
3.2 Air Quality

**Supplemental Environmental Impact Statement/
Overseas Environmental Impact Statement
Mariana Islands Training and Testing**

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3.2 Air Quality

The purpose of this section is to supplement the analysis of impacts on Air Quality presented in the 2015 Mariana Islands Training and Testing (MITT) Final Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) with new information relevant to proposed changes in training and testing activities conducted at sea and on Farallon de Medinilla (FDM). Information presented in the 2015 Final MITT EIS/OEIS that remains valid is noted as such and referenced in the appropriate sections. Any new or updated information describing the affected environment and analysis of impacts on Air Quality associated with the Proposed Action is provided in this section. Comments received from the public during scoping related to Air Quality are addressed in Section 3.2.3 (Public Scoping Comments).

This analysis is complicated because the emitted emissions are scattered widely over multiple regions, covering thousands of square miles of ocean from the sea surface and up to over a half mile in altitude. Therefore, the analysis makes use of screening thresholds. Screening thresholds are compared against the change in annual emissions that an action would have from the baseline. Changes in emissions below a screening threshold in a region or air basin are presumed to have no significant impact on the human environment. Changes in emissions above the thresholds may be significant, such that they require a harder look to make such a determination. For purposes of analysis, screening thresholds used in this analysis are derived from legal standards that are either legislated or contained in regulations promulgated by expert agencies with the input of the public and scientific community. These are conservative as they have been developed mainly for stationary sources or individual projects. They also represent potential cumulative impact(s) in that the thresholds are smaller in areas with degraded air in order to accommodate degradation from past and present actions as well as future progress toward attainment.

The 2015 MITT Final EIS/OEIS used the General Conformity Rule's *de minimis* thresholds as a screening factor because certain training and testing activities occurred within the nonattainment areas of Piti and Tanguisson. However, this Supplemental EIS (SEIS)/OEIS does not address any activities that occur within nonattainment areas. Therefore, the General Conformity Rule is not applicable to the Proposed Action, and thereby the *de minimis* thresholds that were used as screening criterion in the 2015 MITT Final EIS/OEIS are no longer pertinent. This SEIS/OEIS will instead utilize the thresholds established by the Prevention of Significant Deterioration (PSD) program as screening factors. PSD thresholds typically apply to the construction or modification of major stationary sources within nonattainment areas and are in place to ensure that a project would not cause a violation of the National Ambient Air Quality Standards (NAAQS) within an attainment area. Although the Proposed Action does not consist of any stationary sources, the PSD thresholds are more applicable than *de minimis* thresholds due to the attainment status of the region. In addition to criteria pollutants, greenhouse gas emissions were analyzed in this SEIS/OEIS by illustrating their cumulative contribution to climate change.

3.2.1 Affected Environment

3.2.1.1 Climate of the Study Area

Climate in the MITT Study Area was discussed in detail in the 2015 MITT Final EIS/OEIS. The climate within the Study Area has not changed since the publication of the 2015 MITT Final EIS/OEIS (Climatemps.com, 2017).

3.2.1.2 Regional Emissions

Regional emissions have changed since the publication of the 2015 MITT Final EIS/OEIS. Guam and Saipan still contain the majority of the stationary sources of air pollutants within the Study Area. The largest point source emitters for air pollutants were the power-generating facilities at Piti and Tanguisson. However, the power-generating facility at Tanguisson has been retired since then and an explosion and fire at the power-generating facility in Piti has left two turbines inoperable. This has reduced the amount of pollutants being released into the atmosphere from manmade sources. In addition to anthropogenic sources, volcanic activity within the Study Area naturally contributes to sulfur dioxide concentrations in the region.

3.2.1.3 Existing Air Quality

As noted in the 2015 MITT Final EIS/OEIS, Guam and the Commonwealth of the Northern Mariana Islands, including Farallon de Medinilla, meet all national and local ambient air quality standards except for the areas of Piti and Tanguisson, which are in nonattainment of the 1971 sulfur dioxide primary NAAQS (U.S. Environmental Protection Agency, 2017). These nonattainment areas extend in a circle with a radius of 2.2 miles from the power-generating facilities. However, the retirement of the Tanguisson facility and reduction in functionality of the Piti facility have decreased pollutant emissions and could potentially affect the attainment status for these areas. In general, the islands are considered to have excellent ambient air quality due to geographic isolation and favorable climate. Consistent winds and rain help to remove and carry away pollutants from the islands.

3.2.2 Environmental Consequences

The 2015 MITT Final EIS/OEIS analyzed potential impacts on air quality resulting from proposed training and testing activities. This supplemental analysis will update and consider changes to air quality resulting from proposed changes to training and testing activities conducted at sea and on FDM (see Tables 2.5-1 and 2.5-2). This SEIS/OEIS only addresses training and testing activities that would occur at-sea or on Farallon de Medinilla, therefore there is no discussion of any activities that occur within the nonattainment areas surrounding the Piti and Tanguisson facilities. Any activities associated with the 2015 MITT Final EIS/OEIS that currently occur within these nonattainment areas would not be affected by the Proposed Action. Therefore, all activities associated with this SEIS/OEIS are considered to occur in attainment areas that meet the NAAQS for all criteria pollutants. For these reasons and the reasons stated above, the PSD thresholds of 250 tons per year for criteria pollutants are used as a screening factor to determine the extent and likelihood of impacts that could arise from implementation of the Proposed Action.

3.2.2.1 Criteria Pollutants

Estimated emissions are compared against baseline emissions (Table 3.2-1) to determine whether PSD thresholds are exceeded for criteria pollutants. While most of the emissions would be off shore, only emissions that would be released below 3,000 feet elevation and within 3 nautical miles (NM) of the coastline are analyzed for their impacts on ambient air quality. Pollutants that would be emitted more than 3 NM offshore would be intermittent and distributed across a very large area of ocean, and would not be concentrated in any one area. Therefore, pollutants emitted beyond 3 NM are expected to disperse sufficiently enough to not be detectable, meaning that these emissions would have very little effect on the ambient air quality over the ocean and almost no impact on the ambient air quality over Guam or the Commonwealth of the Northern Mariana Islands. Emissions calculations for the Baseline, Alternative 1, and Alternative 2 can be seen in Appendix D (Air Quality Emissions Calculations). Baseline

emissions are derived from those presented in Alternative 1 of the 2015 MITT Final EIS/OEIS (Table 3.2-7). However, this SEIS/OEIS only addresses at-sea activities and activities occurring at FDM, whereas the 2015 MITT Final EIS/OEIS addressed those activities in addition to land-based activities. Therefore, only those activities that are covered under this SEIS/OEIS are considered in the baseline emissions.

Table 3.2-1: Baseline Pollutant Emissions for At-Sea and FDM Training and Testing Activities that Occur Within 3 Nautical Miles of the Coast from Aircraft, Vessels, and Ordnance (tpy)

Criteria Pollutant	NO _x	CO	VOC	SO _x	PM ₁₀	PM _{2.5}
Aircraft	117	170	24	8	49	44
Vessels	365	41	97	288	54	48
Ordnance	0	0	0	0	0	0
Total of At-Sea and FDM Emissions	482	211	121	296	103	92

Notes: NO_x = nitrogen oxide, CO = carbon monoxide, VOC = volatile organic compounds, SO_x = sulfur oxide, PM₁₀ = particulate matter less than 10 microns, PM_{2.5} = particulate matter less than 2.5 microns, FDM = Farallon de Medinilla; tpy = tons per year. Baseline emissions are derived from those presented in Alternative 1 of the 2015 MITT Final EIS/OEIS.

3.2.2.1.1 Alternative 1

Under Alternative 1, estimated pollutant emissions from aircraft, vessels, and ordnance would increase, as shown in Table 3.2-2. Criteria pollutants emitted in the Study Area within territorial waters could be transported ashore but would not affect the attainment status of the relevant air quality control regions. The amounts of air pollutants emitted in the Study Area and subsequently transported ashore would be minor because (1) the pollutants are emitted over large areas (i.e., the Study Area is an area source) and mostly beyond 3 NM, (2) the distances the air pollutants would be transported are often large, and (3) the pollutants would be substantially dispersed during transport. The criteria pollutants emitted over non-territorial waters within the Study Area would be dispersed over vast areas of open ocean and thus would not cause significant harm to environmental resources in those areas.

The changes in emissions produced under Alternative 1 above baseline conditions are compared against the PSD threshold of 250 tons per year to determine whether implementation of the Proposed Action would result in significant impacts. As shown in Table 3.2-2, Alternative 1 would not cause pollutant emissions to exceed the PSD threshold of 250 tons per year for any of the criteria pollutants, meaning this alternative would not have a significant impact on ambient air quality.

Table 3.2-2: Annual Emissions for At-Sea and FDM Training and Testing Activities that Occur Within 3 Nautical Miles of the Coast Under Alternative 1 from Aircraft, Vessels, and Ordnance (tpy)

Criteria Pollutant	NO _x	CO	VOC	SO _x	PM ₁₀	PM _{2.5}
Alternative 1 Emissions	547	272	169	313	123	111
Baseline Emissions	470	194	119	295	99	88
Changes in Emissions	77	78	50	18	24	23
PSD Thresholds	250	250	250	250	250	250

Notes: NO_x = nitrogen oxide, CO = carbon monoxide, VOC = volatile organic compounds, SO_x = sulfur oxide, PM₁₀ = particulate matter less than 10 microns, PM_{2.5} = particulate matter less than 2.5 microns, PSD = prevention of significant deterioration, tpy = tons per year

3.2.2.1.2 Alternative 2

Under Alternative 2, there would be a slight increase in annual air emissions from Alternative 1 (Table 3.2-3). However, the change in emissions would not exceed the PSD thresholds and would not affect the attainment status of the relevant air quality control regions.

Table 3.2-3: Annual Emissions for At-Sea and FDM Training and Testing Activities that Occur Within 3 Nautical Miles of the Coast Under Alternative 2 from Aircraft, Vessels, and Ordnance (tpy)

Criteria Pollutant	NO _x	CO	VOC	SO _x	PM ₁₀	PM _{2.5}
Alternative 2 Emissions	548	273	169	313	123	111
Baseline Emissions	470	194	119	295	99	88
Difference	78	79	50	18	24	23
PSD Thresholds	250	250	250	250	250	250

Notes: NO_x = nitrogen oxide, CO = carbon monoxide, VOC = volatile organic compounds, SO_x = sulfur oxide, PM₁₀ = particulate matter less than 10 microns, PM_{2.5} = particulate matter less than 2.5 microns, PSD = Prevention of Significant Deterioration, tpy = tons per year

3.2.2.1.3 No Action Alternative

Under the No Action Alternative, proposed training and testing activities would not occur. Other military activities not associated with this Proposed Action would continue to occur. Therefore, implementation of the No Action Alternative would mean that the emissions shown in Table 3.2-1 would no longer be produced, resulting in improved air quality.

3.2.2.2 Hazardous Pollutants

These emissions are typically one or more orders of magnitude smaller than concurrent emissions of criteria air pollutants, and only become a concern when large amounts of fuel, explosives, or other materials are consumed during a single activity or in one location. Hazardous air pollutants are analyzed qualitatively in relation to the prevalence of the sources emitting these pollutants during training and testing activities. Mobile sources operating as a result of the Proposed Action would be functioning intermittently over a large area and would produce negligible ambient hazardous air pollutants in a

localized area not located near any publicly accessible areas. For these reasons, hazardous air pollutants are not further evaluated in the analysis.

3.2.2.3 Greenhouse Gases

Table 3.2-4 summarizes the greenhouse gas emissions that would be generated under baseline conditions, Alternative 1, and Alternative 2. Greenhouse gas emissions would increase from the baseline by approximately 20 percent under Alternative 1 and Alternative 2. Since greenhouse gases are relevant in a global scope, they are analyzed based on the extent to which they would contribute to climate change. Implementation of Alternative 2 would generate approximately 0.0133 percent of the United States annual greenhouse gas emissions, which is less than a 0.0025 percent increase from baseline contributions. This minor increase is not expected to significantly affect the global climate.

Table 3.2-4: Annual Greenhouse Gas Emissions Under All Three Alternatives

	Annual Greenhouse Gas Emissions (metric tons per year)			
	CO ₂	N ₂ O	CH ₄	CO ₂ e
Baseline Emissions	704,268	23	20	711,764
Alternative 1	854,586	28	24	863,682
Alternative 2	855,700	28	24	864,807
Nationwide Emissions				6,511,000,000

Notes: CO₂ = carbon dioxide, N₂O = nitrous oxide, CH₄ = methane, CO₂e = carbon dioxide equivalent

3.2.3 Public Scoping Comments

The public did not raise any issues during the scoping period in regard to air quality.

REFERENCES

Climateemps.com. (2017). *Guam Climate & Temperature*. Retrieved from <http://www.mariana-islands.climateemps.com/>.

U.S. Environmental Protection Agency. (2017). *Nonattainment Areas for Criteria Pollutants (Green Book)*. Retrieved from <https://www.epa.gov/green-book>.