious Transport Dock - Wasp	2	2.5	100%	30.0	30.0	0.0	0.0	88	520	66	1,563	314	282	0	0	0	0	0	0	0	0	0	0	0	0	373	11,190	235,594	8	7	238,103
Urban Warfare Training	36																																		
Non-Combatant Evacuation Operation	5	5	LHA	Amphib. Assault Ship - Tarawa	1	80.0	100%	400.0	400.0	0.0	0.0	2,952	17,412	2,212	52,388	10,516	9,464	0	0	0	0	0	0	0	0	0	0	0	0	373	149,200	3,141,257	102	89	3,174,711
		10	LPD	Amphibious Transport Dock - Wasp	2	80.0	100%	800.0	800.0	0.0	0.0	2,349	13,858	1,762	41,691	8,368	7,531	0	0	0	0	0	0	0	0	0	0	0	0	373	298,400	6,282,514	204	178	6,349,422
		5	LCU	Landing Craft Utility	1	80.0	100%	400.0	400.0	0.0	0.0	14,484	17,980	208	1,244	628	565	0	0	0	0	0	0	0	0	0	0	0	0	66	26,400	555,826	18	16	561,745

Table D.5-9. Emissions from Surface Ships During Training, Alternative 2

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
Humanitarian Assistance/ Disaster Relief Operations	5	5	LHA	Amphib. Assault Ship - Tarawa	1	8.0	100%	40.0	40.0	0.0	0.0	295	1,741	221	5,239	1,052	946	0	0	0	0	0	0	0	0	0	0	0	0	373	14,920	314,126	10	9	317,471
		10	LPD	Amphibious Transport Dock - Wasp	2	8.0	100%	80.0	80.0	0.0	0.0	235	1,386	176	4,169	837	753	0	0	0	0	0	0	0	0	0	0	0	0	373	29,840	628,251	20	18	634,942
		5	LCAC	Landing Craft Air Cushioned	1	8.0	100%	40.0	40.0	0.0	0.0	1,016	2,213	29	1,732	156	140	0	0	0	0	0	0	0	0	0	0	0	0	611	24,440	514,560	17	15	520,040
Unmanned Aerial Vehicle - Intelligence, Surveillance, and Reconnaissance	100																																		
ANTI-SURFACE WARFARE																																			
Gunnery Exercise, A-S (Small Caliber) - Ship	242																																		
Gunnery Exercise, A-S (Medium Caliber) - Ship	295																																		
Missile Exercise (A-S) - Rocket	10																																		
Missile Exercise (A-S)	20																																		
Laser Targeting	600																																		
Bombing Exercise (A-S)	37																																		
Torpedo Exercise (Submarine to Surface)	5																																		
Missile Exercise (S-S)	12	24	FFG	Guided Missile Frigate	2.00	2.0	100%	48.0	0.0	0.0	48.0	0	0	0	0	0	0	0	0	0	0	0	0	5,762	3,749	559	772	206	186	79	3,792	79,837	3	2	80,687
Gunnery Exercise (S-S)- Ship, Large Caliber	140																																		
		31	CG	Cruiser	0.22	2.5	100%	77.0	0.0	21.6	55.4	0	0	0	0	0	0	2,474	1,406	165	723	74	67	6,362	3,616	425	1,860	191	172	184	14,168	298,293	10	8	301,470
		63	DDG	Guided Missile Destroyer	0.45	2.5	100%	157.5	0.0	44.1	113.4	0	0	0	0	0	0	4,704	2,374	346	936	123	111	12,096	6,105	889	2,406	318	286	187	29,453	620,093	20	18	626,697
		21	FFG	Guided Missile Frigate	0.15	2.5	100%	52.5	0.0	14.7	37.8	0	0	0	0	0	0	1,765	1,148	171	236	63	57	4,538	2,953	440	608	163	146	79	4,148	87,321	3	2	88,251
		7	Unknown	Other	0.05	2.5	100%	17.5	0.0	4.9	12.6	0	0	0	0	0	0	33	197	25	591	119	107	86	506	64	1,521	305	275	66	1,155	24,317	1	1	24,576
		17	USCG	US Coast Guard	0.12	2.5	100%	42.0	0.0	11.8	30.2	0	0	0	0	0	0	68	681	10	136	2	2	174	1,751	27	349	6	6	66	2,772	58,362	2	2	58,983
Gunnery Exercise (S-S)- Ship, Medium caliber	100																																		
		22	CG	Cruiser	0.22	2.5	100%	55.0	0.0	15.4	39.6	0	0	0	0	0	0	1,767	1,004	118	517	53	48	4,544	2,583	304	1,329	136	123	184	10,120	213,066	7	6	215,336
		45	DDG	Guided Missile Destroyer	0.45	2.5	100%	112.5	0.0	31.5	81.0	0	0	0	0	0	0	3,360	1,696	247	668	88	79	8,640	4,361	635	1,719	227	204	187	21,038	442,924	14	13	447,641
		15	FFG	Guided Missile Frigate	0.15	2.5	100%	37.5	0.0	10.5	27.0	0	0	0	0	0	0	1,260	820	122	169	45	41	3,241	2,109	314	434	116	104	79	2,963	62,372	2	2	63,037
		1	LPD	Amphibious Transport Dock - Wasp	0.01	2.5	100%	1.5	0.0	0.4	1.1	0	0	0	0	0	0	1	7	1	22	4	4	3	19	2	56	11	10	373	560	11,780	0	0	11,905
		5	Unknown	Other	0.05	2.5	100%	12.5	0.0	3.5	9.0	0	0	0	0	0	0	24	140	18	422	85	76	61	361	46	1,086	218	196	66	825	17,370	1	0	17,555

Table D.5-9. Emissions from Surface Ships During Training, Alternative 2

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
		12	USCG	US Coast Guard	0.12	2.5	100%	30.0	0.0	8.4	21.6	0	0	0	0	0	0	48	486	7	97	2	2	124	1,251	19	249	5	4	66	1,980	41,687	1	1	42,131
Sinking Exercise (SINKEX)	2	10	FFG	Guided Missile Frigate	5.00	16.0	100%	160.0	0.0	0.0	160.0	0	0	0	0	0	0	0	0	0	0	0	0	19,206	12,498	1,862	2,573	688	619	79	12,640	266,123	9	8	268,957
Gunnery Exercise (S-S) Boat – Medium-caliber	10	50	FFG	Guided Missile Frigate	5.00	3.0	100%	150.0	0.0	0.0	150.0	0	0	0	0	0	0	0	0	0	0	0	0	18,006	11,717	1,746	2,412	645	581	79	11,850	249,490	8	7	252,147
Gunnery Exercise (S-S) Small-caliber	40	80	CRRC	Combat Rubber Raiding Craft	2	3.0	100%	240.0	0.0	0.0	240.0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	3,096	0	0	0	3	720	15,159	0	0	15,320
Maritime Security Operations (MSO)	40	40	FFG	Guided Missile Frigate	1	8.0	100%	320.0	0.0	0.0	320.0	0	0	0	0	0	0	0	0	0	0	0	0	38,413	24,995	3,725	5,146	1,376	1,238	79	25,280	532,245	17	15	537,914
		40	RHIB	Rigid Hulled Inflatable Boat	1	8.0	100%	320.0	0.0	0.0	320.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	108.8	2924.8	19.2	460.8	48.0	43	14	4,480	94,322	3	3	95,326
		40	CRRC	Combat Rubber Raiding Craft	1	8.0	100%	320.0	0.0	0.0	320.0	0	0	0	0	0	0	0	0	0	0	0	0	0	48	4,128	0	0	0	3	960	20,212	1	1	20,427
ANTI-SUBMARINE WARFARE																																			
Tracking Exercise-Helo	62																																		
Torpedo Exercise-Helo	4																																		
Tracking Exercise-Maritime Patrol Advanced Extended Echo Ranging Sonobuoys	11																																		
Tracking Exercise -Maritime Patrol Aircraft	34																																		
Torpedo Exercise-Maritime Patrol Aircraft	4																																		
Tracking Exercise –Surface	132	132	FFG	Guided Missile Frigate	1	2.0	100%	264.0	0.0	132.0	132.0	0	0	0	0	0	0	15,845	10,311	1,536	2,123	568	511	15,845	10,311	1,536	2,123	568	511	79	20,856	439,102	14	12	443,779
Torpedo Exercise-Surface	3	3	FFG	Guided Missile Frigate	1	2.0	100%	6.0	0.0	3.0	3.0	0	0	0	0	0	0	360	234	35	48	13	12	360	234	35	48	13	12	79	474	9,980	0	0	10,086
Tracking Exercise–Submarine	12																																		
Torpedo Exercise – Submarine	10																																		
MAJOR TRAINING EVENTS																																			
Joint Expeditionary Exercise	1	1	CVN	Nuclear Carrier (No emissions)	1	80.0	100%	80.0	0.0	80.0	0.0																								
		1	CG		1	80.0	100%	80.0	0.0	80.0	0.0	0	0	0	0	0	0	9,180	5,218	614	2,684	275	248	0	0	0	0	0	0	184	14,720	309,915	10	9	313,215
		2	FFG		2	80.0	100%	160.0	0.0	160.0	0.0	0	0	0	0	0	0	19,206	12,498	1,862	2,573	688	619	0	0	0	0	0	0	79	12,640	266,123	9	8	268,957
		5	DDG		5	80.0	100%	400.0	0.0	400.0	0.0	0	0	0	0	0	0	42,668	21,536	3,136	8,488	1,120	1,008	0	0	0	0	0	0	187	74,800	1,574,839	51	45	1,591,611
		1	LHD/LHA		1	80.0	100%	80.0	0.0	80.0	0.0	0	0	0	0	0	0	590	3,482	442	10,478	2,103	1,893	0	0	0	0	0	0	373	29,840	628,251	20	18	634,942
		2	LSD		2	80.0	100%	160.0	0.0	160.0	0.0	0	0	0	0	0	0	1,088	6,419	816	19,312	3,877	3,489	0	0	0	0	0	0	373	59,680	1,256,503	41	36	1,269,884

Table D.5-9. Emissions from Surface Ships During Training, Alternative 2

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
		1	LPD		1	80.0	100%	80.0	0.0	80.0	0.0	0	0	0	0	0	0	235	1,386	176	4,169	837	753	0	0	0	0	0	0	373	29,840	628,251	20	18	634,942
		1	TAOE		1	80.0	100%	80.0	0.0	80.0	0.0	0	0	0	0	0	0	534	3,150	400	9,554	1,902	1,711	0	0	0	0	0	0	1,865	149,200	3,141,257	102	89	3,174,711
		1	SSN	Nuclear Carrier (No emissions)	1	80.0	100%	80.0	0.0	80.0	0.0																								
		1	SSGN	Nuclear Carrier (No emissions)	1	80.0	100%	80.0	0.0	80.0	0.0																								
		2	T-AGO(LFA)		2	80.0	100%	160.0	0.0	160.0	0.0	0	0	0	0	0	0	1,067	6,299	800	19,109	3,803	3,423	0	0	0	0	0	0	1,865	298,400	6,282,514	204	178	6,349,422
		1	CG-PARTNER		1	80.0	100%	80.0	0.0	80.0	0.0	0	0	0	0	0	0	8,623	3,768	792	1,680	208	187	0	0	0	0	0	0	184	14,720	309,915	10	9	313,215
		2	DDG-PARTNER		2	80.0	100%	160.0	0.0	160.0	0.0	0	0	0	0	0	0	16,638	7,984	1,440	2,864	400	360	0	0	0	0	0	0	187	29,920	629,936	20	18	636,644
		1	SS-PARTNER		1	80.0	100%	80.0	0.0	80.0	0.0	0	0	0	0	0	0	235	1,386	176	4,169	837	753	0	0	0	0	0	0	373	29,840	628,251	20	18	634,942
		5	LCAC		5	80.0	100%	400.0	0.0	400.0	0.0	0	0	0	0	0	0	10,164	22,128	288	17,320	1,556	1,400	0	0	0	0	0	0	611	244,400	5,145,598	167	145	5,200,398
		2	LCU		2	80.0	100%	160.0	0.0	160.0	0.0	0	0	0	0	0	0	5,794	7,192	83	498	251	226	0	0	0	0	0	0	66	10,560	222,330	7	6	224,698
		19	CRRC		19	80.0	100%	1520.0	0.0	1520.0	0.0	0	0	0	0	0	0	0	226	19,610	0	0	0	0	0	0	0	0	0	3	4,560	96,006	3	3	97,029
		2	RHIB		2	80.0	100%	160.0	0.0	160.0	0.0	0	0	0	0	0	0	54	1,462	10	230	24	22	0	0	0	0	0	0	14	2,240	47,161	2	1	47,663
		14	AAV		14	80.0	100%	1120.0	0.0	1120.0	0.0	0	0	0	0	0	0	851	6,966	918	1,400	291	262	0	0	0	0	0	0	3	3,360	70,741	2	2	71,495
Joint Multi-Strike Group Exercise	1	3	CVN		3	80.0	100%	240.0	0.0	0.0	240.0																								
		3	CG		3	80.0	100%	240.0	0.0	0.0	240.0	0	0	0	0	0	0	0	0	0	0	0	0	27,540	15,653	1,841	8,052	826	743	184	44,160	929,745	30	26	939,646
		3	FFG		3	80.0	100%	240.0	0.0	0.0	240.0	0	0	0	0	0	0	0	0	0	0	0	0	28,810	18,746	2,794	3,859	1,032	929	79	18,960	399,184	13	11	403,435
		12	DDG		12	80.0	100%	960.0	0.0	0.0	960.0	0	0	0	0	0	0	0	0	0	0	0	0	102,403	51,686	7,526	20,371	2,688	2,419	187	179,520	3,779,614	123	107	3,819,867
		3	TAOE		3	80.0	100%	240.0	0.0	0.0	240.0	0	0	0	0	0	0	0	0	0	0	0	0	1,601	9,449	1,200	28,663	5,705	5,134	1,865	447,600	9,423,770	306	266	9,524,134
		5	SSN		5	80.0	100%	400.0	0.0	0.0	400.0																								
		2	T-AGO(LFA)		2	80.0	100%	160.0	0.0	0.0	160.0	0	0	0	0	0	0	0	0	0	0	0	0	1,067	6,299	800	19,109	3,803	3,423	1,865	298,400	6,282,514	204	178	6,349,422
		1	SS-PARTNER		1	80.0	100%	80.0	0.0	0.0	80.0	0	0	0	0	0	0	0	0	0	0	0	0	235	1,386	176	4,169	837	753	373	29,840	628,251	20	18	634,942
Fleet Strike Group Exercise	1	1	CVN	Nuclear Carrier (No emissions)	1	56.0	100%	56.0	0.0	0.0	56.0																								
		1	CG		1	56.0	100%	56.0	0.0	0.0	56.0	0	0	0	0	0	0	0	0	0	0	0	0	6,426	3,652	430	1,879	193	173	184	10,304	216,940	7	6	219,251
		1	FFG		1	56.0	100%	56.0	0.0	0.0	56.0	0	0	0	0	0	0	0	0	0	0	0	0	6,722	4,374	652	900	241	217	79	4,424	93,143	3	3	94,135
		3	DDG		3	56.0	100%	168.0	0.0	0.0	168.0	0	0	0	0	0	0	0	0	0	0	0	0	17,921	9,045	1,317	3,565	470	423	187	31,416	661,432	21	19	668,477
		1	LHD/LHA		1	56.0	100%	56.0	0.0	0.0	56.0	0	0	0	0	0	0	0	0	0	0	0	0	413	2,438	310	7,334	1,472	1,325	373	20,888	439,776	14	12	444,460
		1	TAOE		1	56.0	100%	56.0	0.0	0.0	56.0	0	0	0	0	0	0	0	0	0	0	0	0	374	2,205	280	6,688	1,331	1,198	1,865	104,440	2,198,880	71	62	2,222,298
		1	SSN	Nuclear Carrier (No emissions)	1	56.0	100%	56.0	0.0	0.0	56.0																								
Integrated Anti-Submarine Warfare Exercise	1	1	CVN	Nuclear Carrier (No emissions)	1	40.0	100%	40.0	0.0	40.0	0.0																								
		1	CG		1	40.0	100%	40.0	0.0	40.0	0.0	0	0	0	0	0	0	4,590	2,609	307	1,342	138	124	0	0	0	0	0	0	184	7,360	154,957	5	4	156,608
		1	FFG		1	40.0	100%	40.0	0.0	40.0	0.0	0	0	0	0	0	0	4,802	3,124	466	643	172	155	0	0	0	0	0	0	79	3,160	66,531	2	2	67,239
		3	DDG		3	40.0	100%	120.0	0.0	120.0	0.0	0	0	0	0	0	0	12,800	6,461	941	2,546	336	302	0	0	0	0	0	0	187	22,440	472,452	15	13	477,483
		1	SSN	Nuclear Carrier (No emissions)	1	40.0	100%	40.0	0.0	40.0	0.0																								
Ship Squadron Anti-Submarine Warfare Exercise	1	1	CG		1	40.0	100%	40.0	0.0	40.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4590.0	2608.8	306.8	1342.0	137.6	123.8	0.0	0.0	0.0	0.0	0.0	0.0	184.0	7360	154957.44	5.02688	4.3792	156607.736
		1	FFG		1	40.0	100%	40.0	0.0	40.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4801.6	3124.4	465.6	643.2	172.0	154.8	0.0	0.0	0.0	0.0	0.0	0.0	79.0	3160	66530.64	2.15828	1.8802	67239.191
		3	DDG		3	40.0	100%	120.0	0.0	120.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12800.4	6460.8	940.8	2546.4	336.0	302.4	0.0	0.0	0.0	0.0	0.0	0.0	187.0	22440	472451.76	15.3265	13.3518	477483.369
Maritime Homeland Defense / Security Mine Countermeasures	1	4	FFG	Guided Missile Frigate	4	8.0	100%	32.0	32.0	0.0	0.0	3,841	2,500	372	515	138	124	0	0	0	0	0	0	0	0	0	0	0	0	79	2,528	53,225	2	2	53,791
Marine Air Ground Task Force Exercise (Amphibious)	4	4	LHD/LHA		1	80.0	100%	320.0	320.0	0.0	0.0	2,362	13,930	1,770	41,910	8,413	7,572	0	0	0	0	0	0	0	0	0	0	0	0	373	119,360	2,513,005	82	71	2,539,769
		4	LSD		1	80.0	100%	320.0	320.0	0.0	0.0	2,176	12,838	1,632	38,624	7,754	6,978	0	0	0	0	0	0	0	0	0	0	0	0	373	119,360	2,513,005	82	71	2,539,769

Table D.5-9. Emissions from Surface Ships During Training, Alternative 2

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
		4	LPD		1	80.0	100%	320.0	320.0	0.0	0.0	940	5,543	705	16,676	3,347	3,012	0	0	0	0	0	0	0	0	0	0	0	0	373	119,360	2,513,005	82	71	2,539,769
Special Purpose Marine Air Ground Task Force Exercise	2	2	LHA	Amphib. Assault Ship - Tarawa	1	80.0	100%	160.0	52.8	52.8	54.4	390	2,298	292	6,915	1,388	1,249	390	2,298	292	6,915	1,388	1,249	401	2,368	301	7,125	1,430	1,287	373	59,680	1,256,503	41	36	1,269,884
		4	LPD	Amphibious Transport Dock - Wasp	2	80.0	100%	320.0	105.6	105.6	108.8	310	1,829	233	5,503	1,105	994	310	1,829	233	5,503	1,105	994	319	1,885	240	5,670	1,138	1,024	373	119,360	2,513,005	82	71	2,539,769
Urban Warfare Exercise	5	5	LHA	Amphib. Assault Ship - Tarawa	1	112.0	100%	560.0	560.0	0.0	0.0	4,133	24,377	3,097	73,343	14,722	13,250	0	0	0	0	0	0	0	0	0	0	0	0	373	208,880	4,397,760	143	124	4,444,596
		10	LPD	Amphibious Transport Dock - Wasp	2	112.0	100%	1120.0	1120.0	0.0	0.0	3,288	19,401	2,466	58,367	11,715	10,543	0	0	0	0	0	0	0	0	0	0	0	0	373	417,760	8,795,519	285	249	8,889,191
ELECTRONIC WARFARE																																			
Electronic Warfare Operations (EW Ops)	530	530	FFG	Guided Missile Frigate	1	4	100%	2120.0	0.0	0.0	2120.0	0	0	0	0	0	0	0	0	0	0	0	0	254,485	165,593	24,677	34,090	9,116	8,204	79	167,480	3,526,124	114	100	3,563,677
Counter Targeting Flare Exercise (FLAREX) - Aircraft	3534																																		
Counter Targeting Chaff Exercise (CHAFFEX) - Ship	40	40	FFG	Guided Missile Frigate	1	4	100%	160.0	0.0	0.0	160.0	0	0	0	0	0	0	0	0	0	0	0	0	19,206	12,498	1,862	2,573	688	619	79	12,640	266,123	9	8	268,957
Counter Targeting Chaff Exercise (CHAFFEX) - Aircraft	3534																																		
MINE WARFARE																																			
Submarine Mine Exercise	16	0																																	
Mine Countermeasure Exercise – Sonar (AQS-20, LCS)	4	1	CG	Cruiser	0.2	1.5	100%	1.2	0.0	0.7	0.5	0.0	0.0	0.0	0.0	0.0	0	85.4	48.5	5.7	25.0	2.6	2	52.3	29.7	3.5	15.3	1.6	1	184	221	4,649	0	0	4,698
		1	DDG	Guided Missile Destroyer	0.14	1.5	100%	0.8	0.0	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0	55.6	28.0	4.1	11.1	1.5	1	34.0	17.2	2.5	6.8	0.9	1	187	157	3,307	0	0	3,342
		1	FFG	Guided Missile Frigate	0.13	1.5	100%	0.8	0.0	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0	58.1	37.8	5.6	7.8	2.1	2	35.6	23.2	3.5	4.8	1.3	1	79	62	1,297	0	0	1,311
Mine Countermeasure Exercise – Surface (SMCMEX) Sonar (SQQ-32, MCM)	4	4	MCM	MCM Class	1	8.0	100%	32.0	32.0	0.0	0.0	94.0	554.3	70.5	1667.6	334.7	301	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	373	11,936	251,301	8	7	253,977
Mine Neutralization – Remotely Operated Vehicle Sonar (AQS-235[AQS-20], SLQ-48)	4	4	RHIB	Rigid Hulled Inflatable Boat	1	12.0	100%	48.0	48.0	0.0	0.0	16.3	438.7	2.9	69.1	7.2	6	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	14	672	14,148	0	0	14,299
Mine Laying - Aircraft	4																																		
Mine Neutralization – Explosive Ordnance Disposal	20	60	RHIB	Rigid Hulled Inflatable Boat	3	12.0	100%	720.0	720.0	0.0	0.0	244.8	6580.8	43.2	1036.8	108.0	97	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	14	10,080	212,224	7	6	214,485

Table D.5-9. Emissions from Surface Ships During Training, Alternative 2

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
Limpet Mine Neutralization System/Shock Wave Generator	40	40	RHIB	Rigid Hulled Inflatable Boat	1	4.0	100%	160.0	160.0	0.0	0.0	54.4	1462.4	9.6	230.4	24.0	22	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	14	2,240	47,161	2	1	47,663
Mine Countermeasure – Towed Mine Detection	4	4	MCM	MCM Class	1	15.0	100%	60.0	60.0	0.0	0.0	176.2	1039.3	132.1	3126.8	627.6	565	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	373	22,380	471,189	15	13	476,207
NAVAL SPECIAL WARFARE																																			
Personnel I&E	240	1200	RHIB	Rigid Hulled Inflatable Boat	5	8.0	100%	9600.0	9600.0	0.0	0.0	3264.0	87744.0	576.0	13824.0	1440.0	1,296	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	14	134,400	2,829,658	92	80	2,859,793
		1440	CRRC	Combat Rubber Raiding Craft	6	8.0	100%	11520.0	11520.0	0.0	0.0	0	1,711	148,625	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	34,560	727,626	24	21	735,375
Parachute Insertion	20																																		
Embassy Reinforcement	50	50	LCAC	Landing Craft Air Cushioned	1	24.0	100%	1200.0	1200.0	0.0	0.0	30,492	66,384	864	51,960	4,668	4,201	0	0	0	0	0	0	0	0	0	0	0	0	611	733,200	15,436,793	501	436	15,601,195
Direct Action (Combat Close Quarters)	72																																		
Direct Action (Breaching)	72																																		
Direct Action (TAC-P)	18																																		
Underwater Demolition Qualifications	30	30	CRRC	Combat Rubber Raiding Craft	1	8.0	100%	240.0	0.0	240.0	0.0	0	0	0	0	0	0	0	36	3,096	0	0	0	0	0	0	0	0	0	3	720	15,159	0	0	15,320
Intelligence, Surveillance, Reconnaissance	16																																		
Urban Warfare Training	18	18	LHA	Amphib. Assault Ship - Tarawa	1	40.0	100%	720.0	720.0	0.0	0.0	5,314	31,342	3,982	94,298	18,929	17,036	0	0	0	0	0	0	0	0	0	0	0	0	373	268,560	5,654,262	183	160	5,714,480
		36	LPD	Amphibious Transport Dock - Wasp	2	40.0	100%	1440.0	1440.0	0.0	0.0	4,228	24,944	3,171	75,043	15,062	13,555	0	0	0	0	0	0	0	0	0	0	0	0	373	537,120	11,308,524	367	320	11,428,960
Underwater Survey	16	48	RHIB	Rigid Hulled Inflatable Boat	3	8.0	100%	384.0	384.0	0.0	0.0	130.6	3509.8	23.0	553.0	57.6	52	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	14	5,376	113,186	4	3	114,392
		48	CRRC	Combat Rubber Raiding Craft	3	8.0	100%	384.0	384.0	0.0	0.0	0	57	4,954	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1,152	24,254	1	1	24,513
OTHER																																			
Surface Ship Sonar Maintenance	42	42	FFG	Guided Missile Frigate	1	4.0	100%	168.0	168.0	0.0	0.0	20,167	13,122	1,956	2,701	722	650	0	0	0	0	0	0	0	0	0	0	0	0	79	13,272	279,429	9	8	282,405
Submarine Sonar Maintenance	48																																		
Small Boat Attack	18	18	CRRC	Combat Rubber Raiding Craft	1	4.0	100%	72.0	0.0	72.0	0.0	0	0	0	0	0	0	0	11	929	0	0	0	0	0	0	0	0	0	3	216	4,548	0	0	4,596
Search and Rescue at Sea	40	80	USCG	US Coast Guard	2	40.0	100%	3200.0	0.0	3200.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18368.0	185312.0	2816.0	36960.0	672.0	604.8	0	0	0	0	0	0	66	211200	4446605	144.25	125.66	4,493,961
Submarine Navigation	40																																		

Table D.5-9. Emissions from Surface Ships During Training, Alternative 2

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
Precision Anchoring	18	18	FFG	Guided Missile Frigate	1	4.0	100%	72.0	72.0	0.0	0.0	8,643	5,624	838	1,158	310	279	0	0	0	0	0	0	0	0	0	0	0	0	79	5,688	119,755	4	3	121,031
Maneuver (Convoy, Land Navigation)	16																																		
Water Purification	16																																		
Field Training Exercise	100																																		
Force Protection	75																																		
Anti-Terrorism	80																																		
Seize Airfield	12																																		
Airfield Expeditionary	12																																		
Unmanned Aerial Vehicle Operation	1000																																		
Land Demolitions (Improvised Explosive Device) Discovery / Disposal	120																																		
Land Demolitions (Unexploded Ordnance) Discovery / Disposal	236																																		
TOTAL TRAINING EMISSIONS (LBS/YEAR)									34,988	9,574	7,698	158,513	519,825	198,044	967,349	187,053	168,348	212,289	345,594	45,174	169,702	23,874	21,486	613,778	404,784	65,078	180,319	36,505	32,855		7,721,569	162,569,914	5,274	4,594	164,301,283
TOTAL TRAINING EMISSIONS (TONS/YEAR)												79	260	99	484	94	84	106	173	23	85	12	11	307	202	33	90	18	16		7,721,569	81,285	3	2	82,151

Table D.5-10. Emissions from Surface Ships During Testing, Alternative 2

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - VESSELS										Emissions By Jurisdiction (lb/year)																		Greenhouse Gas Emissions (lb/year)					
		Ship / Vessel / Boat				Range Time (hr)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)											
		Number	Ship Type	Type	Participation	Per Ship	Time at Each Power Level (%)	Total	0-3 nm from shore	3-12 nm from shore	>12 nm from shore	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
ANTI-SURFACE WARFARE																																			
Air to Surface Missile Test	10																																		
ANTI-SUBMARINE WARFARE																																			
Anti-submarine Warfare Tracking Test - MPA	207																																		
Anti-submarine Warfare Torpedo Test	44																																		
Broad Area Maritime Surveillance (BAMS) Testing	11																																		
LIFECYCLE ACTIVITIES TESTING																																			
Ship Signature Testing	19	19	FFG	Guided Missile	1	4.0	100%	76.0	25.1	25.1	25.8	3,011	1,959	292	403	108	97	3,011	1,959	292	403	108	97	3,102	2,018	301	416	111	100	79	6,004	126,408	4	4	127,754
ANTI-SURFACE WARFARE / ANTI-SUBMARINE WARFARE TESTING																																			
Torpedo Explosive Testing	2	6	DDG		3	4.0	100%	24.0	0.0	0.0	24.0	0	0	0	0	0	0	0	0	0	0	0	0	2,560	1,292	188	509	67	60	187	4,488	94,490	3	3	95,497
Countermeasure Testing	3	6	DDG		2	2.0	100%	12.0	6.0	6.0	0.0	640	323	47	127	17	15	640	323	47	127	17	15	0	0	0	0	0	0	187	2,244	47,245	2	1	47,748
At-Sea Sonar Testing	24	96	SSN	Nuclear Carrie	4	2.0	100%	192.0	0.0	0.0	192.0																								
		24	CG		1	2.0	100%	48.0	0.0	0.0	48.0	0	0	0	0	0	0	0	0	0	0	0	0	5,508	3,131	368	1,610	165	149	184	8,832	185,949	6	5	187,929
		96	DDG		4	2.0	100%	192.0	0.0	0.0	192.0	0	0	0	0	0	0	0	0	0	0	0	0	20,481	10,337	1,505	4,074	538	484	187	35,904	755,923	25	21	763,973
SHIPBOARD PROTECTION SYSTEMS AND SWIMMER DEFENSE TESTING																																			
Pierside Integrated Swimmer Defense	1	1	FFG	Guided Missile	1	8.0	100%	8.0	8.0	0.0	0.0	960	625	93	129	34	31	0	0	0	0	0	0	0	0	0	0	0	0	79	632	13,306	0	0	13,448
NEW SHIP CONSTRUCTION																																			
ASW Mission Package Testing	37	37	LCS	Littoral Comba	1	60	1	2220	0	2220	0	0	0	0	0	0	0	266488.8	173404.2	25840.8	35697.6	9546	8591.4	0	0	0	0	0	0	79	175380	3692450.52	119.785	104.351	3731775.101
MCM Mission Package Testing	36	36	LCS	Littoral Comba	1	60	1	2160	0	2160	0	0	0	0	0	0	0	259286.4	168717.6	25142.4	34732.8	9288	8359.2	0	0	0	0	0	0	79	170640	3592654.56	116.547	101.531	3630916.314
ASUW Mission Package Testing	4	4	LCS	Littoral Comba	1	40	1	160	0	80	80	0	0	0	0	0	0	9603.2	6248.8	931.2	1286.4	344	309.6	9603.2	6248.8	931.2	1286.4	344	309.6	79	12640	266122.56	8.63312	7.5208	268956.764
OFFICE OF NAVAL RESEARCH																																			
North Pacific Acoustic Lab Philippine Sea 2018 19 Experiment (Deep Water)	1																																		
TOTAL TESTING EMISSIONS (lbs per year)									39	4,491	562	4,611	2,907	432	659	159	143	539,029	350,653	52,253	72,247	19,303	17,372	41,254	23,027	3,294	7,896	1,225	1,103		416,764	8,774,549	285	248	8,867,998
TOTAL TESTING EMISSIONS (tons per year)												2	1	0	0	0	0	270	175	26	36	10	9	21	12	2	4	1	1		416,764	4,387	0	0	4,434

Table D.5-11 Emissions from Aircraft During Training, No Action Alternative

Type of Training	OPERATIONAL INFORMATION - AIRCRAFT														EMISSIONS/YEAR (lb) BY JURISDICTION																		Greenhouse Gas Emissions (lb/year)			
		Aircraft			Time		Altitude		Distribution (%)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)									
	Training Ops (#)	Distribution	A/C Sorties (#)	Type	Ave Time on Range (hr)	Total Time on Range (hr)	Time < 3,000 ft (%)	Time < 3,000 ft (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Total Time 0-3 nm from shore	Total Time 3-12 nm from shore	Total Time >12 nm from shore	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO_2	N_2O	CH_4	CO_{2-e}
Amphibious Raid - Special Purpose Marine Air Ground Task Force	2	4	8.0	H-53	12.0	96.0	100%	96.0	100%	0%	0%	96.00	0.00	0.00	913	3463	64	171	947	852	0	0	0	0	0	0	0	0	0	0	0	0	1326848	43	37	1,340,979
		10	20.0	MV-22	12.0	240.0	100%	240.0	100%	0%	0%	240.00	0.00	0.00	5306	1059	922	108	478	431	0	0	0	0	0	0	0	0	0	0	0	0	1664504	54	47	1,682,231
		2	4.0	UH-1	12.0	48.0	100%	48.0	100%	0%	0%	48.00	0.00	0.00	87	122	4	10	109	98	0	0	0	0	0	0	0	0	0	0	0	0	80253	3	2	81,108
		4	8.0	AH-1	12.0	96.0	100%	96.0	100%	0%	0%	96.00	0.00	0.00	874	424	44	31	327	295	0	0	0	0	0	0	0	0	0	0	0	0	241353	8	7	243,924
		4	8.0	AV-8	12.0	96.0	0%	0.0	100%	0%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1783398	58	50	1,802,391
Urban Warfare Training	17	1	17	AH-1	28.0	476.0	100%	476.0	100%	0%	0%	476.00	0.00	0.00	4333	2103	220	155	1623	1461	0	0	0	0	0	0	0	0	0	0	0	0	1196709	39	34	1,209,454
		1	17	UH-1	28.0	476.0	100%	476.0	100%	0%	0%	476.00	0.00	0.00	859	1213	44	103	1080	972	0	0	0	0	0	0	0	0	0	0	0	0	795841	26	22	804,317
		1	17	MV-22	28.0	476.0	100%	476.0	100%	0%	0%	476.00	0.00	0.00	10524	2100	1829	213	949	854	0	0	0	0	0	0	0	0	0	0	0	0	3301267	107	93	3,336,426
		1	17	H-53	28.0	476.0	100%	476.0	100%	0%	0%	476.00	0.00	0.00	4526	17169	319	850	4696	4226	0	0	0	0	0	0	0	0	0	0	0	0	6578954	213	186	6,649,020
		1	17	MH-53	8.0	136.0	100%	136.0	100%	0%	0%	136.00	0.00	0.00	1293	4905	91	243	1342	1208	0	0	0	0	0	0	0	0	0	0	0	0	1879701	61	53	1,899,720
		1	17	H-60	8.0	136.0	100%	136.0	100%	0%	0%	136.00	0.00	0.00	1020	1044	90	65	685	617	0	0	0	0	0	0	0	0	0	0	0	0	505296	16	14	510,677
Non-Combatant Evacuation Operation	2	10	20	MV-22	20.0	400.0	100%	400.0	100%	0%	0%	400.00	0.00	0.00	8844	1765	1537	179	797	718	0	0	0	0	0	0	0	0	0	0	0	0	2774174	90	78	2,803,719
		4	8	H-53	20.0	160.0	100%	160.0	100%	0%	0%	160.00	0.00	0.00	1521	5771	107	286	1578	1421	0	0	0	0	0	0	0	0	0	0	0	0	2211413	72	62	2,234,965
		2	4	UH-1	20.0	80.0	100%	80.0	100%	0%	0%	80.00	0.00	0.00	144	204	7	17	181	163	0	0	0	0	0	0	0	0	0	0	0	0	133755	4	4	135,179
		4	8	AH-1	20.0	160.0	100%	160.0	100%	0%	0%	160.00	0.00	0.00	1456	707	74	52	546	491	0	0	0	0	0	0	0	0	0	0	0	0	402255	13	11	406,539
		4	8	AV-8	20.0	160.0	0%	0.0	100%	0%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2972329	96	84	3,003,985
Humanitarian Assistance/ Disaster Relief Operations	2	10	20	MV-22	20.0	400.0	100%	400.0	100%	0%	0%	400.00	0.00	0.00	8844	1765	1537	179	797	718	0	0	0	0	0	0	0	0	0	0	0	0	2774174	90	78	2,803,719
		4	8	H-53	20.0	160.0	100%	160.0	100%	0%	0%	160.00	0.00	0.00	1521	5771	107	286	1578	1421	0	0	0	0	0	0	0	0	0	0	0	0	2211413	72	62	2,234,965
		2	4	UH-1	20.0	80.0	100%	80.0	100%	0%	0%	80.00	0.00	0.00	144	204	7	17	181	163	0	0	0	0	0	0	0	0	0	0	0	0	133755	4	4	135,179
		4	8	AH-1	20.0	160.0	100%	160.0	100%	0%	0%	160.00	0.00	0.00	1456	707	74	52	546	491	0	0	0	0	0	0	0	0	0	0	0	0	402255	13	11	406,539
		4	8	AV-8	20.0	160.0	0%	0.0	100%	0%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2972329	96	84	3,003,985
Unmanned Aerial Vehicle - Intelligence, Surveillance, and Reconnaissance	0	1	0.0	MQ-4C	4.0	0.0	100%	0.0	100%	0%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANTI-SURFACE WARFARE																																				
Gunnery Exercise, A-S (Small Caliber) - Ship	220	0.25	55	FA-18E/F	2.0	110.0	10%	11.0	0%	0%	100%	0.00	0.00	11.00	0	0	0	0	0	0	0	0	0	0	0	0	82	1677	14	45	746	671	3520910	114	100	3,558,408
		0.75	165	SH-60B	2.0	330.0	100%	330.0	0%	0%	100%	0.00	0.00	330.00	0	0	0	0	0	0	0	0	0	0	0	0	2475	2534	218	158	1663	1497	1226086	40	35	1,239,144
Gunnery Exercise, A-S (Medium Caliber) - Ship	155	0.25	38.75	FA-18E/F	2.0	77.5	10%	7.8	0%	0%	100%	0.00	0.00	7.75	0	0	0	0	0	0	0	0	0	0	0	0	58	1182	10	32	526	473	2480641	80	70	2,507,060
		0.75	116.25	SH-60B	2.0	232.5	100%	232.5	0%	0%	100%	0.00	0.00	232.50	0	0	0	0	0	0	0	0	0	0	0	0	1744	1786	153	112	1172	1055	863833	28	24	873,033
Missile Exercise (A-S) - Rocket	0	0.33	0	FA-18E/F	2.0	0.0	10%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0.66	0	SH-60B	2.0	0.0	100%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Missile Exercise (A-S)	2	0.5	1	FA-18E/F	2.0	2.0	10%	0.2	0%	0%	100%	0.00	0.00	0.20	0	0	0	0	0	0	0	0	0	0	0	0	1	30	0	1	14	12	64017	2	2	64,698
		0.5	1	SH-60B	2.0	2.0	100%	2.0	0%	0%	100%	0.00	0.00	2.00	0	0	0	0	0	0	0	0	0	0	0	0	15	15	1	1	10	9	7431	0	0	7,510
Laser Targeting	60	0.5	30	FA-18E/F	1.0	30.0	10%	3.0	0%	0%	100%	0.00	0.00	3.00	0	0	0	0	0	0	0	0	0	0	0	0	22	457	4	12	203	183	960248	31	27	970,475
		0.5	30	SH-60B	1.0	30.0	100%	30.0	0%	0%	100%	0.00	0.00	30.00	0	0	0	0	0	0	0	0	0	0	0	0	225	230	20	14	151	136	111462	4	3	112,649

Table D.5-11 Emissions from Aircraft During Training, No Action Alternative

Type of Training	OPERATIONAL INFORMATION - AIRCRAFT														EMISSIONS/YEAR (lb) BY JURISDICTION																		Greenhouse Gas Emissions (lb/year)			
		Aircraft			Time		Altitude		Distribution (%)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)									
	Training Ops (#)	Distribution	A/C Sorties (#)	Type	Ave Time on Range (hr)	Total Time on Range (hr)	Time < 3,000 ft (%)	Time < 3,000 ft (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Total Time 0-3 nm from shore	Total Time 3-12 nm from shore	Total Time >12 nm from shore	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO_2	N_2O	CH_4	CO_{2-e}
Bombing Exercise (A-S)	28	0.5	14	FA-18E/F	1.0	14.0	10%	1.4	0%	0%	100%	0.00	0.00	1.40	0	0	0	0	0	0	0	0	0	0	0	0	10	213	2	6	95	85	448116	15	13	452,888
		0.5	14	P-3	1.0	14.0	10%	1.4	0%	0%	100%	0.00	0.00	1.40	0	0	0	0	0	0	0	0	0	0	0	0	12	57	3	3	27	24	208063	7	6	210,279
Torpedo Exercise (Submarine to Surface)	0																																			
Missile Exercise (S-S)	0																																			
Gunnery Exercise (S-S)-Ship, Large Caliber	12	0	0																																	
Gunnery Exercise (S-S)-Ship, Medium caliber	5	0	0																																	
Sinking Exercise (SINKEX)	2	2	4	FA-18E/F	8.0	32.0	10%	3.2	0%	0%	100%	0.00	0.00	3.20	0	0	0	0	0	0	0	0	0	0	0	0	24	488	4	13	217	195	1024265	33	29	1,035,173
		1	2	P-3	8.0	16.0	10%	1.6	0%	0%	100%	0.00	0.00	1.60	0	0	0	0	0	0	0	0	0	0	0	0	14	65	3	3	30	27	237786	8	7	240,319
		1	2	SH-60B	8.0	16.0	100%	16.0	0%	0%	100%	0.00	0.00	16.00	0	0	0	0	0	0	0	0	0	0	0	0	120	123	11	8	81	73	59447	2	2	60,080
Gunnery Exercise (S-S) Boat – Medium-caliber	0																																			
Gunnery Exercise (S-S) Small-caliber	32																																			
Maritime Security Operations (MSO)	6	1	6	SH-60B	4.0	24.0	100%	24.0	100%	0%	0%	24.00	0.00	0.00	180	184	16	12	121	109	0	0	0	0	0	0	0	0	0	0	0	0	89170	3	3	90,120
ANTI-SUBMARINE WARFARE																																				
Tracking Exercise-Helo	18	3	54	SH-60B	4.0	216.0	100%	216.0	0%	100%	0%	0.00	216.00	0.00	0	0	0	0	0	0	1620	1659	143	104	1089	980	0	0	0	0	0	0	802529	26	23	811,076
Torpedo Exercise-Helo	4	3	12	SH-60B	4.0	48.0	100%	48.0	0%	100%	0%	0.00	48.00	0.00	0	0	0	0	0	0	360	369	32	23	242	218	0	0	0	0	0	0	178340	6	5	180,239
Tracking Exercise-Maritime Patrol Advanced Extended Echo Ranging Sonobuoys	8	1	8	P-3	6.0	48.0	75%	36.0	0%	100%	0%	0.00	36.00	0.00	0	0	0	0	0	0	314	1457	71	69	686	617	0	0	0	0	0	0	713359	23	20	720,956
Tracking Exercise - Maritime Patrol Aircraft	8	1	8	P-3	6.0	48.0	75%	36.0	0%	100%	0%	0.00	36.00	0.00	0	0	0	0	0	0	314	1457	71	69	686	617	0	0	0	0	0	0	713359	23	20	720,956
Torpedo Exercise-Maritime Patrol Aircraft	4	1	4	P-3	6.0	24.0	75%	18.0	0%	100%	0%	0.00	18.00	0.00	0	0	0	0	0	0	157	728	35	35	343	309	0	0	0	0	0	0	356680	12	10	360,478
Tracking Exercise –Surface	30																																			
Torpedo Exercise-Surface	3																																			
Tracking Exercise-Submarine	10																																			
Torpedo Exercise – Submarine	10																																			
MAJOR TRAINING EVENTS																																				
Joint Expeditionary Exercise	1	48	48	FA-18E/F	8.0	384.0	10%	38.4	0%	100%	0%	0.00	38.40	0.00	0	0	0	0	0	0	286	5855	48	159	2604	2344	0	0	0	0	0	0	12291177	399	347	12,422,078
		4	4	EA-6B	8.0	32.0	10%	3.2	0%	100%	0%	0.00	3.20	0.00	0	0	0	0	0	0	163	117	22	8	248	223	0	0	0	0	0	0	633106	21	18	639,849
		4	4	E-2	8.0	32.0	10%	3.2	0%	100%	0%	0.00	3.20	0.00	0	0	0	0	0	0	15	57	3	3	28	25	0	0	0	0	0	0	217971	7	6	220,292
		3	3	P-3	8.0	24.0	10%	2.4	0%	100%	0%	0.00	2.40	0.00	0	0	0	0	0	0	21	97	5	5	46	41	0	0	0	0	0	0	356680	12	10	360,478

Table D.5-11 Emissions from Aircraft During Training, No Action Alternative

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - AIRCRAFT													EMISSIONS/YEAR (lb) BY JURISDICTION																		Greenhouse Gas Emissions (lb/year)			
		Aircraft			Time		Altitude		Distribution (%)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)									
		Distribution	A/C Sorties (#)	Type	Ave Time on Range (hr)	Total Time on Range (hr)	Time < 3,000 ft (%)	Time < 3,000 ft (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Total Time 0-3 nm from shore	Total Time 3-12 nm from shore	Total Time >12 nm from shore	CO	NOx	HC	SOx	PM	$PM_{2.5}$	CO	NOx	HC	SOx	PM	$PM_{2.5}$	CO	NOx	HC	SOx	PM	$PM_{2.5}$	CO_2	N_2O	CH_4	CO_{2-e}
		6	6	AV-8B	8.0	48.0	10%	4.8	0%	100%	0%	0.00	4.80	0.00	0	0	0	0	0	0	253	193	8	12	204	184	0	0	0	0	0	0	891699	29	25	901,195
		2	2	C-130	8.0	16.0	10%	1.6	0%	100%	0%	0.00	1.60	0.00	0	0	0	0	0	0	15	59	3	3	29	26	0	0	0	0	0	0	222925	7	6	225,299
		4	4	A-10	8.0	32.0	10%	3.2	0%	100%	0%	0.00	3.20	0.00	0	0	0	0	0	0	39	86	4	4	26	23	0	0	0	0	0	0	599618	19	17	606,004
		1	1	E-3	8.0	8.0	10%	0.8	0%	100%	0%	0.00	0.80	0.00	0	0	0	0	0	0	54	221	8	10	7	6	0	0	0	0	0	0	3238254	105	92	3,272,741
		1	1	KC-135	8.0	8.0	10%	0.8	0%	100%	0%	0.00	0.80	0.00	0	0	0	0	0	0	25	247	1	7	2	2	0	0	0	0	0	0	2267689	74	64	2,291,840
		15	15	SH-60B	8.0	120.0	100%	120.0	0%	100%	0%	0.00	120.00	0.00	0	0	0	0	0	0	900	922	79	58	605	544	0	0	0	0	0	0	445849	14	13	450,598
		4	4	CH-53	8.0	32.0	100%	32.0	0%	100%	0%	0.00	32.00	0.00	0	0	0	0	0	0	304	1154	21	57	316	284	0	0	0	0	0	0	442283	14	12	446,993
		12	12	CH-46	8.0	96.0	100%	96.0	0%	100%	0%	0.00	96.00	0.00	0	0	0	0	0	0	1963	475	304	46	205	185	0	0	0	0	0	0	356680	12	10	360,478
		4	4	AH-1	8.0	32.0	100%	32.0	0%	100%	0%	0.00	32.00	0.00	0	0	0	0	0	0	291	141	15	10	109	98	0	0	0	0	0	0	80451	3	2	81,308
		2	2	UH-1	8.0	16.0	100%	16.0	0%	100%	0%	0.00	16.00	0.00	0	0	0	0	0	0	29	41	1	3	36	33	0	0	0	0	0	0	26751	1	1	27,036
		10	10	MV-22	8.0	80.0	100%	80.0	0%	100%	0%	0.00	80.00	0.00	0	0	0	0	0	0	1769	353	307	36	159	144	0	0	0	0	0	0	554835	18	16	560,744
Joint Multi-Strike Group Exercise	1	144	144	FA-18E/F	8.0	1152.0	10%	115.2	0%	0%	100%	0.00	0.00	115.20	0	0	0	0	0	0	0	0	0	0	0	0	857	17566	143	476	7813	7031	36873530	1196	1042	37,266,233
		12	12	EA-6B	8.0	96.0	10%	9.6	0%	0%	100%	0.00	0.00	9.60	0	0	0	0	0	0	0	0	0	0	0	0	490	350	67	25	743	669	1899318	62	54	1,919,546
		12	12	E-2	8.0	96.0	10%	9.6	0%	0%	100%	0.00	0.00	9.60	0	0	0	0	0	0	0	0	0	0	0	0	46	170	10	8	84	75	653912	21	18	660,877
		5	5	P-3	8.0	40.0	10%	4.0	0%	0%	100%	0.00	0.00	4.00	0	0	0	0	0	0	0	0	0	0	0	0	35	162	8	8	76	69	594466	19	17	600,797
		1	1	E-3	8.0	8.0	10%	0.8	0%	0%	100%	0.00	0.00	0.80	0	0	0	0	0	0	0	0	0	0	0	0	54	221	8	10	7	6	3238254	105	92	3,272,741
		2	2	KC-135	8.0	16.0	10%	1.6	0%	0%	100%	0.00	0.00	1.60	0	0	0	0	0	0	0	0	0	0	0	0	49	494	1	15	5	4	4535378	147	128	4,583,680
		6	6	B-1B	8.0	48.0	10%	4.8	0%	0%	100%	0.00	0.00	4.80	0	0	0	0	0	0	0	0	0	0	0	0	27	418	4	13	4	4	3947253	128	112	3,989,292
		24	24	F-15	8.0	192.0	10%	19.2	0%	0%	100%	0.00	0.00	19.20	0	0	0	0	0	0	0	0	0	0	0	0	431	5558	77	48	970	873	3683311	119	104	3,722,538
		45	45	SH-60B	8.0	360.0	100%	360.0	0%	0%	100%	0.00	0.00	360.00	0	0	0	0	0	0	0	0	0	0	0	0	2700	2765	238	173	1814	1633	1337548	43	38	1,351,793
Fleet Strike Group Exercise	0	48	0	FA-18E/F	8.0	0.0	10%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		4	0	EA-6B	8.0	0.0	10%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		4	0	E-2	8.0	0.0	10%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		3	0	P-3	8.0	0.0	10%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		6	0	AV-8B	8.0	0.0	10%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		1	0	E-3	8.0	0.0	10%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		1	0	KC-135	8.0	0.0	10%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		24	0	F-15	8.0	0.0	10%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		15	0	SH-60B	8.0	0.0	100%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		4	0	CH-53	8.0	0.0	100%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		12	0	CH-46	8.0	0.0	100%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		4	0	AH-1	8.0	0.0	100%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		2	0	UH-1	8.0	0.0	100%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		10	0	MV-22	8.0	0.0	100%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Integrated Anti-Submarine Warfare Exercise	0	48	0	FA-18E/F	8.0	0.0	10%	0.0	0%	100%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		4	0	EA-6B	8.0	0.0	10%	0.0	0%	100%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		4	0	E-2	8.0	0.0	10%	0.0	0%	100%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		3	0	P-3	8.0	0.0	10%	0.0	0%	100%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		15	0	SH-60B	8.0	0.0	100%	0.0	0%	100%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table D.5-11 Emissions from Aircraft During Training, No Action Alternative

Type of Training	OPERATIONAL INFORMATION - AIRCRAFT														EMISSIONS/YEAR (lb) BY JURISDICTION																		Greenhouse Gas Emissions (lb/year)			
		Aircraft			Time		Altitude		Distribution (%)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)									
	Training Ops (#)	Distribution	A/C Sorties (#)	Type	Ave Time on Range (hr)	Total Time on Range (hr)	Time < 3,000 ft (%)	Time < 3,000 ft (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Total Time 0-3 nm from shore	Total Time 3-12 nm from shore	Total Time >12 nm from shore	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO_2	N_2O	CH_4	CO_{2-e}
Ship Squadron Anti-Submarine Warfare Exercise	0																																			
Maritime Homeland Defense / Security Mine Countermeasures	0																																			
Marine Air Ground Task Force Exercise (Amphibious)	4	1	4	C-130	8.0	32.0	10%	3.2	50%	50%	0%	1.60	1.60	0.00	15	59	3	3	29	26	15	59	3	3	29	26	0	0	0	0	0	0	445849	14	13	450,598
		2	8	SH-60B	8.0	64.0	100%	64.0	50%	50%	0%	32.00	32.00	0.00	240	246	21	15	161	145	240	246	21	15	161	145	0	0	0	0	0	0	237786	8	7	240,319
		4	16	CH-53	8.0	128.0	100%	128.0	50%	50%	0%	64.00	64.00	0.00	609	2308	43	114	631	568	609	2308	43	114	631	568	0	0	0	0	0	0	1769130	57	50	1,787,972
		12	48	CH-46	8.0	384.0	100%	384.0	50%	50%	0%	192.00	192.00	0.00	3926	949	608	92	410	369	3926	949	608	92	410	369	0	0	0	0	0	0	1426718	46	40	1,441,913
		4	16	AH-1	8.0	128.0	100%	128.0	50%	50%	0%	64.00	64.00	0.00	583	283	30	21	218	196	583	283	30	21	218	196	0	0	0	0	0	0	321804	10	9	325,231
		2	8	UH-1	8.0	64.0	100%	64.0	50%	50%	0%	32.00	32.00	0.00	58	82	3	7	73	65	58	82	3	7	73	65	0	0	0	0	0	0	107004	3	3	108,143
		10	40	MV-22	8.0	320.0	100%	320.0	50%	50%	0%	160.00	160.00	0.00	3537	706	615	72	319	287	3537	706	615	72	319	287	0	0	0	0	0	0	2219339	72	63	2,242,975
Special Purpose Marine Air Ground Task Force Exercise	2	1	2	C-130	8.0	16.0	10%	1.6	50%	50%	0%	0.80	0.80	0.00	7	29	2	1	14	13	7	29	2	1	14	13	0	0	0	0	0	0	222925	7	6	225,299
		4	8	CH-53	8.0	64.0	100%	64.0	50%	50%	0%	32.00	32.00	0.00	304	1154	21	57	316	284	304	1154	21	57	316	284	0	0	0	0	0	0	884565	29	25	893,986
		12	24	CH-46	8.0	192.0	100%	192.0	50%	50%	0%	96.00	96.00	0.00	1963	475	304	46	205	185	1963	475	304	46	205	185	0	0	0	0	0	0	713359	23	20	720,956
		4	8	AH-1	8.0	64.0	100%	64.0	50%	50%	0%	32.00	32.00	0.00	291	141	15	10	109	98	291	141	15	10	109	98	0	0	0	0	0	0	160902	5	5	162,616
		2	4	UH-1	8.0	32.0	100%	32.0	50%	50%	0%	16.00	16.00	0.00	29	41	1	3	36	33	29	41	1	3	36	33	0	0	0	0	0	0	53502	2	2	54,072
		10	20	MV-22	8.0	160.0	100%	160.0	50%	50%	0%	80.00	80.00	0.00	1769	353	307	36	159	144	1769	353	307	36	159	144	0	0	0	0	0	0	1109670	36	31	1,121,488
Urban Warfare Exercise	5	1	5	C-130	8.0	40.0	10%	4.0	100%	0%	0%	4.00	0.00	0.00	37	147	8	7	71	64	0	0	0	0	0	0	0	0	0	0	0	0	557312	18	16	563,247
		4	20	CH-53	8.0	160.0	100%	160.0	100%	0%	0%	160.00	0.00	0.00	1521	5771	107	286	1578	1421	0	0	0	0	0	0	0	0	0	0	0	0	2211413	72	62	2,234,965
		12	60	CH-46	8.0	480.0	100%	480.0	100%	0%	0%	480.00	0.00	0.00	9815	2373	1521	230	1025	923	0	0	0	0	0	0	0	0	0	0	0	0	1783398	58	50	1,802,391
		4	20	AH-1	8.0	160.0	100%	160.0	100%	0%	0%	160.00	0.00	0.00	1456	707	74	52	546	491	0	0	0	0	0	0	0	0	0	0	0	0	402255	13	11	406,539
		2	10	UH-1	8.0	80.0	100%	80.0	100%	0%	0%	80.00	0.00	0.00	144	204	7	17	181	163	0	0	0	0	0	0	0	0	0	0	0	0	133755	4	4	135,179
		10	50	MV-22	8.0	400.0	100%	400.0	100%	0%	0%	400.00	0.00	0.00	8844	1765	1537	179	797	718	0	0	0	0	0	0	0	0	0	0	0	0	2774174	90	78	2,803,719
ELECTRONIC WARFARE																																				
Electronic Warfare Operations (EW Ops)	72	1	72	FA-18E/F	2.0	144.0	0%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4609191	150	130	4,658,279
Counter Targeting Flare E	546	0.9	491.4	F-15	3.0	1474.2	0%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28280919	917	799	28,582,111
		0.06	32.76	FA-18E/F	3.0	98.3	0%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3145773	102	89	3,179,275
		0.04	21.84	SH-60B	3.0	65.5	100%	65.5	0%	0%	100%	0.00	0.00	65.52	0	0	0	0	0	0	0	0	0	0	0	0	491	503	43	31	330	297	243434	8	7	246,026
Counter Targeting Chaff E	16																																			
Counter Targeting Chaff Exercise (CHAFFEX) - Aircraft	546	0.9	491.4	F-15	3.0	1474.2	0%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28280919	917	799	28,582,111
		0.06	32.76	FA-18E/F	3.0	98.3	0%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3145773	102	89	3,179,275
		0.04	21.84	SH-60B	3.0	65.5	100%	65.5	0%	0%	100%	0.00	0.00	65.52	0	0	0	0	0	0	0	0	0	0	0	0	491	503	43	31	330	297	243434	8	7	246,026
MINE WARFARE																																				
Submarine Mine Exercise	0																																			

Table D.5-11 Emissions from Aircraft During Training, No Action Alternative

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - AIRCRAFT													EMISSIONS/YEAR (lb) BY JURISDICTION																		Greenhouse Gas Emissions (lb/year)			
		Aircraft			Time		Altitude		Distribution (%)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)									
		Distribution	A/C Sorties (#)	Type	Ave Time on Range (hr)	Total Time on Range (hr)	Time < 3,000 ft (%)	Time < 3,000 ft (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Total Time 0-3 nm from shore	Total Time 3-12 nm from shore	Total Time >12 nm from shore	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO_2	N_2O	CH_4	CO_{2-e}
Mine Countermeasure Exercise – Sonar (AQS-20, LCS)	0																																			
Mine Countermeasure Exercise – Surface (SMCMEX) Sonar (SQQ-32, MCM)	0																																			
Mine Neutralization – Remotely Operated Vehicle Sonar (AQS-235[AQS-20], SLQ-48)	0																																			
Mine Laying – Aircraft	3	0.5	2	FA-18E/F	0.5	0.8	0%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24006	1	1	24,262
		0.5	2	P-3	1.0	1.5	0%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22292	1	1	22,530
Mine Neutralization – Explosive Ordnance Disposal	20																																			
Limpet Mine Neutralization System/Shock Wave Generator	0																																			
Mine Countermeasure – Towed Mine Detection	0																																			
NAVAL SPECIAL WARFARE																																				
Personnel I&E	150	4	600	H-60	8.0	4800.0	100%	4800.0	100%	0%	0%	4800.00	0.00	0.00	36000	36864	3168	2304	24192	21773	0	0	0	0	0	0	0	0	0	0	0	0	17833976	579	504	18,023,908
		2	300	MV-22	8.0	2400.0	100%	2400.0	100%	0%	0%	2400.00	0.00	0.00	53061	10591	9220	1075	4785	4306	0	0	0	0	0	0	0	0	0	0	0	0	16645045	540	470	16,822,314
Parachute Insertion	12	1	12	C-130	4.0	48.0	100%	48.0	100%	0%	0%	48.00	0.00	0.00	447	1763	102	86	858	772	0	0	0	0	0	0	0	0	0	0	0	0	668774	22	19	675,897
		1	12	CH-46	4.0	48.0	100%	48.0	100%	0%	0%	48.00	0.00	0.00	982	237	152	23	103	92	0	0	0	0	0	0	0	0	0	0	0	0	178340	6	5	180,239
		1	12	H-60	4.0	48.0	100%	48.0	100%	0%	0%	48.00	0.00	0.00	360	369	32	23	242	218	0	0	0	0	0	0	0	0	0	0	0	0	178340	6	5	180,239
Embassy Reinforcement	50	1	50	SH-60B	4.0	200.0	100%	200.0	100%	0%	0%	200.00	0.00	0.00	1500	1536	132	96	1008	907	0	0	0	0	0	0	0	0	0	0	0	0	743082	24	21	750,996
		1	50	AV-8B	4.0	200.0	100%	200.0	100%	0%	0%	200.00	0.00	0.00	10560	8052	336	480	8520	7668	0	0	0	0	0	0	0	0	0	0	0	0	3715412	121	105	3,754,981
Direct Action (Combat Close Quarters)	40																																			
Direct Action (Breaching)	40																																			
Direct Action (TAC-P)	3																																			
Underwater Demolition Qualifications	30																																			
Intelligence, Surveillance, Reconnaissance	16	1	16.0	MQ-4C	4.0	64.0	100%	64.0	0%	50%	50%	0.00	32.00	32.00	0	0	0	0	0	0	67	1243	21	113	20	18	67	1243	21	113	20	18	501729	16	14	507,073
Urban Warfare Training	8																																			
Underwater Survey	6	1	6	SH-60B	2.0	12.0	100%	12.0	100%	0%	0%	12.00	0.00	0.00	90	92	8	6	60	54	0	0	0	0	0	0	0	0	0	0	0	0	44585	1	1	45,060
OTHER																																				
Surface Ship Sonar Maintenance	0																																			
Submarine Sonar Maintenance	0																																			

Table D.5-11 Emissions from Aircraft During Training, No Action Alternative

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - AIRCRAFT													EMISSIONS/YEAR (lb) BY JURISDICTION																		Greenhouse Gas Emissions (lb/year)			
		Aircraft			Time		Altitude		Distribution (%)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)									
		Distribution	A/C Sorties (#)	Type	Ave Time on Range (hr)	Total Time on Range (hr)	Time < 3,000 ft (%)	Time < 3,000 ft (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Total Time 0-3 nm from shore	Total Time 3-12 nm from shore	Total Time >12 nm from shore	CO	NOx	HC	SOx	PM	$PM_{2.5}$	CO	NOx	HC	SOx	PM	$PM_{2.5}$	CO	NOx	HC	SOx	PM	$PM_{2.5}$	CO_2	N_2O	CH_4	CO_{2-e}
Small Boat Attack	0																																			
Search and Rescue at Se	0																																			
Submarine Navigation	0																																			
Precision Anchoring	0																																			
Maneuver (Convoy, Land Navigation)	16																																			
Water Purification	0																																			
Field Training Exercise	100																																			
Force Protection	75																																			
Anti-Terrorism	80	1	80	SH-60B	2.0	160.0	100%	160.0	100%	0%	0%	160.00	0.00	0.00	1200	1229	106	77	806	726	0	0	0	0	0	0	0	0	0	0	0	0	594466	19	17	600,797
Seize Airfield	12																																			
Airfield Expeditionary	12																																			
Unmanned Aerial Vehicle Operation	0																																			
Land Demolitions (Improvised Explosive Device) Discovery / Disposal	120																																			
Land Demolitions (Unexploded Ordnance) Discovery / Disposal	200																																			
TOTAL TRAINING EMISSIONS (LBS/YEAR)															214,984	144,751	28,708	9,431	71,808	64,628	22,544	24,096	3,203	1,332	10,575	9,518	12,781	72,715	1,430	2,302	32,342	29,108	360,075,875	11,681	10,176	363,910,681
TOTAL TRAINING EMISSIONS (TONS/YEAR)															107	72	14	5	36	32	11	12	2	1	5	5	6	36	1	1	16	15	180,038	6	5	181,955

Table D.5-12 Emissions from Aircraft During Testing, No Action Alternative

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - AIRCRAFT													EMISSIONS/YEAR (lb) BY JURISDICTION																		Greenhouse Gas Emissions (lb/year)			
		Aircraft			Time		Altitude		Distribution (%)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)									
		Distribution	A/C Sorties (#)	Type	Ave Time on Range (hr)	Total Time on Range (hr)	Time < 3,000 ft (%)	Time < 3,000 ft (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Total Time 0-3 nm from shore	Total Time 3-12 nm from shore	Total Time >12 nm from shore	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO_2	N_2O	CH_4	CO_{2-e}
ANTI-SURFACE WARFARE																																				
Air to Surface Missile Test	0	1	0	P-3	4	0	75%	0	0%	0%	100%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANTI-SUBMARINE WARFARE																																				
Anti-submarine Warfare Tracking Test - MPA	0	1	0	P-3	6.0	0.0	75%	0.0	0%	100%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Anti-submarine Warfare Torpedo Test	0	0.33	0	SH-60	8.0	0.0	75%	0.0	0%	100%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0.33	0	MH-60	8.0	0.0	75%	0.0	0%	100%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0.33	0	P-3	8.0	0.0	75%	0.0	0%	100%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Broad Area Maritime Surveillance (BAMS) Testing	1	1	1	MQ-4C	1.0	1.0	100%	1.0	100%	0%	0%	1.00	0.00	0.00	2	39	1	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	7840	0	0	7,923
LIFECYCLE ACTIVITIES TESTING																																				
Ship Signature Testing	0																																			
ANTI-SURFACE WARFARE / ANTI-SUBMARINE WARFARE TESTING																																				
Torpedo Explosive Testing	0																																			
Countermeasure Testing	0																																			
At-Sea Sonar Testing	0																																			
SHIPBOARD PROTECTION SYSTEMS AND SWIMMER DEFENSE TESTING																																				
Pierside Integrated Swimmer Defense	0																																			
NEW SHIP CONSTRUCTION																																				
ASW Mission Package Testing	0																																			
MCM Mission Package Testing	0																																			
OFFICE OF NAVAL RESEARCH																																				
North Pacific Acoustic Lab Philippine Sea 2018-19 Experiment (Deep Water)	1																																			
TOTAL TESTING EMISSIONS (lbs per year)															2.1	38.84	0.66	3.54	0.61	0.549	0	0	0	0	0	0	0	0	0	0	0	0	7839.518824	0.2543171	0.22155	7923.009662
TOTAL TESTING EMISSIONS (tons per year)															0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.919759412	0.0001272	0.0001108	3.961504831

Table D.5-13 Emissions from Aircraft During Training, Alternative 1

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - AIRCRAFT													EMISSIONS/YEAR (lb) BY JURISDICTION																		Greenhouse Gas Emissions (lb/year)			
		Aircraft			Time		Altitude		Distribution (%)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)									
		Distribution	A/C Sorties (#)	Type	Ave Time on Range (hr)	Total Time on Range (hr)	Time < 3,000 ft (%)	Time < 3,000 ft (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Total Time 0-3 nm from Shore	Total Time 3-12 nm from Shore	Total Time >12 nm from Shore	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO_2	N_2O	CH_4	CO_{2-e}
		10	120	MV-22	24.0	2880.0	100%	2880.0	100%	0%	0%	2880.00	0.00	0.00	63673	12709	11064	1290	5742	5167	0	0	0	0	0	0	0	0	0	0	0	0	19974054	648	564	20,186,777
Amphibious Assault - Marine Air Ground Task Force	6	4	24.0	CH-53	18.0	432.0	100%	432.0	100%	0%	0%	432.00	0.00	0.00	4108	15582	289	771	4262	3836	0	0	0	0	0	0	0	0	0	0	0	0	5970815	194	169	6,034,404
		10	60.0	MV-22	18.0	1080.0	100%	1080.0	100%	0%	0%	1080.00	0.00	0.00	23878	4766	4149	484	2153	1938	0	0	0	0	0	0	0	0	0	0	0	0	7490270	243	212	7,570,041
		2	12.0	UH-1	18.0	216.0	100%	216.0	100%	0%	0%	216.00	0.00	0.00	390	551	20	47	490	441	0	0	0	0	0	0	0	0	0	0	0	0	361138	12	10	364,984
		4	24.0	AH-1	18.0	432.0	100%	432.0	100%	0%	0%	432.00	0.00	0.00	3932	1908	200	140	1473	1326	0	0	0	0	0	0	0	0	0	0	0	0	1086089	35	31	1,097,656
		4	24.0	AV-8	18.0	432.0	0%	0.0	100%	0%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8025289	260	227	8,110,759
Amphibious Raid - Special Purpose Marine Air Ground Task Force	6	4	24.0	H-53	12.0	288.0	100%	288.0	100%	0%	0%	288.00	0.00	0.00	2738	10388	193	514	2841	2557	0	0	0	0	0	0	0	0	0	0	0	0	3980544	129	112	4,022,936
		10	60.0	MV-22	12.0	720.0	100%	720.0	100%	0%	0%	720.00	0.00	0.00	15918	3177	2766	323	1435	1292	0	0	0	0	0	0	0	0	0	0	0	0	4993513	162	141	5,046,694
		2	12.0	UH-1	12.0	144.0	100%	144.0	100%	0%	0%	144.00	0.00	0.00	260	367	13	31	327	294	0	0	0	0	0	0	0	0	0	0	0	0	240759	8	7	243,323
		4	24.0	AH-1	12.0	288.0	100%	288.0	100%	0%	0%	288.00	0.00	0.00	2622	1272	133	94	982	884	0	0	0	0	0	0	0	0	0	0	0	0	724059	23	20	731,771
		4	24.0	AV-8	12.0	288.0	0%	0.0	100%	0%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5350193	174	151	5,407,172
Urban Warfare Training	36	1	36	AH-1	28.0	1008.0	100%	1008.0	100%	0%	0%	1008.00	0.00	0.00	9175	4453	467	327	3438	3094	0	0	0	0	0	0	0	0	0	0	0	0	2534208	82	72	2,561,197
		1	36	UH-1	28.0	1008.0	100%	1008.0	100%	0%	0%	1008.00	0.00	0.00	1818	2569	93	218	2288	2058	0	0	0	0	0	0	0	0	0	0	0	0	1685311	55	48	1,703,259
		1	36	MV-22	28.0	1008.0	100%	1008.0	100%	0%	0%	1008.00	0.00	0.00	22286	4448	3872	452	2010	1809	0	0	0	0	0	0	0	0	0	0	0	0	6990919	227	198	7,065,372
		1	36	H-53	28.0	1008.0	100%	1008.0	100%	0%	0%	1008.00	0.00	0.00	9584	36358	675	1800	9944	8950	0	0	0	0	0	0	0	0	0	0	0	0	13931902	452	394	14,080,277
		1	36	MH-53	8.0	288.0	100%	288.0	100%	0%	0%	288.00	0.00	0.00	2738	10388	193	514	2841	2557	0	0	0	0	0	0	0	0	0	0	0	0	3980544	129	112	4,022,936
		1	36	H-60	8.0	288.0	100%	288.0	100%	0%	0%	288.00	0.00	0.00	2160	2212	190	138	1452	1306	0	0	0	0	0	0	0	0	0	0	0	0	1070039	35	30	1,081,434
Non-Combatant Evacuation Operation	5	10	50	MV-22	20.0	1000.0	100%	1000.0	100%	0%	0%	1000.00	0.00	0.00	22109	4413	3842	448	1994	1794	0	0	0	0	0	0	0	0	0	0	0	0	6935435	225	196	7,009,298
		4	20	H-53	20.0	400.0	100%	400.0	100%	0%	0%	400.00	0.00	0.00	3803	14428	268	714	3946	3552	0	0	0	0	0	0	0	0	0	0	0	0	5528533	179	156	5,587,412
		2	10	UH-1	20.0	200.0	100%	200.0	100%	0%	0%	200.00	0.00	0.00	361	510	18	43	454	408	0	0	0	0	0	0	0	0	0	0	0	0	334387	11	9	337,948
		4	20	AH-1	20.0	400.0	100%	400.0	100%	0%	0%	400.00	0.00	0.00	3641	1767	185	130	1364	1228	0	0	0	0	0	0	0	0	0	0	0	0	1005638	33	28	1,016,348
		4	20	AV-8	20.0	400.0	0%	0.0	100%	0%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7430824	241	210	7,509,962
Humanitarian Assistance/ Disaster Relief Operations	5	10	50	MV-22	20.0	1000.0	100%	1000.0	100%	0%	0%	1000.00	0.00	0.00	22109	4413	3842	448	1994	1794	0	0	0	0	0	0	0	0	0	0	0	0	6935435	225	196	7,009,298
		4	20	H-53	20.0	400.0	100%	400.0	100%	0%	0%	400.00	0.00	0.00	3803	14428	268	714	3946	3552	0	0	0	0	0	0	0	0	0	0	0	0	5528533	179	156	5,587,412
		2	10	UH-1	20.0	200.0	100%	200.0	100%	0%	0%	200.00	0.00	0.00	361	510	18	43	454	408	0	0	0	0	0	0	0	0	0	0	0	0	334387	11	9	337,948
		4	20	AH-1	20.0	400.0	100%	400.0	100%	0%	0%	400.00	0.00	0.00	3641	1767	185	130	1364	1228	0	0	0	0	0	0	0	0	0	0	0	0	1005638	33	28	1,016,348
		4	20	AV-8	20.0	400.0	0%	0.0	100%	0%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7430824	241	210	7,509,962
Unmanned Aerial Vehicle - Intelligence, Surveillance, and Reconaissance	100	1	100.0	MQ-4C	4.0	400.0	100%	400.0	100%	0%	0%	400.00	0.00	0.00	840	15536	264	1416	244	220	0	0	0	0	0	0	0	0	0	0	0	0	3135808	102	89	3,169,204
ANTI-SURFACE WARFARE																																				
Gunnery Exercise, A-S (Small Caliber) - Ship	242	0.25	60.5	FA-18E/F	2.0	121.0	10%	12.1	0%	0%	100%	0.00	0.00	12.10	0	0	0	0	0	0	0	0	0	0	0	0	90	1845	15	50	821	739	3873001	126	109	3,914,248
		0.75	181.5	SH-60B	2.0	363.0	100%	363.0	0%	0%	100%	0.00	0.00	363.00	0	0	0	0	0	0	0	0	0	0	0	0	2723	2788	240	174	1830	1647	1348694	44	38	1,363,058

Table D.5-13 Emissions from Aircraft During Training, Alternative 1

Type of Training	OPERATIONAL INFORMATION - AIRCRAFT														EMISSIONS/YEAR (lb) BY JURISDICTION																		Greenhouse Gas Emissions (lb/year)			
		Aircraft			Time		Altitude		Distribution (%)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)									
	Training Ops (#)	Distribution	A/C Sorties (#)	Type	Ave Time on Range (hr)	Total Time on Range (hr)	Time < 3,000 ft (%)	Time < 3,000 ft (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Total Time 0-3 nm from shore	Total Time 3-12 nm from shore	Total Time >12 nm from shore	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO_2	N_2O	CH_4	CO_{2-e}
Gunnery Exercise, A-S (Medium Caliber) - Ship	295	0.25	73.75	FA-18E/F	2.0	147.5	10%	14.8	0%	0%	100%	0.00	0.00	14.75	0	0	0	0	0	0	0	0	0	0	0	0	110	2249	18	61	1000	900	4721220	153	133	4,771,501
		0.75	221.25	SH-60B	2.0	442.5	100%	442.5	0%	0%	100%	0.00	0.00	442.50	0	0	0	0	0	0	0	0	0	0	0	0	3319	3398	292	212	2230	2007	1644070	53	46	1,661,579
Missile Exercise (A-S) - Rocket	3	0.33	0.99	FA-18E/F	2.0	2.0	10%	0.2	0%	0%	100%	0.00	0.00	0.20	0	0	0	0	0	0	0	0	0	0	0	0	1	30	0	1	13	12	63376	2	2	64,051
		0.66	1.98	SH-60B	2.0	4.0	100%	4.0	0%	0%	100%	0.00	0.00	3.96	0	0	0	0	0	0	0	0	0	0	0	0	30	30	3	2	20	18	14713	0	0	14,870
Missile Exercise (A-S)	20	0.5	10	FA-18E/F	2.0	20.0	10%	2.0	0%	0%	100%	0.00	0.00	2.00	0	0	0	0	0	0	0	0	0	0	0	0	15	305	2	8	136	122	640165	21	18	646,983
		0.5	10	SH-60B	2.0	20.0	100%	20.0	0%	0%	100%	0.00	0.00	20.00	0	0	0	0	0	0	0	0	0	0	0	0	150	154	13	10	101	91	74308	2	2	75,100
Laser Targeting	600	0.5	300	FA-18E/F	1.0	300.0	10%	30.0	0%	0%	100%	0.00	0.00	30.00	0	0	0	0	0	0	0	0	0	0	0	0	223	4575	37	124	2035	1831	9602482	312	271	9,704,748
		0.5	300	SH-60B	1.0	300.0	100%	300.0	0%	0%	100%	0.00	0.00	300.00	0	0	0	0	0	0	0	0	0	0	0	0	2250	2304	198	144	1512	1361	1114624	36	32	1,126,494
Bombing Exercise (A-S)	37	0.5	19	FA-18E/F	1.0	18.5	10%	1.9	0%	0%	100%	0.00	0.00	1.85	0	0	0	0	0	0	0	0	0	0	0	0	14	282	2	8	125	113	592153	19	17	598,459
		0.5	19	P-3	1.0	18.5	10%	1.9	0%	0%	100%	0.00	0.00	1.85	0	0	0	0	0	0	0	0	0	0	0	0	16	75	4	4	35	32	274940	9	8	277,869
Torpedo Exercise (Submarine to Surface)	5																																			
Missile Exercise (S-S)	12																																			
Gunnery Exercise (S-S)-Ship, Large Caliber	140																																			
Gunnery Exercise (S-S)-Ship, Medium caliber	100																																			
Sinking Exercise (SINKEX)	2	2	4	FA-18E/F	8.0	32.0	10%	3.2	0%	0%	100%	0.00	0.00	3.20	0	0	0	0	0	0	0	0	0	0	0	0	24	488	4	13	217	195	1024265	33	29	1,035,173
		1	2	P-3	8.0	16.0	10%	1.6	0%	0%	100%	0.00	0.00	1.60	0	0	0	0	0	0	0	0	0	0	0	0	14	65	3	3	30	27	237786	8	7	240,319
		1	2	SH-60B	8.0	16.0	100%	16.0	0%	0%	100%	0.00	0.00	16.00	0	0	0	0	0	0	0	0	0	0	0	0	120	123	11	8	81	73	59447	2	2	60,080
Gunnery Exercise (S-S) Boat – Medium-caliber	10																																			
Gunnery Exercise (S-S) Small-caliber	40																																			
Maritime Security Operations (MSO)	40	1	40	SH-60B	4.0	160.0	100%	160.0	100%	0%	0%	160.00	0.00	0.00	1200	1229	106	77	806	726	0	0	0	0	0	0	0	0	0	0	0	0	594466	19	17	600,797
ANTI-SUBMARINE WARFARE																																				
Tracking Exercise-Helo	62	3	186	SH-60B	4.0	744.0	100%	744.0	0%	100%	0%	0.00	744.00	0.00	0	0	0	0	0	0	5580	5714	491	357	3750	3375	0	0	0	0	0	0	2764266	90	78	2,793,706
Torpedo Exercise-Helo	4	3	12	SH-60B	4.0	48.0	100%	48.0	0%	100%	0%	0.00	48.00	0.00	0	0	0	0	0	0	360	369	32	23	242	218	0	0	0	0	0	0	176340	6	5	180,239
Tracking Exercise-Maritime Patrol Advanced Extended Echo Ranging Sonobuoys	11	1	11	P-3	6.0	66.0	75%	49.5	0%	100%	0%	0.00	49.50	0.00	0	0	0	0	0	0	432	2003	97	95	943	849	0	0	0	0	0	0	980869	32	28	991,315
Tracking Exercise - Maritime Patrol Aircraft	34	1	34	P-3	6.0	204.0	75%	153.0	0%	100%	0%	0.00	153.00	0.00	0	0	0	0	0	0	1337	6191	301	294	2916	2624	0	0	0	0	0	0	3031776	98	86	3,064,064
Torpedo Exercise-Maritime Patrol Aircraft	4	1	4	P-3	6.0	24.0	75%	18.0	0%	100%	0%	0.00	18.00	0.00	0	0	0	0	0	0	157	728	35	35	343	309	0	0	0	0	0	0	356680	12	10	360,478

Table D.5-13 Emissions from Aircraft During Training, Alternative 1

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - AIRCRAFT: Aircraft			Time		Altitude		Distribution (%)			Distribution (hr)			EMISSIONS/YEAR (lb) BY JURISDICTION: State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)						Greenhouse Gas Emissions (lb/year)			
		Distribution	A/C Sorties (#)	Type	Ave Time on Range (hr)	Total Time on Range (hr)	Time < 3,000 ft (%)	Time < 3,000 ft (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Total Time 0-3 nm from shore	Total Time 3-12 nm from shore	Total Time >12 nm from shore	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO_2	N_2O	CH_4	CO_{2-e}
Tracking Exercise –Surface	132																																		
Torpedo Exercise–Surface	3																																		
Tracking Exercise–Submarine	12																																		
Torpedo Exercise – Submarine	10																																		
MAJOR TRAINING EVENTS																																			
Joint Expeditionary Exercise	1	48	48	FA-18E/F	8.0	384.0	10%	38.4	0%	100%	0%	0.00	38.40	0.00	0	0	0	0	0	0	286	5855	48	159	2604	2344	0	0	0	0	0	0	12291177	399	347	12,422,078
		4	4	EA-6B	8.0	32.0	10%	3.2	0%	100%	0%	0.00	3.20	0.00	0	0	0	0	0	0	163	117	22	8	248	223	0	0	0	0	0	0	633106	21	18	639,849
		4	4	E-2	8.0	32.0	10%	3.2	0%	100%	0%	0.00	3.20	0.00	0	0	0	0	0	0	15	57	3	3	28	25	0	0	0	0	0	0	21797.1	7	6	220,292
		3	3	P-3	8.0	24.0	10%	2.4	0%	100%	0%	0.00	2.40	0.00	0	0	0	0	0	0	21	97	5	5	46	41	0	0	0	0	0	0	356680	12	10	360,478
		6	6	AV-8B	8.0	48.0	10%	4.8	0%	100%	0%	0.00	4.80	0.00	0	0	0	0	0	0	253	193	8	12	204	184	0	0	0	0	0	0	891699	29	25	901,195
		2	2	C-130	8.0	16.0	10%	1.6	0%	100%	0%	0.00	1.60	0.00	0	0	0	0	0	0	15	59	3	3	29	26	0	0	0	0	0	0	222925	7	6	225,299
		4	4	A-10	8.0	32.0	10%	3.2	0%	100%	0%	0.00	3.20	0.00	0	0	0	0	0	0	39	86	4	4	26	23	0	0	0	0	0	0	599618	19	17	606,004
		1	1	E-3	8.0	8.0	10%	0.8	0%	100%	0%	0.00	0.80	0.00	0	0	0	0	0	0	54	221	8	10	7	6	0	0	0	0	0	0	3238254	105	92	3,272,741
		1	1	KC-135	8.0	8.0	10%	0.8	0%	100%	0%	0.00	0.80	0.00	0	0	0	0	0	0	25	247	1	7	2	2	0	0	0	0	0	0	2267689	74	64	2,291,840
		15	15	SH-60B	8.0	120.0	100%	120.0	0%	100%	0%	0.00	120.00	0.00	0	0	0	0	0	0	900	922	79	58	605	544	0	0	0	0	0	0	445849	14	13	450,598
		4	4	CH-53	8.0	32.0	100%	32.0	0%	100%	0%	0.00	32.00	0.00	0	0	0	0	0	0	304	1154	21	57	316	284	0	0	0	0	0	0	442283	14	12	446,993
		12	12	CH-46	8.0	96.0	100%	96.0	0%	100%	0%	0.00	96.00	0.00	0	0	0	0	0	0	1963	475	304	46	205	185	0	0	0	0	0	0	356680	12	10	360,478
		4	4	AH-1	8.0	32.0	100%	32.0	0%	100%	0%	0.00	32.00	0.00	0	0	0	0	0	0	291	141	15	10	109	98	0	0	0	0	0	0	80451	3	2	81,308
		2	2	UH-1	8.0	16.0	100%	16.0	0%	100%	0%	0.00	16.00	0.00	0	0	0	0	0	0	29	41	1	3	36	33	0	0	0	0	0	0	26751	1	1	27,036
		10	10	MV-22	8.0	80.0	100%	80.0	0%	100%	0%	0.00	80.00	0.00	0	0	0	0	0	0	1769	353	307	36	159	144	0	0	0	0	0	0	554835	18	16	560,744
Joint Multi-Strike Group Exercise	1	144	144	FA-18E/F	8.0	1152.0	10%	115.2	0%	0%	100%	0.00	0.00	115.20	0	0	0	0	0	0	0	0	0	0	0	0	857	17566	143	476	7813	7031	36873530	1196	1042	37,266,233
		12	12	EA-6B	8.0	96.0	10%	9.6	0%	0%	100%	0.00	0.00	9.60	0	0	0	0	0	0	0	0	0	0	0	0	490	350	67	25	743	669	1899318	62	54	1,919,546
		12	12	E-2	8.0	96.0	10%	9.6	0%	0%	100%	0.00	0.00	9.60	0	0	0	0	0	0	0	0	0	0	0	0	46	170	10	8	84	75	653912	21	18	660,877
		5	5	P-3	8.0	40.0	10%	4.0	0%	0%	100%	0.00	0.00	4.00	0	0	0	0	0	0	0	0	0	0	0	0	35	162	8	8	76	69	594466	19	17	600,797
		1	1	E-3	8.0	8.0	10%	0.8	0%	0%	100%	0.00	0.00	0.80	0	0	0	0	0	0	0	0	0	0	0	0	54	221	8	10	7	6	3238254	105	92	3,272,741
		2	2	KC-135	8.0	16.0	10%	1.6	0%	0%	100%	0.00	0.00	1.60	0	0	0	0	0	0	0	0	0	0	0	0	49	494	1	15	5	4	4535378	147	128	4,583,680
		6	6	B-1B	8.0	48.0	10%	4.8	0%	0%	100%	0.00	0.00	4.80	0	0	0	0	0	0	0	0	0	0	0	0	27	418	4	13	4	4	3947253	128	112	3,989,292
		24	24	F-15	8.0	192.0	10%	19.2	0%	0%	100%	0.00	0.00	19.20	0	0	0	0	0	0	0	0	0	0	0	0	431	5558	77	48	970	873	3683311	119	104	3,722,538
		45	45	SH-60B	8.0	360.0	100%	360.0	0%	0%	100%	0.00	0.00	360.00	0	0	0	0	0	0	0	0	0	0	0	0	2700	2765	238	173	1814	1633	1337548	43	38	1,351,793
Fleet Strike Group Exercise	0	48	0	FA-18E/F	8.0	0.0	10%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		4	0	EA-6B	8.0	0.0	10%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		4	0	E-2	8.0	0.0	10%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		3	0	P-3	8.0	0.0	10%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		6	0	AV-8B	8.0	0.0	10%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		1	0	E-3	8.0	0.0	10%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		1	0	KC-135	8.0	0.0	10%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		24	0	F-15	8.0	0.0	10%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table D.5-13 Emissions from Aircraft During Training, Alternative 1

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - AIRCRAFT													EMISSIONS/YEAR (lb) BY JURISDICTION																		Greenhouse Gas Emissions (lb/year)			
		Aircraft			Time		Altitude		Distribution (%)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)									
		Distribution	A/C Sorties (#)	Type	Ave Time on Range (hr)	Total Time on Range (hr)	Time < 3,000 ft (%)	Time < 3,000 ft (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Total Time 0-3 nm from shore	Total Time 3-12 nm from shore	Total Time >12 nm from shore	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO_2	N_2O	CH_4	CO_{2-e}
		15	0	SH-60B	8.0	0.0	100%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		4	0	CH-53	8.0	0.0	100%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		12	0	CH-46	8.0	0.0	100%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		4	0	AH-1	8.0	0.0	100%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		2	0	UH-1	8.0	0.0	100%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		10	0	MV-22	8.0	0.0	100%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Integrated Anti-Submarine Warfare Exercise	0	48	0	FA-18E/F	8.0	0.0	10%	0.0	0%	100%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		4	0	EA-6B	8.0	0.0	10%	0.0	0%	100%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		4	0	E-2	8.0	0.0	10%	0.0	0%	100%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		3	0	P-3	8.0	0.0	10%	0.0	0%	100%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		15	0	SH-60B	8.0	0.0	100%	0.0	0%	100%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ship Squadron Anti-Submarine Warfare Exercise	1	3	3	P-3	40.0	120.0	10%	12.0	0%	100%	0%	0.00	12.00	0.00	0	0	0	0	0	0	105	486	24	23	229	206	0	0	0	0	0	0	1783398	58	50	1,802,391
		4	4	MH-60	40.0	160.0	75%	120.0	0%	100%	0%	0.00	120.00	0.00	0	0	0	0	0	0	900	922	79	58	605	544	0	0	0	0	0	0	594466	19	17	600,797
		4	4	SH-60H	40.0	160.0	100%	160.0	0%	100%	0%	0.00	160.00	0.00	0	0	0	0	0	0	1200	1229	106	77	806	726	0	0	0	0	0	0	594466	19	17	600,797
Maritime Homeland Defense / Security Mine Countermeasures	1																																			
Marine Air Ground Task Force Exercise (Amphibious)	4	1	4	C-130	8.0	32.0	10%	3.2	50%	50%	0%	1.60	1.60	0.00	15	59	3	3	29	26	15	59	3	3	29	26	0	0	0	0	0	0	445849	14	13	450,598
		2	8	SH-60B	8.0	64.0	100%	64.0	50%	50%	0%	32.00	32.00	0.00	240	246	21	15	161	145	240	246	21	15	161	145	0	0	0	0	0	0	237786	8	7	240,319
		4	16	CH-53	8.0	128.0	100%	128.0	50%	50%	0%	64.00	64.00	0.00	609	2308	43	114	631	568	609	2308	43	114	631	568	0	0	0	0	0	0	1769130	57	50	1,787,972
		12	48	CH-46	8.0	384.0	100%	384.0	50%	50%	0%	192.00	192.00	0.00	3926	949	608	92	410	369	3926	949	608	92	410	369	0	0	0	0	0	0	1426718	46	40	1,441,913
		4	16	AH-1	8.0	128.0	100%	128.0	50%	50%	0%	64.00	64.00	0.00	583	283	30	21	218	196	583	283	30	21	218	196	0	0	0	0	0	0	321804	10	9	325,231
		2	8	UH-1	8.0	64.0	100%	64.0	50%	50%	0%	32.00	32.00	0.00	58	82	3	7	73	65	58	82	3	7	73	65	0	0	0	0	0	0	107004	3	3	108,143
		10	40	MV-22	8.0	320.0	100%	320.0	50%	50%	0%	160.00	160.00	0.00	3537	706	615	72	319	287	3537	706	615	72	319	287	0	0	0	0	0	0	2219339	72	63	2,242,975
Special Purpose Marine Air Ground Task Force Exercise	2	1	2	C-130	8.0	16.0	10%	1.6	50%	50%	0%	0.80	0.80	0.00	7	29	2	1	14	13	7	29	2	1	14	13	0	0	0	0	0	0	222925	7	6	225,299
		4	8	CH-53	8.0	64.0	100%	64.0	50%	50%	0%	32.00	32.00	0.00	304	1154	21	57	316	284	304	1154	21	57	316	284	0	0	0	0	0	0	884565	29	25	893,986
		12	24	CH-46	8.0	192.0	100%	192.0	50%	50%	0%	96.00	96.00	0.00	1963	475	304	46	205	185	1963	475	304	46	205	185	0	0	0	0	0	0	713359	23	20	720,956
		4	8	AH-1	8.0	64.0	100%	64.0	50%	50%	0%	32.00	32.00	0.00	291	141	15	10	109	98	291	141	15	10	109	98	0	0	0	0	0	0	160902	5	5	162,616
		2	4	UH-1	8.0	32.0	100%	32.0	50%	50%	0%	16.00	16.00	0.00	29	41	1	3	36	33	29	41	1	3	36	33	0	0	0	0	0	0	53502	2	2	54,072
		10	20	MV-22	8.0	160.0	100%	160.0	50%	50%	0%	80.00	80.00	0.00	1769	353	307	36	159	144	1769	353	307	36	159	144	0	0	0	0	0	0	1109670	36	31	1,121,488
Urban Warfare Exercise	5	1	5	C-130	8.0	40.0	10%	4.0	100%	0%	0%	4.00	0.00	0.00	37	147	8	7	71	64	0	0	0	0	0	0	0	0	0	0	0	0	557312	18	16	563,247
		4	20	CH-53	8.0	160.0	100%	160.0	100%	0%	0%	160.00	0.00	0.00	1521	5771	107	286	1578	1421	0	0	0	0	0	0	0	0	0	0	0	0	2211413	72	62	2,234,965
		12	60	CH-46	8.0	480.0	100%	480.0	100%	0%	0%	480.00	0.00	0.00	9815	2373	1521	230	1025	923	0	0	0	0	0	0	0	0	0	0	0	0	1783398	58	50	1,802,391
		4	20	AH-1	8.0	160.0	100%	160.0	100%	0%	0%	160.00	0.00	0.00	1456	707	74	52	546	491	0	0	0	0	0	0	0	0	0	0	0	0	402255	13	11	406,539
		2	10	UH-1	8.0	80.0	100%	80.0	100%	0%	0%	80.00	0.00	0.00	144	204	7	17	181	163	0	0	0	0	0	0	0	0	0	0	0	0	133755	4	4	135,179
		10	50	MV-22	8.0	400.0	100%	400.0	100%	0%	0%	400.00	0.00	0.00	8844	1765	1537	179	797	718	0	0	0	0	0	0	0	0	0	0	0	0	2774174	90	78	2,803,719
ELECTRONIC WARFARE																																				

Table D.5-13 Emissions from Aircraft During Training, Alternative 1

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - AIRCRAFT													EMISSIONS/YEAR (lb) BY JURISDICTION																		Greenhouse Gas Emissions (lb/year)			
		Aircraft			Time		Altitude		Distribution (%)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)									
		Distribution	A/C Sorties (#)	Type	Ave Time on Range (hr)	Total Time on Range (hr)	Time < 3,000 ft (%)	Time < 3,000 ft (hr)	0-3 nm from shore	3-12 nm from shore	>12 nm from Shore	Total Time 0-3 nm from shore	Total Time 3-12 nm from shore	Total Time >12 nm from shore	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO_2	N_2O	CH_4	CO_{2-e}
Direct Action (Combat Close Quarters)	72																																			
Direct Action (Breaching)	72																																			
Direct Action (TAC-P)	18																																			
Underwater Demolition Qualifications	30																																			
Intelligence, Surveillance, Reconnaissance	16	1	16.0	MQ-4C	4.0	64.0	100%	64.0	0%	50%	50%	0.00	32.00	32.00	0	0	0	0	0	0	67	1243	21	113	20	18	67	1243	21	113	20	18	501729	16	14	507,073
Urban Warfare Training	18																																			
Underwater Survey	16	1	16	SH-60B	2.0	32.0	100%	32.0	100%	0%	0%	32.00	0.00	0.00	240	246	21	15	161	145	0	0	0	0	0	0	0	0	0	0	0	0	118893	4	3	120,159
OTHER																																				
Surface Ship Sonar Maintenance	42																																			
Submarine Sonar Maintenance	48																																			
Small Boat Attack	18																																			
Search and Rescue at Sea	40	2	80	MH-60	40.0	3200.0	75%	2400.0	100%	0%	0%	2400.00	0.00	0.00	18000.00	18432.00	1584.00	1152.00	12096.00	10886.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11889318	385.69	336.00	12,015,939
Submarine Navigation	40																																			
Precision Anchoring	18																																			
Maneuver (Convoy, Land Navigation)	16																																			
Water Purification	16																																			
Field Training Exercise	100																																			
Force Protection	75																																			
Anti-Terrorism	80	1	80	SH-60B	2.0	160.0	100%	160.0	100%	0%	0%	160.00	0.00	0.00	1200	1229	106	77	806	726	0	0	0	0	0	0	0	0	0	0	0	0	594466	19	17	600,797
Seize Airfield	12																																			
Airfield Expeditionary	12																																			
Unmanned Aerial Vehicle Operation	1000	1	1000	MQ-4C	4.0	4000.0	100%	4000.0	100%	0%	0%	4000.00	0.00	0.00	8400.00	155360.00	2640.00	14160.00	2440.00	2196.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31358075	1017.27	886.20	31,692,039
Land Demolitions (Improvised Explosive Device) Discovery / Disposal	120																																			

Table D.5-13 Emissions from Aircraft During Training, Alternative 1

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - AIRCRAFT													EMISSIONS/YEAR (lb) BY JURISDICTION																		Greenhouse Gas Emissions (lb/year)			
		Aircraft			Time		Altitude		Distribution (%)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)									
		Distribution	A/C Sorties (#)	Type	Ave Time on Range (hr)	Total Time on Range (hr)	Time < 3,000 ft (%)	Time < 3,000 ft (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Total Time 0-3 nm from shore	Total Time 3-12 nm from shore	Total Time >12 nm from shore	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO_2	N_2O	CH_4	CO_{2-e}
Land Demolitions (Unexploded Ordnance) Discovery / Disposal	236																																			
TOTAL TRAINING EMISSIONS (LBS/YEAR)															545,479	522,741	76,376	38,682	165,678	149,110	29,934	36,181	4,025	2,000	17,431	15,688	59,291	839,957	8,432	23,454	375,635	338,071	1,451,235,021	47,079	41,013	1,466,690,668
TOTAL TRAINING EMISSIONS (TONS/YEAR)															273	261	38	19	83	75	15	18	2	1	9	8	30	420	4	12	188	169	725,618	24	21	733,345

Table D.5-14 Emissions from Aircraft During Testing, Alternative 1

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - AIRCRAFT													EMISSIONS/YEAR (lb) BY JURISDICTION																		Greenhouse Gas Emissions (lb/year)			
		Aircraft			Time		Altitude		Distribution (%)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)									
		Distribution	A/C Sorties (#)	Type	Ave Time on Range (hr)	Total Time on Range (hr)	Time < 3,000 ft (%)	Time < 3,000 ft (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Total Time 0-3 nm from shore	Total Time 3-12 nm from shore	Total Time >12 nm from shore	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO_2	N_2O	CH_4	CO_{2-e}
ANTI-SURFACE WARFARE																																				
Air to Surface Missile Test	8	1	8	P-3	4	32	75%	24	0%	0%	100%	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0	209.664	971.136	47.232	46.08	457.344	411.6096	475572.7059	15.427765	13.44	480637.5529
ANTI-SUBMARINE WARFARE																																				
Anti-submarine Warfare Tracking Test - MPA	188	1	188	P-3	6.0	1128.0	75%	846.0	0%	100%	0%	0.00	846.00	0.00	0	0	0	0	0	0	7391	34233	1665	1624	16121	14509	0	0	0	0	0	0	16763938	544	474	16,942,474
Anti-submarine Warfare Torpedo Test	40	0.33	13	SH-60	8.0	105.6	75%	79.2	0%	100%	0%	0.00	79.20	0.00	0	0	0	0	0	0	594	608	52	38	399	359	0	0	0	0	0	0	392347	13	11	396,526
		0.33	13	MH-60	8.0	105.6	75%	79.2	0%	100%	0%	0.00	79.20	0.00	0	0	0	0	0	0	594	608	52	38	399	359	0	0	0	0	0	0	392347	13	11	396,526
		0.33	13	P-3	8.0	105.6	75%	79.2	0%	100%	0%	0.00	79.20	0.00	0	0	0	0	0	0	692	3205	156	152	1509	1358	0	0	0	0	0	0	1569390	51	44	1,586,104
Broad Area Maritime Surveillance (BAMS) Testing	10	1	10	MQ-4C	1.0	10.0	100%	10.0	100%	0%	0%	10.00	0.00	0.00	21	388	7	35	6	5	0	0	0	0	0	0	0	0	0	0	0	0	78395	3	2	79,230
LIFECYCLE ACTIVITIES TESTING																																				
Ship Signature Testing	17																																			
ANTI-SURFACE WARFARE / ANTI-SUBMARINE WARFARE TESTING																																				
Torpedo Explosive Testing	2																																			
Countermeasure Testing	2																																			
At-Sea Sonar Testing	20																																			
SHIPBOARD PROTECTION SYSTEMS AND SWIMMER DEFENSE TESTING																																				
Pierside Integrated Swimmer Defense	1																																			
NEW SHIP CONSTRUCTION																																				
ASW Mission Package Testing	33																																			
MCM Mission Package Testing	32																																			
OFFICE OF NAVAL RESEARCH																																				
North Pacific Acoustic Lab Philippine Sea 2018-19 Experiment (Deep Water)	1																																			
TOTAL TESTING EMISSIONS (lbs per year)															21	388.4	6.6	35.4	6.1	5.49	9270.5472	38653.805	1925.34	1852.42	18428.947	16586.05	209.664	971.136	47.232	46.08	457.344	411.6096	19671990.67	638.16708	555.9435	19881497.28
TOTAL TESTING EMISSIONS (tons per year)															0	0	0	0	0	0	5	19	1	1	9	8	0	0	0	0	0	0	9835.995335	0.3190835	0.2779718	9940.748639

Table D.5-15. Emissions from Aircraft During Training, Alternative 2

Type of Training	OPERATIONAL INFORMATION - AIRCRAFT														EMISSIONS/YEAR (lb) BY JURISDICTION																		Greenhouse Gas Emissions (lb/year)			
		Aircraft			Time		Altitude		Distribution (%)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)									
	Training Ops (#)	Distribution	A/C Sorties (#)	Type	Ave Time on Range (hr)	Total Time on Range (hr)	Time < 3,000 ft (%)	Time < 3,000 ft (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Total Time 0-3 nm from shore	Total Time 3-12 nm from shore	Total Time >12 nm from shore	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO_2	N_2O	CH_4	CO_{2-e}
ANTI-AIR WARFARE																																				
Air Combat Maneuver	5300	1	5300	FA-18E/F	1.0	5300.0	0%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	169643843	5503	4794	171,450,550
		1	5300	AV-8B	1.0	5300.0	0%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	98458412	3194	2783	99,506,993
Air Defense Exercise	100	2	200	FA-18E/F	1.0	200.0	50%	100.0	0%	0%	100%	0.00	0.00	100.00	0	0	0	0	0	0	0	0	0	0	0	0	744	15249	124	414	6782	6104	6401654	208	181	6,469,832
Air Intercept Control	5300	2	10600	FA-18E/F	1.0	10600.0	50%	5300.0	0%	0%	100%	0.00	0.00	5300.00	0	0	0	0	0	0	0	0	0	0	0	0	39450	808173	6575	21917	359432	323488	339287687	11007	9588	342,901,099
Gunnery Exercise, A-A (Medium Caliber)	45	1	45	AV-8B	1.0	45.0	0%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	835968	27	24	844,871
		1	45	FA-18E/F	1.0	45.0	0%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1440372	47	41	1,455,712
Missile Exercise, A-A	24	1	24	AV-8B	1.0	24.0	0%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	445849	14	13	450,598
		1	24	FA-18E/F	1.0	24.0	0%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	768199	25	22	776,380
Gunnery Exercise, S-A (Large Caliber)	5	1	5	AV-8B	1.0	5.0	0%	0.0	0%	0%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	92885	3	3	93,875
		1	5	FA-18E/F	1.0	5.0	0%	0.0	0%	0%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	160041	5	5	161,746
Gunnery Exercise, S-A (Medium Caliber)	12	1	12	AV-8B	1.0	12.0	0%	0.0	0%	0%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	222925	7	6	225,299
		1	12	FA-18E/F	1.0	12.0	0%	0.0	0%	0%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	384099	12	11	388,190
Missile Exercise, S-A	15																																			
STRIKE WARFARE																																				
Bombing Exercise, A-G	2520	1	2520	FA-18E/F	1.0	2520.0	10%	252.0	0%	0%	100%	0.00	0.00	252.00	0	0	0	0	0	0	0	0	0	0	0	0	1876	38426	313	1042	17090	15381	80660846	2617	2280	81,519,884
Missile Exercise, A-G	85	0.5	43	FA-18E/F	2.0	85.0	10%	8.5	0%	0%	100%	0.00	0.00	8.50	0	0	0	0	0	0	0	0	0	0	0	0	63	1296	11	35	576	519	2720703	88	77	2,749,679
		0.5	43	SH-60B	2.0	85.0	100%	85.0	0%	0%	100%	0.00	0.00	85.00	0	0	0	0	0	0	0	0	0	0	0	0	638	653	56	41	428	386	315810	10	9	319,173
Gunnery Exercise, A-G	96	0.5	48	FA-18E/F	2.0	96.0	10%	9.6	0%	0%	100%	0.00	0.00	9.60	0	0	0	0	0	0	0	0	0	0	0	0	71	1464	12	40	651	586	3072794	100	87	3,105,519
		0.5	48	SH-60B	2.0	96.0	100%	96.0	0%	0%	100%	0.00	0.00	96.00	0	0	0	0	0	0	0	0	0	0	0	0	720	737	63	46	484	435	356680	12	10	360,478
Combat Search and Rescue	80	0.5	40	SH-60B	2.0	80.0	100%	80.0	50%	50%	0%	40.00	40.00	0.00	300	307	26	19	202	181	300	307	26	19	202	181	0	0	0	0	0	0	297233	10	8	300,398
		0.5	40	C-130	2.0	80.0	10%	8.0	50%	50%	0%	4.00	4.00	0.00	37	147	8	7	71	64	37	147	8	7	71	64	0	0	0	0	0	0	1114624	36	32	1,126,494
AMPHIBIOUS WARFARE																																				
Fire Support Exercise - Land-Based target	10																																			
Amphibious Rehearsal, No Landing - Marine Air Ground Task Force	12	2	24	SH-60B	24.0	576.0	100%	576.0	100%	0%	0%	576.00	0.00	0.00	4320	4424	380	276	2903	2613	0	0	0	0	0	0	0	0	0	0	0	0	2140077	69	60	2,162,869
		4	48	CH-53	24.0	1152.0	100%	1152.0	100%	0%	0%	1152.00	0.00	0.00	10954	41552	771	2057	11365	10228	0	0	0	0	0	0	0	0	0	0	0	0	15922174	517	450	16,091,745
		12	144	CH-46	24.0	3456.0	100%	3456.0	100%	0%	0%	3456.00	0.00	0.00	70668	17086	10949	1659	7382	6644	0	0	0	0	0	0	0	0	0	0	0	0	12840463	417	363	12,977,214
		4	48	AH-1	24.0	1152.0	100%	1152.0	100%	0%	0%	1152.00	0.00	0.00	10486	5089	533	374	3929	3536	0	0	0	0	0	0	0	0	0	0	0	0	2896238	94	82	2,927,083
		2	24	UH-1	24.0	576.0	100%	576.0	100%	0%	0%	576.00	0.00	0.00	1039	1468	53	124	1306	1176	0	0	0	0	0	0	0	0	0	0	0	0	963035	31	27	973,291

Table D.5-15. Emissions from Aircraft During Training, Alternative 2

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - AIRCRAFT													EMISSIONS/YEAR (lb) BY JURISDICTION																		Greenhouse Gas Emissions (lb/year)			
		Aircraft			Time		Altitude		Distribution (%)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)									
		Distribution	A/C Sorties (#)	Type	Ave Time on Range (hr)	Total Time on Range (hr)	Time < 3,000 ft (%)	Time < 3,000 ft (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Total Time 0-3 nm from shore	Total Time 3-12 nm from shore	Total Time >12 nm from shore	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO_2	N_2O	CH_4	CO_{2-e}
		10	120	MV-22	24.0	2880.0	100%	2880.0	100%	0%	0%	2880.00	0.00	0.00	63673	12709	11064	1290	5742	5167	0	0	0	0	0	0	0	0	0	0	0	0	19974054	648	564	20,186,777
Amphibious Assault - Marine Air Ground Task Force	6	4	24.0	CH-53	18.0	432.0	100%	432.0	100%	0%	0%	432.00	0.00	0.00	4108	15582	289	771	4262	3836	0	0	0	0	0	0	0	0	0	0	0	0	5970815	194	169	6,034,404
		10	60.0	MV-22	18.0	1080.0	100%	1080.0	100%	0%	0%	1080.00	0.00	0.00	23878	4766	4149	484	2153	1938	0	0	0	0	0	0	0	0	0	0	0	0	7490270	243	212	7,570,041
		2	12.0	UH-1	18.0	216.0	100%	216.0	100%	0%	0%	216.00	0.00	0.00	390	551	20	47	490	441	0	0	0	0	0	0	0	0	0	0	0	0	361138	12	10	364,984
		4	24.0	AH-1	18.0	432.0	100%	432.0	100%	0%	0%	432.00	0.00	0.00	3932	1908	200	140	1473	1326	0	0	0	0	0	0	0	0	0	0	0	0	1086089	35	31	1,097,656
		4	24.0	AV-8	18.0	432.0	0%	0.0	100%	0%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8025289	260	227	8,110,759
Amphibious Raid - Special Purpose Marine Air Ground Task Force	6	4	24.0	H-53	12.0	288.0	100%	288.0	100%	0%	0%	288.00	0.00	0.00	2738	10388	193	514	2841	2557	0	0	0	0	0	0	0	0	0	0	0	0	3980544	129	112	4,022,936
		10	60.0	MV-22	12.0	720.0	100%	720.0	100%	0%	0%	720.00	0.00	0.00	15918	3177	2766	323	1435	1292	0	0	0	0	0	0	0	0	0	0	0	0	4993513	162	141	5,046,694
		2	12.0	UH-1	12.0	144.0	100%	144.0	100%	0%	0%	144.00	0.00	0.00	260	367	13	31	327	294	0	0	0	0	0	0	0	0	0	0	0	0	240759	8	7	243,323
		4	24.0	AH-1	12.0	288.0	100%	288.0	100%	0%	0%	288.00	0.00	0.00	2622	1272	133	94	982	884	0	0	0	0	0	0	0	0	0	0	0	0	724059	23	20	731,771
		4	24.0	AV-8	12.0	288.0	0%	0.0	100%	0%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5350193	174	151	5,407,172
Urban Warfare Training	36	1	36	AH-1	28.0	1008.0	100%	1008.0	100%	0%	0%	1008.00	0.00	0.00	9175	4453	467	327	3438	3094	0	0	0	0	0	0	0	0	0	0	0	0	2534208	82	72	2,561,197
		1	36	UH-1	28.0	1008.0	100%	1008.0	100%	0%	0%	1008.00	0.00	0.00	1818	2569	93	218	2286	2058	0	0	0	0	0	0	0	0	0	0	0	0	1685311	55	48	1,703,259
		1	36	MV-22	28.0	1008.0	100%	1008.0	100%	0%	0%	1008.00	0.00	0.00	22286	4448	3872	452	2010	1809	0	0	0	0	0	0	0	0	0	0	0	0	6990919	227	198	7,065,372
		1	36	H-53	28.0	1008.0	100%	1008.0	100%	0%	0%	1008.00	0.00	0.00	9584	36358	675	1800	9944	8950	0	0	0	0	0	0	0	0	0	0	0	0	13931902	452	394	14,080,277
		1	36	MH-53	8.0	288.0	100%	288.0	100%	0%	0%	288.00	0.00	0.00	2738	10388	193	514	2841	2557	0	0	0	0	0	0	0	0	0	0	0	0	3980544	129	112	4,022,936
		1	36	H-60	8.0	288.0	100%	288.0	100%	0%	0%	288.00	0.00	0.00	2160	2212	190	138	1452	1306	0	0	0	0	0	0	0	0	0	0	0	0	1070039	35	30	1,081,434
Non-Combatant Evacuation Operation	5	10	50	MV-22	20.0	1000.0	100%	1000.0	100%	0%	0%	1000.00	0.00	0.00	22109	4413	3842	448	1994	1794	0	0	0	0	0	0	0	0	0	0	0	0	6935435	225	196	7,009,298
		4	20	H-53	20.0	400.0	100%	400.0	100%	0%	0%	400.00	0.00	0.00	3803	14428	268	714	3946	3552	0	0	0	0	0	0	0	0	0	0	0	0	5528533	179	156	5,587,412
		2	10	UH-1	20.0	200.0	100%	200.0	100%	0%	0%	200.00	0.00	0.00	361	510	18	43	454	408	0	0	0	0	0	0	0	0	0	0	0	0	334387	11	9	337,948
		4	20	AH-1	20.0	400.0	100%	400.0	100%	0%	0%	400.00	0.00	0.00	3641	1767	185	130	1364	1228	0	0	0	0	0	0	0	0	0	0	0	0	1005638	33	28	1,016,348
		4	20	AV-8	20.0	400.0	0%	0.0	100%	0%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7430824	241	210	7,509,962
Humanitarian Assistance/ Disaster Relief Operations	5	10	50	MV-22	20.0	1000.0	100%	1000.0	100%	0%	0%	1000.00	0.00	0.00	22109	4413	3842	448	1994	1794	0	0	0	0	0	0	0	0	0	0	0	0	6935435	225	196	7,009,298
		4	20	H-53	20.0	400.0	100%	400.0	100%	0%	0%	400.00	0.00	0.00	3803	14428	268	714	3946	3552	0	0	0	0	0	0	0	0	0	0	0	0	5528533	179	156	5,587,412
		2	10	UH-1	20.0	200.0	100%	200.0	100%	0%	0%	200.00	0.00	0.00	361	510	18	43	454	408	0	0	0	0	0	0	0	0	0	0	0	0	334387	11	9	337,948
		4	20	AH-1	20.0	400.0	100%	400.0	100%	0%	0%	400.00	0.00	0.00	3641	1767	185	130	1364	1228	0	0	0	0	0	0	0	0	0	0	0	0	1005638	33	28	1,016,348
		4	20	AV-8	20.0	400.0	0%	0.0	100%	0%	0%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7430824	241	210	7,509,962
Unmanned Aerial Vehicle - Intelligence, Surveillance, and Reconnaissance	100	1	100.0	MQ-4C	4.0	400.0	100%	400.0	100%	0%	0%	400.00	0.00	0.00	840	15536	264	1416	244	220	0	0	0	0	0	0	0	0	0	0	0	0	3135808	102	89	3,169,204
ANTI-SURFACE WARFARE																																				
Gunnery Exercise, A-S (Small Caliber) - Ship	242	0.25	60.5	FA-18E/F	2.0	121.0	10%	12.1	0%	0%	100%	0.00	0.00	12.10	0	0	0	0	0	0	0	0	0	0	0	0	90	1845	15	50	821	739	3873001	126	109	3,914,248
		0.75	181.5	SH-60B	2.0	363.0	100%	363.0	0%	0%	100%	0.00	0.00	363.00	0	0	0	0	0	0	0	0	0	0	0	0	2723	2788	240	174	1830	1647	1348694	44	38	1,363,058
Gunnery Exercise, A-S (Medium Caliber) - Ship	295	0.25	73.75	FA-18E/F	2.0	147.5	10%	14.8	0%	0%	100%	0.00	0.00	14.75	0	0	0	0	0	0	0	0	0	0	0	0	110	2249	18	61	1000	900	4721220	153	133	4,771,501

Table D.5-15. Emissions from Aircraft During Training, Alternative 2

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - AIRCRAFT													EMISSIONS/YEAR (lb) BY JURISDICTION																		Greenhouse Gas Emissions (lb/year)			
		Aircraft			Time		Altitude		Distribution (%)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)									
		Distribution	A/C Sorties (#)	Type	Ave Time on Range (hr)	Total Time on Range (hr)	Time < 3,000 ft (%)	Time < 3,000 ft (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Total Time 0-3 nm from shore	Total Time 3-12 nm from shore	Total Time >12 nm from shore	CO	NOx	HC	SOx	PM	$PM_{2.5}$	CO	NOx	HC	SOx	PM	$PM_{2.5}$	CO	NOx	HC	SOx	PM	$PM_{2.5}$	CO_2	N_2O	CH_4	CO_{2-e}
		0.75	221.25	SH-60B	2.0	442.5	100%	442.5	0%	0%	100%	0.00	0.00	442.50	0	0	0	0	0	0	0	0	0	0	0	0	3319	3398	292	212	2230	2007	1644070	53	46	1,661,579
Missile Exercise (A-S) - Rocket	10	0.33	3.3	FA-18E/F	2.0	6.6	10%	0.7	0%	0%	100%	0.00	0.00	0.66	0	0	0	0	0	0	0	0	0	0	0	0	5	101	1	3	45	40	211255	7	6	213,504
		0.66	6.6	SH-60B	2.0	13.2	100%	13.2	0%	0%	100%	0.00	0.00	13.20	0	0	0	0	0	0	0	0	0	0	0	0	99	101	9	6	67	60	49043	2	1	49,566
Missile Exercise (A-S)	20	0.5	10	FA-18E/F	2.0	20.0	10%	2.0	0%	0%	100%	0.00	0.00	2.00	0	0	0	0	0	0	0	0	0	0	0	0	15	305	2	8	136	122	640165	21	18	646,983
		0.5	10	SH-60B	2.0	20.0	100%	20.0	0%	0%	100%	0.00	0.00	20.00	0	0	0	0	0	0	0	0	0	0	0	0	150	154	13	10	101	91	74308	2	2	75,100
Laser Targeting	600	0.5	300	FA-18E/F	1.0	300.0	10%	30.0	0%	0%	100%	0.00	0.00	30.00	0	0	0	0	0	0	0	0	0	0	0	0	223	4575	37	124	2035	1831	9602482	312	271	9,704,748
		0.5	300	SH-60B	1.0	300.0	100%	300.0	0%	0%	100%	0.00	0.00	300.00	0	0	0	0	0	0	0	0	0	0	0	0	2250	2304	198	144	1512	1361	1114624	36	32	1,126,494
Bombing Exercise (A-S)	37	0.5	19	FA-18E/F	1.0	18.5	10%	1.9	0%	0%	100%	0.00	0.00	1.85	0	0	0	0	0	0	0	0	0	0	0	0	14	282	2	8	125	113	592153	19	17	598,459
		0.5	19	P-3	1.0	18.5	10%	1.9	0%	0%	100%	0.00	0.00	1.85	0	0	0	0	0	0	0	0	0	0	0	0	16	75	4	4	35	32	274940	9	8	277,869
Torpedo Exercise (Submarine to Surface)	5																																			
Missile Exercise (S-S)	12																																			
Gunnery Exercise (S-S)- Ship, Large Caliber	140																																			
Gunnery Exercise (S-S)- Ship, Medium caliber	100																																			
Sinking Exercise (SINKEX)	2	2	4	FA-18E/F	8.0	32.0	10%	3.2	0%	0%	100%	0.00	0.00	3.20	0	0	0	0	0	0	0	0	0	0	0	0	24	488	4	13	217	195	1024265	33	29	1,035,173
		1	2	P-3	8.0	16.0	10%	1.6	0%	0%	100%	0.00	0.00	1.60	0	0	0	0	0	0	0	0	0	0	0	0	14	65	3	3	30	27	237786	8	7	240,319
		1	2	SH-60B	8.0	16.0	100%	16.0	0%	0%	100%	0.00	0.00	16.00	0	0	0	0	0	0	0	0	0	0	0	0	120	123	11	8	81	73	59447	2	2	60,080
Gunnery Exercise (S-S) Boat – Medium-caliber	10																																			
Gunnery Exercise (S-S) Small-caliber	40																																			
Maritime Security Operations (MSO)	40	1	40	SH-60B	4.0	160.0	100%	160.0	100%	0%	0%	160.00	0.00	0.00	1200	1229	106	77	806	726	0	0	0	0	0	0	0	0	0	0	0	0	594466	19	17	600,797
ANTI-SUBMARINE WARFARE																																				
Tracking Exercise-Helo	62	3	186	SH-60B	4.0	744.0	100%	744.0	0%	100%	0%	0.00	744.00	0.00	0	0	0	0	0	0	5580	5714	491	357	3750	3375	0	0	0	0	0	0	2764266	90	78	2,793,706
Torpedo Exercise-Helo	4	3	12	SH-60B	4.0	48.0	100%	48.0	0%	100%	0%	0.00	48.00	0.00	0	0	0	0	0	0	360	369	32	23	242	218	0	0	0	0	0	0	178340	6	5	180,239
Tracking Exercise-Maritime Patrol Advanced Extended Echo Ranging Sonobuoys	11	1	11	P-3	6.0	66.0	75%	49.5	0%	100%	0%	0.00	49.50	0.00	0	0	0	0	0	0	432	2003	97	95	943	849	0	0	0	0	0	0	980869	32	28	991,315
Tracking Exercise - Maritime Patrol Aircraft	34	1	34	P-3	6.0	204.0	75%	153.0	0%	100%	0%	0.00	153.00	0.00	0	0	0	0	0	0	1337	6191	301	294	2916	2624	0	0	0	0	0	0	3031776	98	86	3,064,064
Torpedo Exercise-Maritime Patrol Aircraft	4	1	4	P-3	6.0	24.0	75%	18.0	0%	100%	0%	0.00	18.00	0.00	0	0	0	0	0	0	157	728	35	35	343	309	0	0	0	0	0	0	356680	12	10	360,478

Table D.5-15. Emissions from Aircraft During Training, Alternative 2

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - AIRCRAFT: Aircraft			Time		Altitude		Distribution (%)			Distribution (hr)			EMISSIONS/YEAR (lb) BY JURISDICTION: State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)						Greenhouse Gas Emissions (lb/year)			
		Distribution	A/C Sorties (#)	Type	Ave Time on Range (hr)	Total Time on Range (hr)	Time < 3,000 ft (%)	Time < 3,000 ft (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Total Time 0-3 nm from shore	Total Time 3-12 nm from shore	Total Time >12 nm from shore	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO_2	N_2O	CH_4	CO_{2-e}
Tracking Exercise –Surface	132																																		
Torpedo Exercise–Surface	3																																		
Tracking Exercise–Submarine	12																																		
Torpedo Exercise – Submarine	10																																		
MAJOR TRAINING EVENTS																																			
Joint Expeditionary Exercise	1	48	48	FA-18E/F	8.0	384.0	10%	38.4	0%	100%	0%	0.00	38.40	0.00	0	0	0	0	0	0	286	5855	48	159	2604	2344	0	0	0	0	0	0	12291177	399	347	12,422,078
		4	4	EA-6B	8.0	32.0	10%	3.2	0%	100%	0%	0.00	3.20	0.00	0	0	0	0	0	0	163	117	22	8	248	223	0	0	0	0	0	0	633106	21	18	639,849
		4	4	E-2	8.0	32.0	10%	3.2	0%	100%	0%	0.00	3.20	0.00	0	0	0	0	0	0	15	57	3	3	28	25	0	0	0	0	0	0	217971	7	6	220,292
		3	3	P-3	8.0	24.0	10%	2.4	0%	100%	0%	0.00	2.40	0.00	0	0	0	0	0	0	21	97	5	5	46	41	0	0	0	0	0	0	356680	12	10	360,478
		6	6	AV-8B	8.0	48.0	10%	4.8	0%	100%	0%	0.00	4.80	0.00	0	0	0	0	0	0	253	193	8	12	204	184	0	0	0	0	0	0	891699	29	25	901,195
		2	2	C-130	8.0	16.0	10%	1.6	0%	100%	0%	0.00	1.60	0.00	0	0	0	0	0	0	15	59	3	3	29	26	0	0	0	0	0	0	222925	7	6	225,299
		4	4	A-10	8.0	32.0	10%	3.2	0%	100%	0%	0.00	3.20	0.00	0	0	0	0	0	0	39	86	4	4	26	23	0	0	0	0	0	0	599618	19	17	606,004
		1	1	E-3	8.0	8.0	10%	0.8	0%	100%	0%	0.00	0.80	0.00	0	0	0	0	0	0	54	221	8	10	7	6	0	0	0	0	0	0	3238254	105	92	3,272,741
		1	1	KC-135	8.0	8.0	10%	0.8	0%	100%	0%	0.00	0.80	0.00	0	0	0	0	0	0	25	247	1	7	2	2	0	0	0	0	0	0	2267689	74	64	2,291,840
		15	15	SH-60B	8.0	120.0	100%	120.0	0%	100%	0%	0.00	120.00	0.00	0	0	0	0	0	0	900	922	79	58	605	544	0	0	0	0	0	0	445849	14	13	450,598
		4	4	CH-53	8.0	32.0	100%	32.0	0%	100%	0%	0.00	32.00	0.00	0	0	0	0	0	0	304	1154	21	57	316	284	0	0	0	0	0	0	442283	14	12	446,993
		12	12	CH-46	8.0	96.0	100%	96.0	0%	100%	0%	0.00	96.00	0.00	0	0	0	0	0	0	1963	475	304	46	205	185	0	0	0	0	0	0	356680	12	10	360,478
		4	4	AH-1	8.0	32.0	100%	32.0	0%	100%	0%	0.00	32.00	0.00	0	0	0	0	0	0	291	141	15	10	109	98	0	0	0	0	0	0	80451	3	2	81,308
		2	2	UH-1	8.0	16.0	100%	16.0	0%	100%	0%	0.00	16.00	0.00	0	0	0	0	0	0	29	41	1	3	36	33	0	0	0	0	0	0	26751	1	1	27,036
		10	10	MV-22	8.0	80.0	100%	80.0	0%	100%	0%	0.00	80.00	0.00	0	0	0	0	0	0	1769	353	307	36	159	144	0	0	0	0	0	0	554835	18	16	560,744
Joint Multi-Strike Group Exercise	1	144	144	FA-18E/F	8.0	1152.0	10%	115.2	0%	0%	100%	0.00	0.00	115.20	0	0	0	0	0	0	0	0	0	0	0	0	857	17566	143	476	7813	7031	36873530	1196	1042	37,266,233
		12	12	EA-6B	8.0	96.0	10%	9.6	0%	0%	100%	0.00	0.00	9.60	0	0	0	0	0	0	0	0	0	0	0	0	490	350	67	25	743	669	1899318	62	54	1,919,546
		12	12	E-2	8.0	96.0	10%	9.6	0%	0%	100%	0.00	0.00	9.60	0	0	0	0	0	0	0	0	0	0	0	0	46	170	10	8	84	75	653912	21	18	660,877
		5	5	P-3	8.0	40.0	10%	4.0	0%	0%	100%	0.00	0.00	4.00	0	0	0	0	0	0	0	0	0	0	0	0	35	162	8	8	76	69	594466	19	17	600,797
		1	1	E-3	8.0	8.0	10%	0.8	0%	0%	100%	0.00	0.00	0.80	0	0	0	0	0	0	0	0	0	0	0	0	54	221	8	10	7	6	3238254	105	92	3,272,741
		2	2	KC-135	8.0	16.0	10%	1.6	0%	0%	100%	0.00	0.00	1.60	0	0	0	0	0	0	0	0	0	0	0	0	49	494	1	15	5	4	4535378	147	128	4,583,680
		6	6	B-1B	8.0	48.0	10%	4.8	0%	0%	100%	0.00	0.00	4.80	0	0	0	0	0	0	0	0	0	0	0	0	27	418	4	13	4	4	3947253	128	112	3,989,292
		24	24	F-15	8.0	192.0	10%	19.2	0%	0%	100%	0.00	0.00	19.20	0	0	0	0	0	0	0	0	0	0	0	0	431	5558	77	48	970	873	3683311	119	104	3,722,538
		45	45	SH-60B	8.0	360.0	100%	360.0	0%	0%	100%	0.00	0.00	360.00	0	0	0	0	0	0	0	0	0	0	0	0	2700	2765	238	173	1814	1633	1337548	43	38	1,351,793
Fleet Strike Group Exercise	1	48	48	FA-18E/F	8.0	384.0	10%	38.4	0%	0%	100%	0.00	0.00	38.40	0	0	0	0	0	0	0	0	0	0	0	0	286	5855	48	159	2604	2344	12291177	399	347	12,422,078
		4	4	EA-6B	8.0	32.0	10%	3.2	0%	0%	100%	0.00	0.00	3.20	0	0	0	0	0	0	0	0	0	0	0	0	163	117	22	8	248	223	633106	21	18	639,849
		4	4	E-2	8.0	32.0	10%	3.2	0%	0%	100%	0.00	0.00	3.20	0	0	0	0	0	0	0	0	0	0	0	0	15	57	3	3	28	25	217971	7	6	220,292
		3	3	P-3	8.0	24.0	10%	2.4	0%	0%	100%	0.00	0.00	2.40	0	0	0	0	0	0	0	0	0	0	0	0	21	97	5	5	46	41	356680	12	10	360,478
		6	6	AV-8B	8.0	48.0	10%	4.8	0%	0%	100%	0.00	0.00	4.80	0	0	0	0	0	0	0	0	0	0	0	0	253	193	8	12	204	184	891699	29	25	901,195
		1	1	E-3	8.0	8.0	10%	0.8	0%	0%	100%	0.00	0.00	0.80	0	0	0	0	0	0	0	0	0	0	0	0	54	221	8	10	7	6	3238254	105	92	3,272,741
		1	1	KC-135	8.0	8.0	10%	0.8	0%	0%	100%	0.00	0.00	0.80	0	0	0	0	0	0	0	0	0	0	0	0	25	247	1	7	2	2	2267689	74	64	2,291,840
		24	24	F-15	8.0	192.0	10%	19.2	0%	0%	100%	0.00	0.00	19.20	0	0	0	0	0	0	0	0	0	0	0	0	431	5558	77	48	970	873	3683311	119	104	3,722,538

Table D.5-15. Emissions from Aircraft During Training, Alternative 2

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - AIRCRAFT: Aircraft			Time		Altitude		Distribution (%)			Distribution (hr)			EMISSIONS/YEAR (lb) BY JURISDICTION: State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)						Greenhouse Gas Emissions (lb/year)			
		Distribution	A/C Sorties (#)	Type	Ave Time on Range (hr)	Total Time on Range (hr)	Time < 3,000 ft (%)	Time < 3,000 ft (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Total Time 0-3 nm from shore	Total Time 3-12 nm from shore	Total Time >12 nm from shore	CO	NOx	HC	SOx	PM	$PM_{2.5}$	CO	NOx	HC	SOx	PM	$PM_{2.5}$	CO	NOx	HC	SOx	PM	$PM_{2.5}$	CO_2	N_2O	CH_4	CO_{2-e}
		15	15	SH-60B	8.0	120.0	100%	120.0	0%	0%	100%	0.00	0.00	120.00	0	0	0	0	0	0	0	0	0	0	0	0	900	922	79	58	605	544	445849	14	13	450,598
		4	4	CH-53	8.0	32.0	100%	32.0	0%	0%	100%	0.00	0.00	32.00	0	0	0	0	0	0	0	0	0	0	0	0	304	1154	21	57	316	284	442283	14	12	446,993
		12	12	CH-46	8.0	96.0	100%	96.0	0%	0%	100%	0.00	0.00	96.00	0	0	0	0	0	0	0	0	0	0	0	0	1963	475	304	46	205	185	356680	12	10	360,478
		4	4	AH-1	8.0	32.0	100%	32.0	0%	0%	100%	0.00	0.00	32.00	0	0	0	0	0	0	0	0	0	0	0	0	291	141	15	10	109	98	80451	3	2	81,308
		2	2	UH-1	8.0	16.0	100%	16.0	0%	0%	100%	0.00	0.00	16.00	0	0	0	0	0	0	0	0	0	0	0	0	29	41	1	3	36	33	26751	1	1	27,036
		10	10	MV-22	8.0	80.0	100%	80.0	0%	0%	100%	0.00	0.00	80.00	0	0	0	0	0	0	0	0	0	0	0	0	1769	353	307	36	159	144	554835	18	16	560,744
Integrated Anti-Submarine Warfare Exercise	1	48	48	FA-18E/F	8.0	384.0	10%	38.4	0%	100%	0%	0.00	38.40	0.00	0	0	0	0	0	0	286	5855	48	159	2604	2344	0	0	0	0	0	0	12291177	399	347	12,422,078
		4	4	EA-6B	8.0	32.0	10%	3.2	0%	100%	0%	0.00	3.20	0.00	0	0	0	0	0	0	163	117	22	8	248	223	0	0	0	0	0	0	633106	21	18	639,849
		4	4	E-2	8.0	32.0	10%	3.2	0%	100%	0%	0.00	3.20	0.00	0	0	0	0	0	0	15	57	3	3	28	25	0	0	0	0	0	0	217971	7	6	220,292
		3	3	P-3	8.0	24.0	10%	2.4	0%	100%	0%	0.00	2.40	0.00	0	0	0	0	0	0	21	97	5	5	46	41	0	0	0	0	0	0	356680	12	10	360,478
		15	15	SH-60B	8.0	120.0	100%	120.0	0%	100%	0%	0.00	120.00	0.00	0	0	0	0	0	0	900	922	79	58	605	544	0	0	0	0	0	0	445849	14	13	450,598
Ship Squadron Anti-Submarine Warfare Exercise	1	3	3	P-3	40.0	120.0	10%	12.0	0%	100%	0%	0.00	12.00	0.00	0	0	0	0	0	0	105	486	24	23	229	206	0	0	0	0	0	0	1783398	58	50	1,802,391
		4	4	MH-60	40.0	160.0	75%	120.0	0%	100%	0%	0.00	120.00	0.00	0	0	0	0	0	0	900	922	79	58	605	544	0	0	0	0	0	0	594466	19	17	600,797
		4	4	SH-60H	40.0	160.0	100%	160.0	0%	100%	0%	0.00	160.00	0.00	0	0	0	0	0	0	1200	1229	106	77	806	726	0	0	0	0	0	0	594466	19	17	600,797
Maritime Homeland Defense / Security Mine Countermeasures	1																																			
Marine Air Ground Task Force Exercise (Amphibious)	4	1	4	C-130	8.0	32.0	10%	3.2	50%	50%	0%	1.60	1.60	0.00	15	59	3	3	29	26	15	59	3	3	29	26	0	0	0	0	0	0	445849	14	13	450,598
		2	8	SH-60B	8.0	64.0	100%	64.0	50%	50%	0%	32.00	32.00	0.00	240	246	21	15	161	145	240	246	21	15	161	145	0	0	0	0	0	0	237786	8	7	240,319
		4	16	CH-53	8.0	128.0	100%	128.0	50%	50%	0%	64.00	64.00	0.00	609	2308	43	114	631	568	609	2308	43	114	631	568	0	0	0	0	0	0	1769130	57	50	1,787,972
		12	48	CH-46	8.0	384.0	100%	384.0	50%	50%	0%	192.00	192.00	0.00	3926	949	608	92	410	369	3926	949	608	92	410	369	0	0	0	0	0	0	1426718	46	40	1,441,913
		4	16	AH-1	8.0	128.0	100%	128.0	50%	50%	0%	64.00	64.00	0.00	583	283	30	21	218	196	583	283	30	21	218	196	0	0	0	0	0	0	321804	10	9	325,231
		2	8	UH-1	8.0	64.0	100%	64.0	50%	50%	0%	32.00	32.00	0.00	58	82	3	7	73	65	58	82	3	7	73	65	0	0	0	0	0	0	107004	3	3	108,143
		10	40	MV-22	8.0	320.0	100%	320.0	50%	50%	0%	160.00	160.00	0.00	3537	706	615	72	319	287	3537	706	615	72	319	287	0	0	0	0	0	0	2219339	72	63	2,242,975
Special Purpose Marine Air Ground Task Force Exercise	2	1	2	C-130	8.0	16.0	10%	1.6	50%	50%	0%	0.80	0.80	0.00	7	29	2	1	14	13	7	29	2	1	14	13	0	0	0	0	0	0	222925	7	6	225,299
		4	8	CH-53	8.0	64.0	100%	64.0	50%	50%	0%	32.00	32.00	0.00	304	1154	21	57	316	284	304	1154	21	57	316	284	0	0	0	0	0	0	884565	29	25	893,986
		12	24	CH-46	8.0	192.0	100%	192.0	50%	50%	0%	96.00	96.00	0.00	1963	475	304	46	205	185	1963	475	304	46	205	185	0	0	0	0	0	0	713359	23	20	720,956
		4	8	AH-1	8.0	64.0	100%	64.0	50%	50%	0%	32.00	32.00	0.00	291	141	15	10	109	98	291	141	15	10	109	98	0	0	0	0	0	0	160902	5	5	162,616
		2	4	UH-1	8.0	32.0	100%	32.0	50%	50%	0%	16.00	16.00	0.00	29	41	1	3	36	33	29	41	1	3	36	33	0	0	0	0	0	0	53502	2	2	54,072
		10	20	MV-22	8.0	160.0	100%	160.0	50%	50%	0%	80.00	80.00	0.00	1769	353	307	36	159	144	1769	353	307	36	159	144	0	0	0	0	0	0	1109670	36	31	1,121,488
Urban Warfare Exercise	5	1	5	C-130	8.0	40.0	10%	4.0	100%	0%	0%	4.00	0.00	0.00	37	147	8	7	71	64	0	0	0	0	0	0	0	0	0	0	0	0	557312	18	16	563,247
		4	20	CH-53	8.0	160.0	100%	160.0	100%	0%	0%	160.00	0.00	0.00	1521	5771	107	286	1578	1421	0	0	0	0	0	0	0	0	0	0	0	0	2211413	72	62	2,234,965
		12	60	CH-46	8.0	480.0	100%	480.0	100%	0%	0%	480.00	0.00	0.00	9815	2373	1521	230	1025	923	0	0	0	0	0	0	0	0	0	0	0	0	1783398	58	50	1,802,391
		4	20	AH-1	8.0	160.0	100%	160.0	100%	0%	0%	160.00	0.00	0.00	1456	707	74	52	546	491	0	0	0	0	0	0	0	0	0	0	0	0	402255	13	11	406,539
		2	10	UH-1	8.0	80.0	100%	80.0	100%	0%	0%	80.00	0.00	0.00	144	204	7	17	181	163	0	0	0	0	0	0	0	0	0	0	0	0	133755	4	4	135,179
		10	50	MV-22	8.0	400.0	100%	400.0	100%	0%	0%	400.00	0.00	0.00	8844	1765	1537	179	797	718	0	0	0	0	0	0	0	0	0	0	0	0	2774174	90	78	2,803,719

Table D.5-15. Emissions from Aircraft During Training, Alternative 2

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - AIRCRAFT													EMISSIONS/YEAR (lb) BY JURISDICTION																		Greenhouse Gas Emissions (lb/year)			
		Aircraft			Time		Altitude		Distribution (%)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)									
		Distribution	A/C Sorties (#)	Type	Ave Time on Range (hr)	Total Time on Range (hr)	Time < 3,000 ft (%)	Time < 3,000 ft (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Total Time 0-3 nm from shore	Total Time 3-12 nm from shore	Total Time >12 nm from shore	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO_2	N_2O	CH_4	CO_{2-e}
ELECTRONIC WARFARE																																				
Electronic Warfare Operations (EW Ops)	530	1	530	FA-18E/F	2.0	1060.0	0%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33928769	1101	959	34,290,110
Counter Targeting Flare Exercise (FLAREX) - Aircraft	3534	0.9	3180.6	F-15	3.0	9541.8	0%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	183049027	5938	5173	184,998,498
		0.06	212.04	FA-18E/F	3.0	636.1	0%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20361102	661	575	20,577,948
		0.04	141.36	SH-60B	3.0	424.1	100%	424.1	0%	0%	100%	0.00	0.00	424.08	0	0	0	0	0	0	0	0	0	0	0	0	3181	3257	280	204	2137	1924	1575632	51	45	1,592,412
Counter Targeting Chaff Exercise (CHAFFEX) - Ship	40																																			
Counter Targeting Chaff Exercise (CHAFFEX) - Aircraft	3534	0.9	3180.6	F-15	3.0	9541.8	0%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	183049027	5938	5173	184,998,498
		0.06	212.04	FA-18E/F	3.0	636.1	0%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20361102	661	575	20,577,948
		0.04	141.36	SH-60B	3.0	424.1	100%	424.1	0%	0%	100%	0.00	0.00	424.08	0	0	0	0	0	0	0	0	0	0	0	0	3181	3257	280	204	2137	1924	1575632	51	45	1,592,412
MINE WARFARE																																				
Submarine Mine Exercise	16																																			
Mine Countermeasure Exercise – Sonar (AQS-20, LCS)	4																																			
Mine Countermeasure Exercise – Surface (SMCMEX) Sonar (SQQ-32, MCM)	4																																			
Mine Neutralization – Remotely Operated Vehicle Sonar (AQS-235[AQS-20], SLQ-48)	4																																			
Mine Laying - Aircraft	4	0.5	2	FA-18E/F	0.5	1.0	0%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32008	1	1	32,349
		0.5	2	P-3	1.0	2.0	0%	0.0	0%	0%	100%	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29723	1	1	30,040
Mine Neutralization – Explosive Ordnance Disposal	20																																		0.00	0
Limpet Mine Neutralization System/Shock Wave Generator	40																																			
Mine Countermeasure – Towed Mine Detection	4																																			
NAVAL SPECIAL WARFARE																																				
Personnel I&E	240	4	960	H-60	8.0	7680.0	100%	7680.0	100%	0%	0%	7680.00	0.00	0.00	57600	58982	5069	3686	38707	34836	0	0	0	0	0	0	0	0	0	0	0	0	28534362	926	806	28,838,253
		2	480	MV-22	8.0	3840.0	100%	3840.0	100%	0%	0%	3840.00	0.00	0.00	84898	16945	14752	1720	7655	6890	0	0	0	0	0	0	0	0	0	0	0	0	26632072	864	753	26,915,703
Parachute Insertion	20	1	20	C-130	4.0	80.0	100%	80.0	100%	0%	0%	80.00	0.00	0.00	745	2938	169	144	1429	1286	0	0	0	0	0	0	0	0	0	0	0	0	1114624	36	32	1,126,494
		1	20	CH-46	4.0	80.0	100%	80.0	100%	0%	0%	80.00	0.00	0.00	1636	396	253	38	171	154	0	0	0	0	0	0	0	0	0	0	0	0	297233	10	8	300,398
		1	20	H-60	4.0	80.0	100%	80.0	100%	0%	0%	80.00	0.00	0.00	600	614	53	38	403	363	0	0	0	0	0	0	0	0	0	0	0	0	297233	10	8	300,398
Embassy Reinforcement	50	1	50	SH-60B	4.0	200.0	100%	200.0	100%	0%	0%	200.00	0.00	0.00	1500	1536	132	96	1008	907	0	0	0	0	0	0	0	0	0	0	0	0	743082	24	21	750,996
		1	50	AV-8B	4.0	200.0	100%	200.0	100%	0%	0%	200.00	0.00	0.00	10560	8052	336	480	8520	7668	0	0	0	0	0	0	0	0	0	0	0	0	3715412	121	105	3,754,981

Table D.5-15. Emissions from Aircraft During Training, Alternative 2

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - AIRCRAFT													EMISSIONS/YEAR (lb) BY JURISDICTION																		Greenhouse Gas Emissions (lb/year)			
		Aircraft			Time		Altitude		Distribution (%)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)									
		Distribution	A/C Sorties (#)	Type	Ave Time on Range (hr)	Total Time on Range (hr)	Time < 3,000 ft (%)	Time < 3,000 ft (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Total Time 0-3 nm from shore	Total Time 3-12 nm from shore	Total Time>12 nm from shore	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO_2	N_2O	CH_4	CO_{2-e}
Direct Action (Combat Close Quarters)	72																																			
Direct Action (Breaching)	72																																			
Direct Action (TAC-P)	18																																			
Underwater Demolition Qualifications	30																																			
Intelligence, Surveillance, Reconnaissance	16	1	16.0	MQ-4C	4.0	64.0	100%	64.0	0%	50%	50%	0.00	32.00	32.00	0	0	0	0	0	0	67	1243	21	113	20	18	67	1243	21	113	20	18	501729	16	14	507,073
Urban Warfare Training	18																																			
Underwater Survey	16	1	16	SH-60B	2.0	32.0	100%	32.0	100%	0%	0%	32.00	0.00	0.00	240	246	21	15	161	145	0	0	0	0	0	0	0	0	0	0	0	0	118893	4	3	120,159
OTHER																																				
Surface Ship Sonar Maintenance	42																																			
Submarine Sonar Maintenance	48																																			
Small Boat Attack	18																																			
Search and Rescue at Sea	40	2	80	MH-60	40.0	3200.0	75%	2400.0	100%	0%	0%	2400.00	0.00	0.00	18000	18432	1584	1152	12096	10886	0	0	0	0	0	0	0	0	0	0	0	0	11889318	386	336	12,015,939
Submarine Navigation	40																																			
Precision Anchoring	18																																			
Maneuver (Convoy, Land Navigation)	16																																			
Water Purification	16																																			
Field Training Exercise	100																																			
Force Protection	75																																			
Anti-Terrorism	80	1	80	SH-60B	2.0	160.0	100%	160.0	100%	0%	0%	160.00	0.00	0.00	1200	1229	106	77	806	726	0	0	0	0	0	0	0	0	0	0	0	0	594466	19	17	600,797
Seize Airfield	12																																			
Airfield Expeditionary	12																																			
Unmanned Aerial Vehicle Operation	1000	1	1000	MQ-4C	4.0	4000.0	100%	4000.0	100%	0%	0%	4000.00	0.00	0.00	8400.00	155360.00	2640.00	14160.00	2440.00	2196.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31358075	1017.27	886.20	31,692,039
Land Demolitions (Improvised Explosive Device) Discovery / Disposal	120																																			

Table D.5-15. Emissions from Aircraft During Training, Alternative 2

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - AIRCRAFT													EMISSIONS/YEAR (lb) BY JURISDICTION																		Greenhouse Gas Emissions (lb/year)			
		Aircraft			Time		Altitude		Distribution (%)			Distribution (hr)			State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)									
		Distribution	A/C Sorties (#)	Type	Ave Time on Range (hr)	Total Time on Range (hr)	Time < 3,000 ft (%)	Time < 3,000 ft (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Total Time 0-3 nm from shore	Total Time 3-12 nm from shore	Total Time >12 nm from shore	CO	NOx	HC	SOx	PM	$PM_{2.5}$	CO	NOx	HC	SOx	PM	$PM_{2.5}$	CO	NOx	HC	SOx	PM	$PM_{2.5}$	CO_2	N_2O	CH_4	CO_{2-e}
Land Demolitions (Unexploded Ordnance) Discovery / Disposal	236																																			
TOTAL TRAINING EMISSIONS (LBS/YEAR)															545,479	522,741	76,376	38,682	165,678	149,110	31,319	43,229	4,182	2,232	20,962	18,866	70,354	935,743	10,040	26,119	417,056	375,351	1,597,897,713	51,836	45,158	1,614,915,316
TOTAL TRAINING EMISSIONS (TONS/YEAR)															273	261	38	19	83	75	16	22	2	1	10	9	35	468	5	13	209	188	798,949	26	23	807,458

Table D.5-16. Emissions from Aircraft During Testing, Alternative 2

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION - AIRCRAFT: Aircraft			Time		Altitude		Distribution (%)			Distribution (hr)			EMISSIONS/YEAR (lb) BY JURISDICTION: State (0-3 nm offshore)						Waters of U S (3-12 nm)						International Waters (>12 nm)						Greenhouse Gas Emissions (lb/year)			
		Distribution	A/C Sorties (#)	Type	Ave Time on Range (hr)	Total Time on Range (hr)	Time < 3,000 ft (%)	Time < 3,000 ft (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Total Time 0-3 nm from shore	Total Time 3-12 nm from shore	Total Time >12 nm from shore	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO	NOx	HC	SOx	PM	PM2.5	CO_2	N_2O	CH_4	CO_{2-e}
ANTI-SURFACE WARFARE																																				
Air to Surface Missile Test	10	1	10	P-3	4	40	75%	30	0%	0%	100%	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	262.08	1213.92	59.04	57.6	571.68	514.512	594465.8824	19.284706	16.8	600796.9412
ANTI-SUBMARINE WARFARE TESTING																																				
Anti-submarine Warfare Tracking Test - MPA	207	1	207	P-3	6.0	1242.0	75%	931.5	0%	100%	0%	0.00	931.50	0.00	0	0	0	0	0	0	8138	37692	1833	1788	17751	15976	0	0	0	0	0	0	18458166	599	522	18,654,745
Anti-submarine Warfare Torpedo Test	44	0.33	15	SH-60	8.0	116.2	75%	87.1	0%	100%	0%	0.00	87.12	0.00	0	0	0	0	0	0	653	669	57	42	439	395	0	0	0	0	0	0	431582	14	12	436,179
		0.33	15	MH-60	8.0	116.2	75%	87.1	0%	100%	0%	0.00	87.12	0.00	0	0	0	0	0	0	653	669	57	42	439	395	0	0	0	0	0	0	431582	14	12	436,179
		0.33	15	P-3	8.0	116.2	75%	87.1	0%	100%	0%	0.00	87.12	0.00	0	0	0	0	0	0	761	3525	171	167	1660	1494	0	0	0	0	0	0	1726329	56	49	1,744,714
Broad Area Maritime Surveillance (BAMS) Testing	11	1	11	MQ-4C	1.0	11.0	100%	11.0	100%	0%	0%	11.00	0.00	0.00	23	427	7	39	7	6	0	0	0	0	0	0	0	0	0	0	0	0	86235	3	2	87,153
LIFECYCLE ACTIVITIES TESTING																																				
Ship Signature Testing	19																																			
ANTI-SURFACE WARFARE / ANTI-SUBMARINE WARFARE TESTING																																				
Torpedo Explosive Testing	2																																			
Countermeasure Testing	3																																			
At-Sea Sonar Testing	24																																			
SHIPBOARD PROTECTION SYSTEMS AND SWIMMER DEFENSE TESTING																																				
Pierside Integrated Swimmer Defense	1																																			
NEW SHIP CONSTRUCTION																																				
ASW Mission Package Testing	37																																			
MCM Mission Package Testing	36																																			
OFFICE OF NAVAL RESEARCH																																				
North Pacific Acoustic Lab Philippine Sea 2018-19 Experiment (Deep Water)	1																																			
TOTAL TESTING EMISSIONS (lbs per year)															23.1	427.24	7.26	38.94	6.71	6.039	10205.464	42556.603	2119.64	2039.39	20288.992	18260.09	262.08	1213.92	59.04	57.6	571.68	514.512	21728359.62	704.87649	614.05785	21959766.55
TOTAL TESTING EMISSIONS (tons per year)															0	0	0	0	0	0	5	21	1	1	10	9	0	1	0	0	0	0	10864.17981	0.3524382	0.3070289	10979.88327

Table D.5-17 Emissions from Ordnance During Training and Testing, No Action Alternative

Ordnance Category	Training	Testing	Emissions from Ordnance During Training, lb/year						Emissions from Ordnance During Testing, lb/year					
	units/year	units/year	CO	NOx	VOC	SOx	PM_{10}	$PM_{2.5}$	CO	NOx	VOC	SOx	PM_{10}	$PM_{2.5}$
BOMBS														
Bombs (H-E)	2,978	0	182,053.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bombs (N-E)	2,872	0	732.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PROJECTILES														
Small Caliber	63,000	0	144.9	6.1	0.0	0.0	3.2	2.4	0.0	0.0	0.0	0.0	0.0	0.0
Medium Caliber (H-E)	100	0	0.4	0.1	0.0	0.0	1.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Medium Caliber (N-E)	48,000	0	124.8	4.7	0.0	0.0	6.7	5.8	0.0	0.0	0.0	0.0	0.0	0.0
Large Caliber (H-E)	1,040	0	133.1	166.4	0.0	0.0	10.0	7.7	0.0	0.0	0.0	0.0	0.0	0.0
Large Caliber (N-E)	200	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Missiles (H-E)	103	0	3,154.2	3,664.1	0.0	0.0	6,364.9	6,364.9	0.0	0.0	0.0	0.0	0.0	0.0
Missiles (N-E)	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rockets (H-E)	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rockets (N-E)	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COUNTERMEASURES														
Chaff	5,830	0	0.3	0.9	0.0	0.0	1.6	1.5	0.0	0.0	0.0	0.0	0.0	0.0
Flares	5,720	0	0.3	0.9	0.0	0.0	1.6	1.5	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL EMISSIONS (LBS/YEAR)			186,344	3,843	0	0	6,389	6,384	0	0	0	0	0	0
TOTAL EMISSIONS (TONS/YEAR)			93.2	1.9	0.0	0.0	3.2	3.2	0.0	0.0	0.0	0.0	0.0	0.0

Table D.5-18 Emissions from Ordnance During Training and Testing, Alternative 1

Ordnance Category	Training	Testing	Emissions from Ordnance During Training, lb/year						Emissions from Ordnance During Testing, lb/year					
	units/year	units/year	CO	NOx	VOC	SOx	PM_{10}	$PM_{2.5}$	CO	NOx	VOC	SOx	PM_{10}	$PM_{2.5}$
BOMBS														
Bombs (H-E)	7,440	0	454,828.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bombs (N-E)	4,838	0	1,233.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PROJECTILES														
Small Caliber	173,530	0	399.1	16.8	0.0	0.0	8.9	6.6	0.0	0.0	0.0	0.0	0.0	0.0
Medium Caliber (H-E)	19,186	2050	76.7	24.9	0.0	0.0	182.3	97.8	8.2	2.7	0.0	0.0	19.5	10.5
Medium Caliber (N-E)	177,650	2050	461.9	17.2	0.0	0.0	24.9	21.3	5.3	0.2	0.0	0.0	0.3	0.2
Large Caliber (H-E)	8,803	24	1,126.8	1,408.5	0.0	0.0	84.5	65.5	3.1	3.8	0.0	0.0	0.2	0.2
Large Caliber (N-E)	5,220	24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Missiles (H-E)	189	20	5,787.9	6,723.5	0.0	0.0	11,679.3	11,679.3	612.5	711.5	0.0	0.0	1,235.9	1,235.9
Missiles (N-E)	0	4	0.0	0.0	0.0	0.0	0.0	0.0	122.5	142.3	0.0	0.0	247.2	247.2
Rockets (H-E)	2,114	0	1,966.0	11.8	0.0	0.0	845.6	613.1	0.0	0.0	0.0	0.0	0.0	0.0
Rockets (N-E)	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COUNTERMEASURES														
Chaff	25,840	0	1.5	3.9	0.0	0.0	7.3	6.7	0.0	0.0	0.0	0.0	0.0	0.0
Flares	25,600	0	1.5	3.9	0.0	0.0	7.2	6.6	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL EMISSIONS (lbs per year)			465,883	8,211	0	0	12,840	12,497	752	860	0	0	1,503	1,494
TOTAL EMISSIONS (tons per year)			232.9	4.1	0.0	0.0	6.4	6.2	0.4	0.4	0.0	0.0	0.8	0.7

Table D.5-19 Emissions from Ordnance During Training and Testing, Alternative 2

Ordnance Category	Training	Testing	Emissions from Ordnance During Training, lb/year						Emissions from Ordnance During Testing, lb/year					
	units/year	units/year	CO	NOx	VOC	SOx	PM_{10}	$PM_{2.5}$	CO	NOx	VOC	SOx	PM_{10}	$PM_{2.5}$
BOMBS														
Bombs (H-E)	8,019	0	490,223.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bombs (N-E)	5,090	0	1,298.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PROJECTILES														
Small Caliber	154,630	0	355.6	15.0	0.0	0.0	7.9	5.9	0.0	0.0	0.0	0.0	0.0	0.0
Medium Caliber (H-E)	26,336	2250	105.3	34.2	0.0	0.0	250.2	134.3	9.0	2.9	0.0	0.0	21.4	11.5
Medium Caliber (N-E)	179,900	2250	467.7	17.5	0.0	0.0	25.2	21.6	5.9	0.2	0.0	0.0	0.3	0.3
Large Caliber (H-E)	1,653	28	211.6	264.5	0.0	0.0	15.9	12.3	3.6	4.5	0.0	0.0	0.3	0.2
Large Caliber (N-E)	5,220	28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Missiles (H-E)	201	25	6,155.3	7,150.4	0.0	0.0	12,420.8	12,420.8	765.6	889.4	0.0	0.0	1,544.9	1,544.9
Missiles (N-E)	0	5	0.0	0.0	0.0	0.0	0.0	0.0	153.1	177.9	0.0	0.0	309.0	309.0
Rockets (H-E)	2,380	0	2,213.4	13.3	0.0	0.0	952.0	690.2	0.0	0.0	0.0	0.0	0.0	0.0
Rockets (N-E)	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COUNTERMEASURES														
Chaff	28,512	0	1.7	4.3	0.0	0.0	8.0	7.4	0.0	0.0	0.0	0.0	0.0	0.0
Flares	28,272	0	1.7	4.3	0.0	0.0	8.0	7.3	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL EMISSIONS (lbs per year)			501,034	7,504	0	0	13,688	13,300	937	1,075	0	0	1,876	1,866
TOTAL EMISSIONS (tons per year)			250.5	3.8	0.0	0.0	6.8	6.6	0.5	0.5	0.0	0.0	0.9	0.9

Table D.5-20 Emissions from Other Items During Training, No Action Alternative

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION					Emissions, lb/year						Greenhouse Gas Emissions					
		Vehicles/Equipment			Range Time (hr)		State (0-3 nm offshore)											
		Number	Type	Participation	Per Vehicle/ Equipment	Total	CO	NO_x	HC	SO_x	PM_{10}	PM2.5	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
AMPHIBIOUS WARFARE																		
Fire Support Exercise - Land-Based target	8																	
Amphibious Assault - Marine Air Ground Task Force	4	56	LAV	14	2.0	112.0	69	187	23	0	86	77	7	756	16,912	0	2	17,088
Amphibious Raid - Special Purpose Marine Air Ground Task Force	2	28	LAV	14	2.0	56.0	34	93	11	0	43	39	7	378	8,456	0	1	8,544
Urban Warfare Training	17	17	USMC-LAV	1	56.0	952.0	585	1,588	194	3	730	657	7	6,426	143,752	4	17	145,245
		136	USMC-HMMWV	8	56.0	7616.0	4,682	12,703	1,549	21	5,841	5,257	7	51,409	1,150,016	29	136	1,161,963
		68	USMC-TRUCK	4	56.0	3808.0	2,341	6,351	775	10	2,921	2,629	7	25,704	575,008	15	68	580,981
		68	USAF-HMMWV	4	16.0	1088.0	669	1,815	221	3	834	751	7	7,344	164,288	4	19	165,995
		34	USAF-TRUCK	2	16.0	544.0	334	907	111	1	417	376	7	3,672	82,144	2	10	82,997
		68	NAVY-HMMWV	4	16.0	1088.0	669	1,815	221	3	834	751	7	7,344	164,288	4	19	165,995
		34	NAVY-TRUCK	2	16.0	544.0	334	907	111	1	417	376	7	3,672	82,144	2	10	82,997
		68	ARMY-HMMWV	4	16.0	1088.0	669	1,815	221	3	834	751	7	7,344	164,288	4	19	165,995
		34	ARMY-TRUCK	2	16.0	544.0	334	907	111	1	417	376	7	3,672	82,144	2	10	82,997
Non-Combatant Evacuation Operation	2	32	HMMWV	16	40.0	1280.0	787	2,135	260	3	982	884	7	8,640	193,280	5	23	195,288
		16	TRUCK	8	40.0	640.0	393	1,067	130	2	491	442	7	4,320	96,640	2	11	97,644
		2	LAV	1	40.0	80.0	49	133	16	0	61	55	7	540	12,080	0	1	12,205
Humanitarian Assistance/ Disaster Relief Operations	2	32	HMMWV	16	40.0	1280.0	787	2,135	260	3	982	884	7	8,640	193,280	5	23	195,288
		16	TRUCK	8	40.0	640.0	393	1,067	130	2	491	442	7	4,320	96,640	2	11	97,644
		2	LAV	1	40.0	80.0	49	133	16	0	61	55	7	540	12,080	0	1	12,205
Unmanned Aerial Vehicle - Intelligence, Surveillance, and Reconaissance	0																	

Table D.5-20 Emissions from Other Items During Training, No Action Alternative

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION					Emissions, lb/year						Greenhouse Gas Emissions					
		Vehicles/Equipment			Range Time (hr)		State (0-3 nm offshore)											
		Number	Type	Participation	Per Vehicle/ Equipment	Total	CO	NO_x	HC	SO_x	PM_{10}	PM2.5	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
MAJOR TRAINING EVENTS																		
Joint Expeditionary Exercise	1	14.0	AAV	14	20.0	280.0	172	467	57	1	215	193	7	1,890	42,280	1	5	42,719
		13.0	LAV	13	20.0	260.0	160	434	53	1	199	179	7	1,755	39,260	1	5	39,668
		78.0	HMMWV	78	40.0	3120.0	1,918	5,204	635	8	2,393	2,154	7	21,060	471,120	12	56	476,014
		36.0	TRUCKS	36	40.0	1440.0	885	2,402	293	4	1,104	994	7	9,720	217,440	6	26	219,699
		2.0	DOZER	2	20.0	40.0	44	95	11	0	4	4	11	427	9,560	0	1	9,657
		6.0	FORKLIFT	6	20.0	120.0	27	43	6	0	2	2	2	292	6,528	0	1	6,591
		2.0	ROWPU	2	240.0	480.0	233	342	48	0	26	23	3	1,672	37,392	1	4	37,779
Joint Multi-Strike Group Exercise	1																	
Fleet Strike Group Exercise	0																	
Integrated Anti-Submarine Warfare Exercise	0																	
Maritime Homeland Defense / Security Mine Countermeasures	0																	
Marine Air Ground Task Force Exercise (Amphibious)	4	56.0	AAV	14	20.0	1120.0	689	1,868	228	3	859	773	7	7,560	169,120	4	20	170,877
		20.0	LAV	5	20.0	400.0	246	667	81	1	307	276	7	2,700	60,400	2	7	61,027
		312.0	HMMWV	78	40.0	12480.0	7,673	20,815	2,538	34	9,572	8,615	7	84,241	1,884,480	48	223	1,904,057
		144.0	TRUCKS	36	40.0	5760.0	3,541	9,607	1,172	16	4,418	3,976	7	38,881	869,760	22	103	878,795
		8.0	DOZER	2	20.0	160.0	177	382	46	0	16	14	11	1,709	38,240	1	4	38,628
		24.0	FORKLIFT	6	20.0	480.0	106	170	24	0	9	8	2	1,167	26,112	1	2	26,364
		8.0	ROWPU	2	240.0	1920.0	932	1,369	193	2	103	93	3	6,686	149,568	4	17	151,116
Special Purpose Marine Air Ground Task Force Exercise	2	6.0	AAV	3	20.0	120.0	74	200	24	0	92	83	7	810	18,120	0	2	18,308
		10.0	LAV	5	20.0	200.0	123	334	41	1	153	138	7	1,350	30,200	1	4	30,514
		32.0	HMMWV	16	40.0	1280.0	787	2,135	260	3	982	884	7	8,640	193,280	5	23	195,288
		16.0	TRUCKS	8	40.0	640.0	393	1,067	130	2	491	442	7	4,320	96,640	2	11	97,644
		2.0	DOZER	1	20.0	40.0	44	95	11	0	4	4	11	427	9,560	0	1	9,657
		4.0	FORKLIFT	2	20.0	80.0	18	28	4	0	1	1	2	195	4,352	0	0	4,394
		2.0	ROWPU	1	240.0	480.0	233	342	48	0	26	23	3	1,672	37,392	1	4	37,779

Table D.5-20 Emissions from Other Items During Training, No Action Alternative

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION					Emissions, lb/year						Greenhouse Gas Emissions					
		Vehicles/Equipment			Range Time (hr)		State (0-3 nm offshore)											
		Number	Type	Participation	Per Vehicle/ Equipment	Total	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
Urban Warfare Exercise	5	15.0	AAV	3	28.0	420.0	258	701	85	1	322	290	7	2,835	63,420	2	8	64,079
		25.0	LAV	5	28.0	700.0	430	1,168	142	2	537	483	7	4,725	105,700	3	13	106,798
		80.0	HMMWV	16	56.0	4480.0	2,754	7,472	911	12	3,436	3,093	7	30,241	676,480	17	80	683,508
		40.0	TRUCKS	8	56.0	2240.0	1,377	3,736	456	6	1,718	1,546	7	15,120	338,240	9	40	341,754
		5.0	DOZER	1	28.0	140.0	155	334	40	0	14	13	11	1,496	33,460	1	4	33,800
		10.0	FORKLIFT	2	28.0	280.0	62	99	14	0	5	4	2	681	15,232	0	1	15,379
		5.0	ROWPU	1	336.0	1680.0	816	1,198	169	2	90	81	3	5,850	130,872	3	15	132,227
NAVAL SPECIAL WARFARE																		
Personnel I&E	150																	
Parachute Insertion	12																	
Embassy Reinforcement	50	200	HMMWV	4	12.0	2400.0	1,476	4,003	488	6	1,841	1,657	7	16,200	362,400	9	43	366,165
		100	TRUCK	2	12.0	1200.0	738	2,001	244	3	920	828	7	8,100	181,200	5	21	183,082
Direct Action (Combat Close Quarters)	40																	
Direct Action (Breaching)	40																	
Direct Action (TAC-P)	3																	
Underwater Demolition Qualifications	30																	
Intelligence, Surveillance, Reconnaissance	16																	
Urban Warfare Training	8	32	HMMWV	4	20.0	640.0	393	1,067	130	2	491	442	7	4,320	96,640	2	11	97,644
		16	TRUCK	2	20.0	320.0	197	534	65	1	245	221	7	2,160	48,320	1	6	48,822
Underwater Survey	6																	
OTHER																		
Surface Ship Sonar Maintenance	0																	

Table D.5-20 Emissions from Other Items During Training, No Action Alternative

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION					Emissions, lb/year						Greenhouse Gas Emissions					
		Vehicles/Equipment			Range Time (hr)		State (0-3 nm offshore)											
		Number	Type	Participation	Per Vehicle/ Equipment	Total	CO	NO_x	HC	SO_x	PM_{10}	PM2.5	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
Submarine Sonar Maintenance	0																	
Small Boat Attack	0																	
Submarine Navigation	0																	
Precision Anchoring	0																	
Maneuver (Convoy, Land Navigation)	16	16	LAV	1	4.0	64.0	39	107	13	0	49	44	7	432	9,664	0	1	9,764
		64	HMMWV	4	4.0	256.0	157	427	52	1	196	177	7	1,728	38,656	1	5	39,058
		32	TRUCK	2	4.0	128.0	79	213	26	0	98	88	7	864	19,328	0	2	19,529
Water Purification	0	0	ROWPU	1	8.0	0.0	0	0	0	0	0	0	#DIV/0!	0	0	0	0	0
Field Training Exercise	100	1600	HMMWV	16	12.0	19200.0	11,804	32,024	3,905	52	14,726	13,254	7	129,602	2,899,200	74	344	2,929,318
		1200	TRUCK	12	12.0	14400.0	8,853	24,018	2,929	39	11,045	9,940	7	97,202	2,174,400	55	258	2,196,988
		800	Generator	8	48.0	38400.0	11,421	19,517	2,697	27	1,135	1,022	3	104,712	2,342,400	60	242	2,365,983
Force Protection	75	300	HMMWV	4	8.0	2400.0	1,476	4,003	488	6	1,841	1,657	7	16,200	362,400	9	43	366,165
		150	TRUCK	2	8.0	1200.0	738	2,001	244	3	920	828	7	8,100	181,200	5	21	183,082
		150	Generator	2	8.0	1200.0	357	610	84	1	35	32	3	3,272	73,200	2	8	73,937
Anti-Terrorism	80	320	HMMWV	4	4.0	1280.0	787	2,135	260	3	982	884	7	8,640	193,280	5	23	195,288
		160	TRUCK	2	4.0	640.0	393	1,067	130	2	491	442	7	4,320	96,640	2	11	97,644
Seize Airfield	12	36	HMMWV	3	4.0	144.0	89	240	29	0	110	99	7	972	21,744	1	3	21,970
		36	TRUCK	3	4.0	144.0	89	240	29	0	110	99	7	972	21,744	1	3	21,970
Airfield Expeditionary	12	12	Dozer	1	2.0	24.0	27	57	7	0	2	2	11	256	5,736	0	1	5,794
		72	Truck	6	4.0	288.0	177	480	59	1	221	199	7	1,944	43,488	1	5	43,940
		12	Crane	1	2.0	24.0	11	27	3	0	1	1	6	138	3,096	0	0	3,126
		12	Forklift	1	2.0	24.0	5	9	1	0	0	0	2	58	1,306	0	0	1,318
		12	Earth Mover	1	2.0	24.0	27	57	7	0	2	2	11	256	5,736	0	1	5,794
Unmanned Aerial Vehicle Operation	0																	
Land Demolitions (Improvised Explosive Device) Discovery / Disposal	120	240	HMMWV	2	2.0	480.0	295	801	98	1	368	331	7	3,240	72,480	2	9	73,233
		120	TRUCK	1	2.0	240.0	148	400	49	1	184	166	7	1,620	36,240	1	4	36,616

Table D.5-20 Emissions from Other Items During Training, No Action Alternative

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION					Emissions, lb/year						Greenhouse Gas Emissions					
		Vehicles/Equipment			Range Time (hr)		State (0-3 nm offshore)											
		Number	Type	Participation	Per Vehicle/ Equipment	Total	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
Land Demolitions (Unexploded Ordnance) Discovery / Disposal	200	400	HMMWV	2	2.0	800.0	492	1,334	163	2	614	552	7	5,400	120,800	3	14	122,055
		200	TRUCK	1	2.0	400.0	246	667	81	1	307	276	7	2,700	60,400	2	7	61,027
TOTAL TRAINING EMISSIONS (lbs per year)							78,022	196,576	24,366	312	80,481	72,433			18,483,346	471	2,150	18,674,505
TOTAL TRAINING EMISSIONS (tons per year)							39	98	12	0	40	36			9,242	0	1	9,337

Table D.5-21 Emissions from Other Items During Training, Alternative 1

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION					Emissions, lb/year						Greenhouse Gas Emissions					
		Vehicles/Equipment			Range Time (hr)		State (0-3 nm offshore)											
		Number	Type	Participation	Per Vehicle/ Equipment	Total	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
AMPHIBIOUS WARFARE																		
Fire Support Exercise - Land-Based target	10																	
Amphibious Assault - Marine Air Ground Task Force	6	84	LAV	14	2.0	168.0	103	280	34	0	129	116	7	1,134	25,368	1	3	25,632
Amphibious Raid - Special Purpose Marine Air Ground Task Force	6	84	LAV	14	2.0	168.0	103	280	34	0	129	116	7	1,134	25,368	1	3	25,632
Urban Warfare Training	36	36	USMC-LAV	1	56.0	2016.0	1,239	3,362	410	5	1,546	1,392	7	13,608	304,416	8	36	307,578
		288	USMC-HMMWV	8	56.0	16128.0	9,915	26,900	3,280	44	12,370	11,133	7	108,866	2,435,328	62	289	2,460,627
		144	USMC-TRUCK	4	56.0	8064.0	4,958	13,450	1,640	22	6,185	5,567	7	54,433	1,217,664	31	144	1,230,314
		144	USAF-HMMWV	4	16.0	2304.0	1,416	3,843	469	6	1,767	1,590	7	15,552	347,904	9	41	351,518
		72	USAF-TRUCK	2	16.0	1152.0	708	1,921	234	3	884	795	7	7,776	173,952	4	21	175,759
		144	NAVY-HMMWV	4	16.0	2304.0	1,416	3,843	469	6	1,767	1,590	7	15,552	347,904	9	41	351,518
		72	NAVY-TRUCK	2	16.0	1152.0	708	1,921	234	3	884	795	7	7,776	173,952	4	21	175,759
		144	ARMY-HMMWV	4	16.0	2304.0	1,416	3,843	469	6	1,767	1,590	7	15,552	347,904	9	41	351,518
		72	ARMY-TRUCK	2	16.0	1152.0	708	1,921	234	3	884	795	7	7,776	173,952	4	21	175,759
Non-Combatant Evacuation Operation	6	96	HMMWV	16	40.0	3840.0	2,361	6,405	781	10	2,945	2,651	7	25,920	579,840	15	69	585,864
		48	TRUCK	8	40.0	1920.0	1,180	3,202	391	5	1,473	1,325	7	12,960	289,920	7	34	292,932
		6	LAV	1	40.0	240.0	148	400	49	1	184	166	7	1,620	36,240	1	4	36,616
Humanitarian Assistance/ Disaster Relief Operations	6	96	HMMWV	16	40.0	3840.0	2,361	6,405	781	10	2,945	2,651	7	25,920	579,840	15	69	585,864
		48	TRUCK	8	40.0	1920.0	1,180	3,202	391	5	1,473	1,325	7	12,960	289,920	7	34	292,932
		6	LAV	1	40.0	240.0	148	400	49	1	184	166	7	1,620	36,240	1	4	36,616
Unmanned Aerial Vehicle - Intelligence, Surveillance, and Reconaissance	100																	

Table D.5-21 Emissions from Other Items During Training, Alternative 1

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION					Emissions, lb/year						Greenhouse Gas Emissions					
		Vehicles/Equipment			Range Time (hr)		State (0-3 nm offshore)											
		Number	Type	Participation	Per Vehicle/ Equipment	Total	CO	NO_x	HC	SO_x	PM_{10}	PM2.5	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
MAJOR TRAINING EVENTS																		
Joint Expeditionary Exercise	1	14.0	AAV	14	20.0	280.0	172	467	57	1	215	193	7	1,890	42,280	1	5	42,719
		13.0	LAV	13	20.0	260.0	160	434	53	1	199	179	7	1,755	39,260	1	5	39,668
		78.0	HMMWV	78	40.0	3120.0	1,918	5,204	635	8	2,393	2,154	7	21,060	471,120	12	56	476,014
		36.0	TRUCKS	36	40.0	1440.0	885	2,402	293	4	1,104	994	7	9,720	217,440	6	26	219,699
		2.0	DOZER	2	20.0	40.0	44	95	11	0	4	4	11	427	9,560	0	1	9,657
		6.0	FORKLIFT	6	20.0	120.0	27	43	6	0	2	2	2	292	6,528	0	1	6,591
		2.0	ROWPU	2	240.0	480.0	233	342	48	0	26	23	3	1,672	37,392	1	4	37,779
Joint Multi-Strike Group Exercise	1																	
Fleet Strike Group Exercise	0																	
Integrated Anti-Submarine Warfare Exercise	0																	
Maritime Homeland Defense / Security Mine Countermeasures	1																	
Marine Air Ground Task Force Exercise (Amphibious)	4	56.0	AAV	14	20.0	1120.0	689	1,868	228	3	859	773	7	7,560	169,120	4	20	170,877
		20.0	LAV	5	20.0	400.0	246	667	81	1	307	276	7	2,700	60,400	2	7	61,027
		312.0	HMMWV	78	40.0	12480.0	7,673	20,815	2,538	34	9,572	8,615	7	84,241	1,884,480	48	223	1,904,057
		144.0	TRUCKS	36	40.0	5760.0	3,541	9,607	1,172	16	4,418	3,976	7	38,881	869,760	22	103	878,795
		8.0	DOZER	2	20.0	160.0	177	382	46	0	16	14	11	1,709	38,240	1	4	38,628
		24.0	FORKLIFT	6	20.0	480.0	106	170	24	0	9	8	2	1,167	26,112	1	2	26,364
		8.0	ROWPU	2	240.0	1920.0	932	1,369	193	2	103	93	3	6,686	149,568	4	17	151,116
Special Purpose Marine Air Ground Task Force Exercise	2	6.0	AAV	3	20.0	120.0	74	200	24	0	92	83	7	810	18,120	0	2	18,308
		10.0	LAV	5	20.0	200.0	123	334	41	1	153	138	7	1,350	30,200	1	4	30,514
		32.0	HMMWV	16	40.0	1280.0	787	2,135	260	3	982	884	7	8,640	193,280	5	23	195,288
		16.0	TRUCKS	8	40.0	640.0	393	1,067	130	2	491	442	7	4,320	96,640	2	11	97,644
		2.0	DOZER	1	20.0	40.0	44	95	11	0	4	4	11	427	9,560	0	1	9,657
		4.0	FORKLIFT	2	20.0	80.0	18	28	4	0	1	1	2	195	4,352	0	0	4,394
		2.0	ROWPU	1	240.0	480.0	233	342	48	0	26	23	3	1,672	37,392	1	4	37,779

Table D.5-21 Emissions from Other Items During Training, Alternative 1

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION					Emissions, lb/year						Greenhouse Gas Emissions					
		Vehicles/Equipment			Range Time (hr)		State (0-3 nm offshore)											
		Number	Type	Participation	Per Vehicle/ Equipment	Total	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
Urban Warfare Exercise	5	15.0	AAV	3	28.0	420.0	258	701	85	1	322	290	7	2,835	63,420	2	8	64,079
		25.0	LAV	5	28.0	700.0	430	1,168	142	2	537	483	7	4,725	105,700	3	13	106,798
		80.0	HMMWV	16	56.0	4480.0	2,754	7,472	911	12	3,436	3,093	7	30,241	676,480	17	80	683,508
		40.0	TRUCKS	8	56.0	2240.0	1,377	3,736	456	6	1,718	1,546	7	15,120	338,240	9	40	341,754
		5.0	DOZER	1	28.0	140.0	155	334	40	0	14	13	11	1,496	33,460	1	4	33,800
		10.0	FORKLIFT	2	28.0	280.0	62	99	14	0	5	4	2	681	15,232	0	1	15,379
		5.0	ROWPU	1	336.0	1680.0	816	1,198	169	2	90	81	3	5,850	130,872	3	15	132,227
NAVAL SPECIAL WARFARE																		
Personnel I&E	240																	
Parachute Insertion	20																	
Embassy Reinforcement	50	200	HMMWV	4	12.0	2400.0	1,476	4,003	488	6	1,841	1,657	7	16,200	362,400	9	43	366,165
		100	TRUCK	2	12.0	1200.0	738	2,001	244	3	920	828	7	8,100	181,200	5	21	183,082
Direct Action (Combat Close Quarters)	72																	
Direct Action (Breaching)	72																	
Direct Action (TAC-P)	18																	
Underwater Demolition Qualifications	30																	
Intelligence, Surveillance, Reconnaissance	16																	
Urban Warfare Training	18	72	HMMWV	4	20.0	1440.0	885	2,402	293	4	1,104	994	7	9,720	217,440	6	26	219,699
		36	TRUCK	2	20.0	720.0	443	1,201	146	2	552	497	7	4,860	108,720	3	13	109,849
Underwater Survey	16																	
OTHER																		
Surface Ship Sonar Maintenance	42																	
Submarine Sonar Maintenance	48																	

Table D.5-21 Emissions from Other Items During Training, Alternative 1

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION					Emissions, lb/year						Greenhouse Gas Emissions					
		Vehicles/Equipment			Range Time (hr)		State (0-3 nm offshore)											
		Number	Type	Participation	Per Vehicle/ Equipment	Total	CO	NO_x	HC	SO_x	PM_{10}	PM2.5	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
Small Boat Attack	18																	
Submarine Navigation	40																	
Precision Anchoring	18																	
Maneuver (Convoy, Land Navigation)	16	16	LAV	1	4.0	64.0	39	107	13	0	49	44	7	432	9,664	0	1	9,764
		64	HMMWV	4	4.0	256.0	157	427	52	1	196	177	7	1,728	38,656	1	5	39,058
		32	TRUCK	2	4.0	128.0	79	213	26	0	98	88	7	864	19,328	0	2	19,529
Water Purification	16	16	ROWPU	1	8.0	128.0	62	91	13	0	7	6	3	446	9,971	0	1	10,074
Field Training Exercise	100	1600	HMMWV	16	12.0	19200.0	11,804	32,024	3,905	52	14,726	13,254	7	129,602	2,899,200	74	344	2,929,318
		1200	TRUCK	12	12.0	14400.0	8,853	24,018	2,929	39	11,045	9,940	7	97,202	2,174,400	55	258	2,196,988
		800	Generator	8	48.0	38400.0	11,421	19,517	2,697	27	1,135	1,022	3	104,712	2,342,400	60	242	2,365,983
Force Protection	75	300	HMMWV	4	8.0	2400.0	1,476	4,003	488	6	1,841	1,657	7	16,200	362,400	9	43	366,165
		150	TRUCK	2	8.0	1200.0	738	2,001	244	3	920	828	7	8,100	181,200	5	21	183,082
		150	Generator	2	8.0	1200.0	357	610	84	1	35	32	3	3,272	73,200	2	8	73,937
Anti-Terrorism	80	320	HMMWV	4	4.0	1280.0	787	2,135	260	3	982	884	7	8,640	193,280	5	23	195,288
		160	TRUCK	2	4.0	640.0	393	1,067	130	2	491	442	7	4,320	96,640	2	11	97,644
Seize Airfield	12	36	HMMWV	3	4.0	144.0	89	240	29	0	110	99	7	972	21,744	1	3	21,970
		36	TRUCK	3	4.0	144.0	89	240	29	0	110	99	7	972	21,744	1	3	21,970
Airfield Expeditionary	12	12	Dozer	1	2.0	24.0	27	57	7	0	2	2	11	256	5,736	0	1	5,794
		72	Truck	6	4.0	288.0	177	480	59	1	221	199	7	1,944	43,488	1	5	43,940
		12	Crane	1	2.0	24.0	11	27	3	0	1	1	6	138	3,096	0	0	3,126
		12	Forklift	1	2.0	24.0	5	9	1	0	0	0	2	58	1,306	0	0	1,318
		12	Earth Mover	1	2.0	24.0	27	57	7	0	2	2	11	256	5,736	0	1	5,794
Unmanned Aerial Vehicle Operation	1000																	
Land Demolitions (Improvised Explosive Device) Discovery / Disposal	120	240	HMMWV	2	2.0	480.0	295	801	98	1	368	331	7	3,240	72,480	2	9	73,233
		120	TRUCK	1	2.0	240.0	148	400	49	1	184	166	7	1,620	36,240	1	4	36,616
Land Demolitions (Unexploded Ordnance) Discovery / Disposal	236	472	HMMWV	2	2.0	944.0	580	1,574	192	3	724	652	7	6,372	142,544	4	17	144,025
		236	TRUCK	1	2.0	472.0	290	787	96	1	362	326	7	3,186	71,272	2	8	72,012

Table D.5-21 Emissions from Other Items During Training, Alternative 1

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION					Emissions, lb/year						Greenhouse Gas Emissions					
		Vehicles/Equipment			Range Time (hr)		State (0-3 nm offshore)											
		Number	Type	Participation	Per Vehicle/ Equipment	Total	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
TOTAL TRAINING (lbs per year)							95,844	244,850	30,255	390	102,645	92,380		1,021,699	22,855,405	582	2,669	23,091,982
TOTAL TRAINING (tons per year)							48	122	15	0	51	46		1,021,699	11,428	0	1	11,546

Table D.5-22 Emissions from Other Items During Training, Alternative 2

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION					Emissions, lb/year						Greenhouse Gas Emissions					
		Vehicles/Equipment			Range Time (hr)		State (0-3 nm offshore)											
		Number	Type	Participation	Per Vehicle/ Equipment	Total	CO	NO_x	HC	SO_x	PM_{10}	PM2.5	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
AMPHIBIOUS WARFARE																		
Fire Support Exercise - Land-Based target	10																	
Amphibious Assault - Marine Air Ground Task Force	6	84	LAV	14	2.0	168.0	103	280	34	0	129	116	7	1,134	25,368	1	3	25,632
Amphibious Raid - Special Purpose Marine Air Ground Task Force	6	84	LAV	14	2.0	168.0	103	280	34	0	129	116	7	1,134	25,368	1	3	25,632
Urban Warfare Training	36	36	USMC-LAV	1	56.0	2016.0	1,239	3,362	410	5	1,546	1,392	7	13,608	304,416	8	36	307,578
		288	USMC-HMMWV	8	56.0	16128.0	9,915	26,900	3,280	44	12,370	11,133	7	108,866	2,435,328	62	289	2,460,627
		144	USMC-TRUCK	4	56.0	8064.0	4,958	13,450	1,640	22	6,185	5,567	7	54,433	1,217,664	31	144	1,230,314
		144	USAF-HMMWV	4	16.0	2304.0	1,416	3,843	469	6	1,767	1,590	7	15,552	347,904	9	41	351,518
		72	USAF-TRUCK	2	16.0	1152.0	708	1,921	234	3	884	795	7	7,776	173,952	4	21	175,759
		144	NAVY-HMMWV	4	16.0	2304.0	1,416	3,843	469	6	1,767	1,590	7	15,552	347,904	9	41	351,518
		72	NAVY-TRUCK	2	16.0	1152.0	708	1,921	234	3	884	795	7	7,776	173,952	4	21	175,759
		144	ARMY-HMMWV	4	16.0	2304.0	1,416	3,843	469	6	1,767	1,590	7	15,552	347,904	9	41	351,518
		72	ARMY-TRUCK	2	16.0	1152.0	708	1,921	234	3	884	795	7	7,776	173,952	4	21	175,759
Non-Combatant Evacuation Operation	6	96	HMMWV	16	40.0	3840.0	2,361	6,405	781	10	2,945	2,651	7	25,920	579,840	15	69	585,864
		48	TRUCK	8	40.0	1920.0	1,180	3,202	391	5	1,473	1,325	7	12,960	289,920	7	34	292,932
		6	LAV	1	40.0	240.0	148	400	49	1	184	166	7	1,620	36,240	1	4	36,616
Humanitarian Assistance/ Disaster Relief Operations	6	96	HMMWV	16	40.0	3840.0	2,361	6,405	781	10	2,945	2,651	7	25,920	579,840	15	69	585,864
		48	TRUCK	8	40.0	1920.0	1,180	3,202	391	5	1,473	1,325	7	12,960	289,920	7	34	292,932
		6	LAV	1	40.0	240.0	148	400	49	1	184	166	7	1,620	36,240	1	4	36,616
Unmanned Aerial Vehicle - Intelligence, Surveillance, and Reconaissance	100																	

Table D.5-22 Emissions from Other Items During Training, Alternative 2

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION					Emissions, lb/year						Greenhouse Gas Emissions					
		Vehicles/Equipment			Range Time (hr)		State (0-3 nm offshore)											
		Number	Type	Participation	Per Vehicle/ Equipment	Total	CO	NO_x	HC	SO_x	PM_{10}	PM2.5	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
MAJOR TRAINING EVENTS																		
Joint Expeditionary Exercise	1	14.0	AAV	14	20.0	280.0	172	467	57	1	215	193	7	1,890	42,280	1	5	42,719
		13.0	LAV	13	20.0	260.0	160	434	53	1	199	179	7	1,755	39,260	1	5	39,668
		78.0	HMMWV	78	40.0	3120.0	1,918	5,204	635	8	2,393	2,154	7	21,060	471,120	12	56	476,014
		36.0	TRUCKS	36	40.0	1440.0	885	2,402	293	4	1,104	994	7	9,720	217,440	6	26	219,699
		2.0	DOZER	2	20.0	40.0	44	95	11	0	4	4	11	427	9,560	0	1	9,657
		6.0	FORKLIFT	6	20.0	120.0	27	43	6	0	2	2	2	292	6,528	0	1	6,591
		2.0	ROWPU	2	240.0	480.0	233	342	48	0	26	23	3	1,672	37,392	1	4	37,779
Joint Multi-Strike Group Exercise	1																	
Fleet Strike Group Exercise	1																	
Integrated Anti-Submarine Warfare Exercise	1																	
Maritime Homeland Defense / Security Mine Countermeasures	1																	
Marine Air Ground Task Force Exercise (Amphibious)	4	56.0	AAV	14	20.0	1120.0	689	1,868	228	3	859	773	7	7,560	169,120	4	20	170,877
		20.0	LAV	5	20.0	400.0	246	667	81	1	307	276	7	2,700	60,400	2	7	61,027
		312.0	HMMWV	78	40.0	12480.0	7,673	20,815	2,538	34	9,572	8,615	7	84,241	1,884,480	48	223	1,904,057
		144.0	TRUCKS	36	40.0	5760.0	3,541	9,607	1,172	16	4,418	3,976	7	38,881	869,760	22	103	878,795
		8.0	DOZER	2	20.0	160.0	177	382	46	0	16	14	11	1,709	38,240	1	4	38,628
		24.0	FORKLIFT	6	20.0	480.0	106	170	24	0	9	8	2	1,167	26,112	1	2	26,364
		8.0	ROWPU	2	240.0	1920.0	932	1,369	193	2	103	93	3	6,686	149,568	4	17	151,116
Special Purpose Marine Air Ground Task Force Exercise	2	6.0	AAV	3	20.0	120.0	74	200	24	0	92	83	7	810	18,120	0	2	18,308
		10.0	LAV	5	20.0	200.0	123	334	41	1	153	138	7	1,350	30,200	1	4	30,514

Table D.5-22 Emissions from Other Items During Training, Alternative 2

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION					Emissions, lb/year						Greenhouse Gas Emissions					
		Vehicles/Equipment			Range Time (hr)		State (0-3 nm offshore)											
		Number	Type	Participation	Per Vehicle/ Equipment	Total	CO	NO_x	HC	SO_x	PM_{10}	PM2.5	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
		32.0	HMMWV	16	40.0	1280.0	787	2,135	260	3	982	884	7	8,640	193,280	5	23	195,288
		16.0	TRUCKS	8	40.0	640.0	393	1,067	130	2	491	442	7	4,320	96,640	2	11	97,644
		2.0	DOZER	1	20.0	40.0	44	95	11	0	4	4	11	427	9,560	0	1	9,657
		4.0	FORKLIFT	2	20.0	80.0	18	28	4	0	1	1	2	195	4,352	0	0	4,394
		2.0	ROWPU	1	240.0	480.0	233	342	48	0	26	23	3	1,672	37,392	1	4	37,779
Urban Warfare Exercise	5	15.0	AAV	3	28.0	420.0	258	701	85	1	322	290	7	2,835	63,420	2	8	64,079
		25.0	LAV	5	28.0	700.0	430	1,168	142	2	537	483	7	4,725	105,700	3	13	106,798
		80.0	HMMWV	16	56.0	4480.0	2,754	7,472	911	12	3,436	3,093	7	30,241	676,480	17	80	683,508
		40.0	TRUCKS	8	56.0	2240.0	1,377	3,736	456	6	1,718	1,546	7	15,120	338,240	9	40	341,754
		5.0	DOZER	1	28.0	140.0	155	334	40	0	14	13	11	1,496	33,460	1	4	33,800
		10.0	FORKLIFT	2	28.0	280.0	62	99	14	0	5	4	2	681	15,232	0	1	15,379
		5.0	ROWPU	1	336.0	1680.0	816	1,198	169	2	90	81	3	5,850	130,872	3	15	132,227
NAVAL SPECIAL WARFARE																		
Personnel I&E	240																	
Parachute Insertion	20																	
Embassy Reinforcement	50	200	HMMWV	4	12.0	2400.0	1,476	4,003	488	6	1,841	1,657	7	16,200	362,400	9	43	366,165
		100	TRUCK	2	12.0	1200.0	738	2,001	244	3	920	828	7	8,100	181,200	5	21	183,082
Direct Action (Combat Close Quarters)	72																	
Direct Action (Breaching)	72																	
Direct Action (TAC-P)	18																	
Underwater Demolition Qualifications	30																	
Intelligence, Surveillance, Reconnaissance	16																	
Urban Warfare Training	18	72	HMMWV	4	20.0	1440.0	885	2,402	293	4	1,104	994	7	9,720	217,440	6	26	219,699
		36	TRUCK	2	20.0	720.0	443	1,201	146	2	552	497	7	4,860	108,720	3	13	109,849
Underwater Survey	16																	

Table D.5-22 Emissions from Other Items During Training, Alternative 2

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION					Emissions, lb/year						Greenhouse Gas Emissions					
		Vehicles/Equipment			Range Time (hr)		State (0-3 nm offshore)											
		Number	Type	Participation	Per Vehicle/ Equipment	Total	CO	NO_x	HC	SO_x	PM_{10}	PM2.5	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
OTHER																		
Surface Ship Sonar Maintenance	42																	
Submarine Sonar Maintenance	48																	
Small Boat Attack	18																	
Submarine Navigation	40																	
Precision Anchoring	18																	
Maneuver (Convoy, Land Navigation)	16	16	LAV	1	4.0	64.0	39	107	13	0	49	44	7	432	9,664	0	1	9,764
		64	HMMWV	4	4.0	256.0	157	427	52	1	196	177	7	1,728	38,656	1	5	39,058
		32	TRUCK	2	4.0	128.0	79	213	26	0	98	88	7	864	19,328	0	2	19,529
Water Purification	16	16	ROWPU	1	8.0	128.0	62	91	13	0	7	6	3	446	9,971	0	1	10,074
Field Training Exercise	100	1600	HMMWV	16	12.0	19200.0	11,804	32,024	3,905	52	14,726	13,254	7	129,602	2,899,200	74	344	2,929,318
		1200	TRUCK	12	12.0	14400.0	8,853	24,018	2,929	39	11,045	9,940	7	97,202	2,174,400	55	258	2,196,988
		800	Generator	8	48.0	38400.0	11,421	19,517	2,697	27	1,135	1,022	3	104,712	2,342,400	60	242	2,365,983
Force Protection	75	300	HMMWV	4	8.0	2400.0	1,476	4,003	488	6	1,841	1,657	7	16,200	362,400	9	43	366,165
		150	TRUCK	2	8.0	1200.0	738	2,001	244	3	920	828	7	8,100	181,200	5	21	183,082
		150	Generator	2	8.0	1200.0	357	610	84	1	35	32	3	3,272	73,200	2	8	73,937
Anti-Terrorism	80	320	HMMWV	4	4.0	1280.0	787	2,135	260	3	982	884	7	8,640	193,280	5	23	195,288
		160	TRUCK	2	4.0	640.0	393	1,067	130	2	491	442	7	4,320	96,640	2	11	97,644
Seize Airfield	12	36	HMMWV	3	4.0	144.0	89	240	29	0	110	99	7	972	21,744	1	3	21,970
		36	TRUCK	3	4.0	144.0	89	240	29	0	110	99	7	972	21,744	1	3	21,970
Airfield Expeditionary	12	12	Dozer	1	2.0	24.0	27	57	7	0	2	2	11	256	5,736	0	1	5,794
		72	Truck	6	4.0	288.0	177	480	59	1	221	199	7	1,944	43,488	1	5	43,940
		12	Crane	1	2.0	24.0	11	27	3	0	1	1	6	138	3,096	0	0	3,126
		12	Forklift	1	2.0	24.0	5	9	1	0	0	0	2	58	1,306	0	0	1,318
		12	Earth Mover	1	2.0	24.0	27	57	7	0	2	2	11	256	5,736	0	1	5,794

Table D.5-22 Emissions from Other Items During Training, Alternative 2

Type of Training	Training Ops (#)	OPERATIONAL INFORMATION					Emissions, lb/year						Greenhouse Gas Emissions					
		Vehicles/Equipment			Range Time (hr)		State (0-3 nm offshore)											
		Number	Type	Participation	Per Vehicle/ Equipment	Total	CO	NO_x	HC	SO_x	PM_{10}	PM2.5	Fuel Flow (GPH)	Annual Fuel Consumption (gal)	CO_2	N_2O	CH_4	CO_{2-e}
Unmanned Aerial Vehicle Operation	1000																	
Land Demolitions (Improvised Explosive Device) Discovery / Disposal	120	240	HMMWV	2	2.0	480.0	295	801	98	1	368	331	7	3,240	72,480	2	9	73,233
		120	TRUCK	1	2.0	240.0	148	400	49	1	184	166	7	1,620	36,240	1	4	36,616
Land Demolitions (Unexploded Ordnance) Discovery / Disposal	236	472	HMMWV	2	2.0	944.0	580	1,574	192	3	724	652	7	6,372	142,544	4	17	144,025
		236	TRUCK	1	2.0	472.0	290	787	96	1	362	326	7	3,186	71,272	2	8	72,012
TOTAL TRAINING (lbs per year)							95,844	244,850	30,255	390	102,645	92,380		1,021,699	22,855,405	582	2,669	23,091,982
TOTAL TRAINING (tons per year)							48	122	15	0	51	46		1,021,699	11,428	0	1	11,546

Table D.5-23 Emissions in the Nonattainment Area of Guam, All Alternatives

Training Activities in Nonattainment Area	No Action Alternative, lbs per year						Alternative 1, lbs per year						Alternative 2, lbs per year					
	CO	NO_x	VOC	SO_x	PM_{10}	PM2.5	CO	NO_x	VOC	SO_x	PM_{10}	PM2.5	CO	NO_x	VOC	SO_x	PM_{10}	PM2.5
AMW - Amp Assault																		
Vessels	11779	9588	1308	9629	1896	1706	17668	14381	1962	14444	2844	2560	17668	14381	1962	14444	2844	2560
Aircraft	21538	15204	3105	961	5585	5027	32307	22806	4658	1442	8378	7540	32307	22806	4658	1442	8378	7540
Ordnance																		
Others	69	187	23	0	86	77	103	280	34	0	129	116	103	280	34	0	129	116
AMW - Amp Raid																		
Vessels	118	696	88	2093	420	378	354	2087	265	6278	1260	1134	354	2087	265	6278	1260	1134
Aircraft	7179	5068	1035	320	1862	1676	21538	15204	3105	961	5585	5027	21538	15204	3105	961	5585	5027
Ordnance																		
Others	34	93	11	0	43	39	103	280	34	0	129	116	103	280	34	0	129	116
AMW - Urban WT																		
Vessels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aircraft	22554	28535	2592	1629	10375	9337	47762	60427	5489	3449	21971	19773	47762	60427	5489	3449	21971	19773
Ordnance																		
Others	10619	28808	3513	47	13248	11923	22487	61005	7440	99	28054	25248	22487	61005	7440	99	28054	25248
AMW - NEO																		
Vessels	7914	19700	1673	38129	7805	7024	19785	49250	4182	95323	19512	17560	19785	49250	4182	95323	19512	17560
Aircraft	11966	8447	1725	534	3103	2793	29914	21117	4313	1335	7758	6982	29914	21117	4313	1335	7758	6982
Ordnance																		
Others	1230	3336	407	5	1534	1381	3074	8340	1017	14	3835	3452	3074	8340	1017	14	3835	3452
AMW - HADR																		
Vessels	619	2136	170	4456	818	736	1546	5340	426	11140	2044	1840	1546	5340	426	11140	2044	1840
Aircraft	11966	8447	1725	534	3103	2793	29914	21117	4313	1335	7758	6982	29914	21117	4313	1335	7758	6982
Ordnance																		
Others	1230	3336	407	5	1534	1381	3074	8340	1017	14	3835	3452	3074	8340	1017	14	3835	3452
AMW - UAV/ISR																		
Vessels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aircraft	0	0	0	0	0	0	840	15536	264	1416	244	220	840	15536	264	1416	244	220
Ordnance																		
Others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ASUW - MSO																		
Vessels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aircraft	180	184	16	12	121	109	1200	1229	106	77	806	726	1200	1229	106	77	806	726
Ordnance																		
Others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MAJOR - Maritime Homeland																		
Vessels	0	0	0	0	0	0	3841	2500	372	515	138	124	3841	2500	372	515	138	124
Aircraft	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ordnance																		
Others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MAJOR - SPMAGTF																		
Vessels	700	4128	525	12418	2493	2243	700	4128	525	12418	2493	2243	700	4128	525	12418	2493	2243
Aircraft	4364	2193	651	154	840	756	4364	2193	651	154	840	756	4364	2193	651	154	840	756
Ordnance																		
Others	1672	4202	519	7	1749	1574	1672	4202	519	7	1749	1574	1672	4202	519	7	1749	1574

Table D.5-23 Emissions in the Nonattainment Area of Guam, All Alternatives

Training Activities in Nonattainment Area	No Action Alternative, lbs per year						Alternative 1, lbs per year						Alternative 2, lbs per year					
	CO	NO_x	VOC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	VOC	SO_x	PM_{10}	$PM_{2.5}$	CO	NO_x	VOC	SO_x	PM_{10}	$PM_{2.5}$
MAJOR - Urban WT																		
Vessels	7421	43778	5563	131710	26437	23793	7421	43778	5563	131710	26437	23793	7421	43778	5563	131710	26437	23793
Aircraft	21818	10967	3254	772	4200	3780	21818	10967	3254	772	4200	3780	21818	10967	3254	772	4200	3780
Ordnance																		
Others	5853	14708	1818	23	6122	5510	5853	14708	1818	23	6122	5510	5853	14708	1818	23	6122	5510
MW - Limpet Mine																		
Vessels	0	0	0	0	0	0	54	1462	10	230	24	22	54	1462	10	230	24	22
Aircraft	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ordnance																		
Others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NSW - Insertion/Extraction																		
Vessels	2040	55910	93250	8640	900	810	3264	89455	149201	13824	1440	1296	3264	89455	149201	13824	1440	1296
Aircraft	89061	47455	12388	3379	28977	26079	142498	75928	19821	5407	46363	41726	142498	75928	19821	5407	46363	41726
Ordnance																		
Others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NSW - Parachute Insertion																		
Vessels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aircraft	1789	2369	285	132	1202	1082	2981	3948	475	221	2003	1803	2981	3948	475	221	2003	1803
Ordnance																		
Others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NSW - Embassy Reinforcement																		
Vessels	30492	66384	864	51960	4668	4201	30492	66384	864	51960	4668	4201	30492	66384	864	51960	4668	4201
Aircraft	12060	9588	468	576	9528	8575	12060	9588	468	576	9528	8575	12060	9588	468	576	9528	8575
Ordnance																		
Others	2213	6004	732	10	2761	2485	2213	6004	732	10	2761	2485	2213	6004	732	10	2761	2485
NSW - ISR																		
Vessels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aircraft	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ordnance																		
Others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NSW - Urban WT																		
Vessels	4241	25016	3179	75263	15107	13596	9541	56286	7152	169342	33990	30591	9541	56286	7152	169342	33990	30591
Aircraft	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ordnance																		
Others	590	1601	195	3	736	663	1328	3603	439	6	1657	1491	1328	3603	439	6	1657	1491
NSW - Underwater Survey																		
Vessels	49	1338	1866	207	22	19	131	3567	4977	553	58	52	131	3567	4977	553	58	52
Aircraft	90	92	8	6	60	54	240	246	21	15	161	145	240	246	21	15	161	145
Ordnance																		
Others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other - Small Boat Attack																		
Vessels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aircraft	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ordnance																		

Table D.5-23 Emissions in the Nonattainment Area of Guam, All Alternatives

Training Activities in Nonattainment Area	No Action Alternative, lbs per year						Alternative 1, lbs per year						Alternative 2, lbs per year					
	CO	NO_x	VOC	SO_x	PM_{10}	PM2.5	CO	NO_x	VOC	SO_x	PM_{10}	PM2.5	CO	NO_x	VOC	SO_x	PM_{10}	PM2.5
Others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other - ROWPU																		
Vessels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aircraft	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ordnance																		
Others	0	0	0	0	0	0	62	91	13	0	7	6	62	91	13	0	7	6
Other - Field Training Exercise																		
Vessels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aircraft	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ordnance																		
Others	32078	75559	9531	118	26906	24216	32078	75559	9531	118	26906	24216	32078	75559	9531	118	26906	24216
Other - Force Protection																		
Vessels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aircraft	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ordnance																		
Others	2570	6614	817	11	2797	2517	2570	6614	817	11	2797	2517	2570	6614	817	11	2797	2517
Other - AT																		
Vessels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aircraft	1200	1229	106	77	806	726	1200	1229	106	77	806	726	1200	1229	106	77	806	726
Ordnance																		
Others	1180	3202	391	5	1473	1325	1180	3202	391	5	1473	1325	1180	3202	391	5	1473	1325
Other - IED																		
Vessels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aircraft	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ordnance																		
Others	443	1201	146	2	552	497	443	1201	146	2	552	497	443	1201	146	2	552	497
Testing - BAMS																		
Vessels																		
Aircraft	2	39	1	4	1	1	21	388	7	35	6	5	23	427	7	39	7	6
Ordnance																		
Others																		
TOTAL NONATTAINMENT EMISSIONS (LBS/YEAR)	330919	517340	154357	343831	189869	170882	519695	793969	246498	525318	291320	262188	519697	794008	246499	525321	291320	262188
TOTAL NONATTAINMENT EMISSIONS (TONS/YEAR)	165	259	77	172	95	85	260	397	123	263	146	131	260	397	123	263	146	131