

Air Regulations Affecting Exploration and Production:
MMS Regulation of Offshore Activities in the Gulf of Mexico

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Introduction

During the past few years, concerns about air emissions from OCS activities have gained higher visibility and more attention than before. The Clean Air Act Amendments of 1990 passed responsibility for regulation of OCS air quality issues to the U.S. Environmental Protection Agency (EPA), except for the Western and Central Gulf of Mexico areas, which remain under Minerals Management Service (MMS) jurisdiction. Recent and ongoing studies have demonstrated to MMS managers a valid concern for the impact of OCS emissions on coastal areas. Existing regulations may eventually be limiting factors for leasing and development in certain highly sensitive areas of the Gulf.

A Brief Overview of OCS Air Quality Regulations

Authority for MMS regulation of OCS air quality issues is provided by the OCS Lands Act (OCSLA; 43 U.S.C. 1334), which requires administration of OCS leasing in compliance with the National Ambient Air Quality Standards, pursuant to the Clean Air Act (42 U.S.C. 7401 et seq.), to the extent that activities authorized significantly affect the air quality of any State.

The Clean Air Act Amendments of 1990 (CAAA'90; P.L. 101-549) address air pollution from OCS activities. Section 328(a) gives jurisdiction for all OCS areas other than the Western and Central Gulf of Mexico OCS areas to the EPA and requires establishment of regulations. Section 328(b) requires consultation between the Department of the Interior and the EPA to ensure coordination of air pollution control regulation and requires a major research study to examine the impacts of OCS emissions in nonattainment areas (for ozone or NO_x) in the Western and Central Gulf of Mexico.

MMS regulations (30 CFR 250.44 to 250.46; copies attached) pertinent to air quality are based on the OCSLA authority and are implemented via reviews of Exploration Plans (POEs) and Development Operations Coordination Documents (DOCDs) or Development and Production Plans (DPPs). Regulations guiding preparation of Exploration Plans (30 CFR 250.33) and Development and Production Plans (30 CFR 250.34) require submittal of emission data for five air quality pollutants [carbon monoxide (CO), total suspended particulates (TSP), sulphur dioxide (SO₂), nitrogen oxides (NO_x), and volatile organic compounds (VOCs)]. Submittal of this information is required in both new (initial) Plans and supplemental or revised Plans, including those for existing facilities.

Additional regulations at 30 CFR 250.175 address constraints on flaring or venting of gas to prevent degradation of air quality.

MMS Regulation of OCS Air Quality

When Plans are submitted for MMS review, they must contain calculations regarding the emission data for each of the five air quality pollutants to determine whether or not the Plan is exempt from further air quality review. These calculations are described at 30 CFR 250.45(d). The exemption level for TSP, SO₂, NO_x, and VOC is equal to the distance of the facility from shore (statute miles), multiplied by 33.3, with the result expressed in tons/year.

For example, the exemption level for a facility 20 miles from shore is 666 tons/year of TSP, SO₂, NO_x, and VOC.

A different formula is used to calculate the exemption level for carbon monoxide. For CO, the exemption level is equal to $3400D^{2/3}$, where D is the distance of the facility from shore (i.e., 3400 times the cube root of the distance square). For the same example, the exemption level for a facility 20 miles from shore is 25,303 tons/year of CO.

If the emissions described in a Plan are below the exemption levels for these air quality pollutants, then there is concluded to be no significant affect on the air quality of the State. However, if emissions of SO₂ or NO_x from a facility in the Breton Wilderness Area Class I air quality area exceed 250 tons per year, then the Plan is forwarded to the U.S. Fish and Wildlife Service for their review of potential effects on the air quality of that area.

If, however, the emissions described in the Plan exceed the exemption level, then the significance levels of the air quality emissions must be calculated using an approved air quality model [30 CFR 250.45(e,f)]. Significance levels are specified for each air pollutant other than VOC, on an annual basis, and/or for averaging times of 24, 8, 3, or 1 hours. Projected emissions for VOC that exceed the exemption level are deemed to significantly affect the air quality of the onshore area. At present, only the Offshore and Coastal Dispersion (OCD) Model is approved for use on the OCS (50 FR 12248, March 28, 1985). If the modelling runs indicate that significance levels are exceeded, then controls are required [30 CFR 250.45(g)].

If the projected emissions from a non-temporary facility significantly affect the quality of a non-attainment area, emission reduction through Best Available Control Technology (BACT), additional controls, or acquisition of offsets is required. Use of offsets to compensate for OCS emissions has never been done.

If the modelling runs indicate that projected emissions from a non-temporary facility significantly affect the quality of an attainment area, including Class I areas, then additional modelling runs must be done regarding exceedences of TSP or SO₂ only. Maximum allowable concentrations are specified for an annual mean and for 3-hour and 24-hour maxima.

Additionally, 30 CFR 250.45(j) provides that even for those facilities that are otherwise exempt, if concerns arise regarding projected emissions in combination with those of other facilities in the area, then MMS may require additional information to determine whether emission control measures are necessary.

MMS Review of Plans for Compliance with Air Quality Regulations

Components of Plans (POEs, DPPs) are well described in the regulations. To date, MMS procedural problems with approval of Plans have generally fallen into two categories of situations: Plans well prepared, with valid air quality problems; and Plans poorly prepared. Less often, Plans have been prepared using an unapproved air quality model.

Plans well done, where the projected air emissions result in a significant impact on onshore or Class I areas cannot result in a finding of no significant impact during the NEPA (National Environmental Policy Act) review of the Plan. Any such plan would require preparation of an Environmental Impact Statement by the MMS, before Plan approval could be considered. Typically, Plans are revised by the operator when such problems are encountered, to reduce the emission levels.

Plans poorly done, with improper or confusing calculations, have been the more common problem in past years. Such Plans have required detailed re-analysis by MMS staff and communications with the operator to clarify confused matters, leading to processing

delays. Delays of these sorts can be avoided if the operator properly prepares the Plan. Since both quality and organization of information in Plans have been problems in the past, the API/OOC Gulf of Mexico Air Quality Task Force has worked with MMS to develop a standardized worksheet for Gulf of Mexico air emission calculations. Information regarding this worksheet has been distributed by the MMS as a Letter to Lessees, dated May 5, 1994 (copy attached). Use of this worksheet by offshore operators since 1994 has greatly facilitated and expedited MMS review of air quality portions of Plans. Revisions and corrections to the worksheet have been made from time to time; interested parties desiring a copy of the current version should contact the author.

Lastly, Plans that have relied on use of an air quality model that is not approved are occasionally submitted. This is both a regulatory problem and a pragmatic problem, as current MMS Regulations allow use of the OCD Model only, and that model has limitations that make it unreliable when the model range substantially exceeds 50 km.

MMS Perspectives on Air Quality Issues

Air quality issues in general, and especially preservation of air quality at Class I areas, are highly visible and important policy issues.

Concerns about air quality issues in the PSD Class I air quality area of the Breton National Wilderness Area (BNWA) are driving many activities within MMS and the offshore industry. The BNWA comprises a portion of the Chandeleur and Breton Islands, just east of the Mississippi Delta. MMS will resume gathering data to support air quality analyses for this area and has taken actions to lessen the effect of OCS emissions on the BNWA. Some of these activities include the following:

- MMS has issued NTL No. 94-02, "Air Emissions Reporting Requirements,"

requiring reporting of air emissions during March 1994 within 100 km of BWA as a pilot project. MMS intends to reinstate these data reporting requirements in the near future, to develop monthly data on air emissions in the vicinity of the BNWA.

- MMS has issued NTL No. 94-04, "Best Available Control Technology," recognizing low-sulfur fuel as BACT. Use of low-sulfur fuel in the vicinity of the Class I area may significantly lessen air quality emissions in that area.

- on certain Plans, MMS has required emission reduction controls, such as engine retardation to reduce NO_x emissions, and condensers on glycol units to reduce VOC emissions.

- MMS, in consultation with FWS and others, has developed an issue paper regarding the BNWA Class I air emissions, which proposes consideration of a cumulative impact study for the area, including increment consumption modeling. The pollutants of greatest concern are SO₂ and NO_x. About 325 total OCS sources now exist within 100 km of BNWA; some are "major sources" (i.e., >250 tons/yr). MMS intends to distribute the issue paper widely during 1996, to encourage a consensus on the issues and actions to be taken.

Air emissions from large-scale or extended flaring or venting can also be a source of concern, especially in areas of sour gas and/or near the coast. A regulation to address this concern is now under review within MMS.

Requests to burn large quantities of liquid hydrocarbons (crude oil and condensate) have increased in recent years. MMS intends to develop regulations to restrict burning of liquid hydrocarbons. A recent *Federal Register* notice (60 FR 9298, February 17, 1995) describes our rulemaking intentions.

Regulatory controls require use of approved models. The only approved model (OCD) has some recognized limitations. We are now working to develop funding and procurement mechanisms to support a cumulative air quality analysis for the BNWA, which may include selection and perhaps fine-tuning of an appropriate atmospheric dispersion model.

The MMS Gulf of Mexico Air Quality Study (GMAQS), mandated by Section 801(b) of the Clean Air Act Amendments of 1990 (CAAA'90) has been completed. Significant aspects of the study and of its findings are summarized below:

- The three-year study addressed the effect of air emissions from offshore oil and gas production activities in the Gulf of Mexico on onshore areas in Texas and Louisiana that do not meet the Federal ambient air quality standard for ozone.
- The study was conducted by Systems Applications International (SAI) under a \$5.8 million contract with MMS. The project was guided by a Technical Review Group consisting of representatives from MMS, the U.S. Environmental Protection Agency (EPA), the Texas Natural Resources Conservation Commission, Louisiana's Department of Environmental Quality, and the Offshore Operators Committee (representing offshore production companies).
- The results of the study demonstrate that emissions from oil and gas production activities on the Outer Continental Shelf (OCS) do not play a significant role in the violations of the ozone standard in the Houston and Beaumont metropolitan areas in Texas, and the Baton Rouge and Lake Charles metropolitan areas in Louisiana.
- Computer simulations showed that when the predicted 1-hour average ozone concentrations in the onshore areas exceeded the Federal standard of 120 parts per billion (ppb), the contribution from emissions due to OCS oil and gas production was less than 2 ppb. When the predicted ozone concentrations in onshore areas were less

than 120 ppb, the highest contribution from OCS emission sources was 6-8 ppb.

- An emissions inventory was generated that included emissions from oil and gas production activities in all of the Gulf of Mexico Federal OCS waters, oil and gas production in State waters, vessel traffic, onshore emission sources, and biogenic emission sources. The emissions inventory showed that oil and gas production activities on the OCS in the Gulf of Mexico contributed about 5 percent of the total anthropogenic nitrogen oxide emissions and less than 2 percent of the total reactive hydrocarbon emissions within the study area. Although there is always a degree of uncertainty involved with any emissions inventory, MMS is confident in the overall study results.

- A field program was carried out in the summer of 1993. Supplemental meteorological and/or air quality data were collected at eight different sites (three on offshore platforms and five at onshore locations). Two instrumented aircraft were employed to collect air quality data aloft during ozone episodes. Aircraft observations were taken on 19 different days. Four multi-day ozone episodes in the period of July through September 1993 were selected for detailed analysis.

- An advanced photochemical air quality model, the variable-grid version of the Urban Airshed Model (UAM-V), was used to simulate ozone concentrations during three multi-day ozone episodes. Over 55 modeling runs were performed and it was determined that the modeling system provided a reasonable simulation of each of the ozone episodes. Following the model performance evaluation, the model was used to calculate the contribution from emissions associated with OCS oil and gas production activities.

At the conclusion of the study, CAAA'90 requires consultation by MMS with EPA to determine if any additional actions to control air quality emissions are necessary. Initial

consultation, at the Regional level, has occurred. EPA agrees that the study's emissions inventory is "in the ballpark", and they "don't object" to the study findings, with appropriate caveats. At the Regional level, EPA and MMS concur that the findings of the study do not lead to recommendations for regulatory revisions, or for additional controls on OCS sources. Consultation at the Headquarters level, for full compliance with the statutory requirement, is now ongoing.

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Biographical Sketch

Richard Defenbaugh is Deputy Regional Supervisor for Leasing and Environment within the Gulf of Mexico OCS Regional Office. His graduate work at Texas A&M University on the natural history and ecology of Gulf of Mexico estuarine and continental shelf invertebrates led to an M.S. in 1970 and a Ph.D. in 1976. He began his career in the Federal service in the Bureau of Land Management's New Orleans OCS Office in 1975 as an environmental studies project officer, then as an environmental analyst. He served as Chief, Environmental Studies Section from October 1981 to September 1991, at which time he moved to the position of Deputy Regional Supervisor for Leasing and Environment. He served as Acting Regional Supervisor from July 1993 (following the accidental death of Mr. Ken Adams, who was Regional Supervisor at the time) until October 1995.

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