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CONTACT: Tom DeRocco
(202) 208-3985

Barney Congdon
(504) 736-2595

GULF OF MEXICO AIR QUALITY STUDY

The Minerals Management Service (MMS) has completed a report on a 3-year study of 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 study was required under Section 801 (b) of the 1990 Clean Air Act Amendments.

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 this 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.

Study results will be used by the MMS in consultation with the EPA to determine if changes are needed in the regulations for emission sources on the OCS.

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