

STUDY TITLE: Conference/Workshop: Marine Environmental Implications of Offshore Drilling in the Eastern Gulf of Mexico

REPORT TITLE: Proceedings of Marine Environmental Implications of Offshore Drilling Eastern Gulf of Mexico, January 31 - February 2, 1974

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SPONSORING OCS REGION: Washington

APPLICABLE PLANNING AREAS: Eastern Gulf of Mexico

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KEY WORDS: Eastern Gulf; Mississippi; Alabama; Florida; workshop; biology; chemistry; physical oceanography; geology; baseline; modeling; plankton; fish; hydrocarbons; benthos; sediment; seagrasses; shelf; exploratory drilling; data deficiencies; data management; interlaboratory comparison; monitoring; development; Headquarters

BACKGROUND: Impending Outer Continental Shelf (OCS) oil exploration and production activities in the eastern Gulf of Mexico (EGOM) prompted conference/workshop sessions (January 31, February 1 and 2, 1974) in St. Petersburg, Florida. Participants from across the U.S. met to address environmental issues associated with proposed 1973 OCS Oil and Gas General Lease Sale Offshore Mississippi, Alabama, and Florida (MAFLA). Meetings were supported by the State University of Florida, the Bureau of Land Management (BLM), the U.S. Environmental Protection Agency (EPA), the American Petroleum Institute (API), and the State University System of Florida Sea Grant Program, and were coordinated and administered through the State University System of Florida's Institute of Oceanography (St. Petersburg, Florida), the Florida Coastal Coordinating Council, and the Florida Interinstitutional Committee on Oceanography.

OBJECTIVES: (1) To define priority research and information needs regarding offshore drilling and its potential effects on the marine environment; (2) to discuss the development of a scientifically sound and relevant interdisciplinary program; and (3) to identify the appropriate persons to conduct the research identified as part of the study's first objective.

DESCRIPTION: Representatives of government, academia, and industry contributed 29 talks during the 3-day sessions, followed by in-depth group discussions and planning of cooperative investigations relevant to environmental effects of petroleum exploration and production in the EGOM. Conference/workshop sessions were attended by 352 persons. Agency and industry presentations included: the roles and responsibilities of the BLM, EPA, U.S. Geological Survey, and National Oceanic and Atmospheric Administration (NOAA) with respect to EGOM OCS development; the U.S. Navy oceanographic program and offshore technology; Florida coastal zone environmental considerations as related to petroleum exploitation in the EGOM legal aspects of resource exploration and exploitation in the EGOM; and an overview of the petroleum industry's marine environmental research. To assess the state of knowledge and information needs pertaining to the EGOM marine environment, scientific presentations were made in the areas of physical, biological, chemical, and geological oceanography. Along with conclusions and recommendations by conference/workshop participants, executive briefs and prepared statements were incorporated into a proceedings publication.

SIGNIFICANT CONCLUSIONS: Recommendations were made to the BLM and the Interagency Management Committee (IMC) relative to required pre-drilling baseline studies in the MAFLA lease areas and longer-term comprehensive studies in the EGOM. The importance of good data management was stressed, as was the need to reserve representative material in pre-designated repositories. Further delineation of specific recommendations was outlined under the four oceanography divisions (i.e., physical, biological, chemical, and geological).

STUDY RESULTS: Four workshops developed and prepared recommendations for the BLM and the IMC. The basic objectives of short-term contracts were to obtain baseline information from designated lease tracts prior to any exploration activity. Work was directed toward geographic, spatial, and temporal factors, and standardized methodology for sampling those specified parameters which could be modified by offshore drilling. The budget in the initial phase was \$1.3 million in fiscal year 1974. Subsequent to the short-term baseline studies, longer-term work (3-4 years) was planned to provide comprehensive environmental data for the entire EGOM area, including areas covered in the initial study. Funding was established at \$3.1 to 3.5 million/year for this period, followed by maintenance (i.e., monitoring) at \$1 million/year thereafter.

General recommendations included the following: (1) Improving data management by using inventory strategies presented by the National Environmental Data Service (NEDS); (2) providing funds as a component of longer-term studies for analysis, interpretation, and publishing of data and samples collected from the EGOM but as yet unprocessed; (3) obtaining samples (during the collection of geological, chemical, and

biological material as a component of baseline studies) of sufficient size so that representative samples could be preserved and stored for future analyses; and (4) identifying repositories for such samples prior to initiation of short-term baseline studies. Specific recommendations were expressed and have been summarized below under the major oceanography topics.

Physical oceanography: (1) Developing an operational forecasting procedure for predicting surface-transported oil spill trajectories from MAFLA tracts, using state-of-the-art methods; (2) developing a probability distribution model for surface-transported materials for each lease area, and a model for the transport of the entire water column (i.e., models should be functional on a seasonal and vertical basis); (3) establishing offshore, "hurricane-proof", meteorological stations (e.g., buoys or towers) equipped to measure horizontal coherence of the wind, barometric pressure, temperature fields, waves and tidal heights; (4) requiring all drilling rigs to install meteorological and tidal-height recorders and to provide data to appropriate agencies or individuals; and (5) requesting the NEDS to prepare a source book of "extreme" EGOM environmental conditions, with data presented by season and by mini-region.

Biological oceanography: (1) Sampling plankton in lease and control areas to : a) determine phytoplankton standing crops, primary productivity, and other aspects of metabolism; and b) obtain data on zooplankton diet, growth, reproduction, respiration, excretion, biomass, and levels of trace metals and hydrocarbons; (2) sampling fish (only in long-term studies), and obtaining catch and effort data from recreational and commercial fisheries; (3) conducting reconnaissances using submersible vehicles to classify and map benthic communities and bottom types; (4) sampling benthos in coordination with sampling for sediments, suspended matter, hydrocarbons, and trace metals in the water column; (5) examining seagrass distributions and relative densities, and measuring growth rates relative to season and depth, density and biomass, and epiphytes and grazers; (6) conducting studies concerning distribution, abundance, and physiological responses of non-fish vertebrates to foreign substances introduced as a result of offshore drilling; and (7) emphasizing that chronic and catastrophic spills probably have the greatest adverse biological consequences, with the most vulnerable marine component being the benthos.

Chemical oceanography: (1) Providing the data base by chemical analyses for hydrocarbons and other biologically significant substances in the water column, biota, sediments, suspended particulate matter, sea surface, and lower atmosphere in order to develop predictive models for the dispersion of these substances in and through the shelf system; (2) implementing a complete system of interlaboratory calibration of chemical sampling equipment and techniques and analytical procedures; (3) determining hydrocarbon levels in key benthic, planktonic, and nektonic organisms, within sediments, and in the water column; (4) investigating and monitoring fluxes of hydrocarbons across the sediment-water interface and the sea-air interface; and (5) obtaining samples during high-energy conditions.

Geological oceanography: (1) Completing baseline sediment sampling prior to initiation of drilling operations; (2) obtaining sediment samples on a flexible grid of 1- to 2-mile

spacing within the actual MAFLA lease areas and high-density sampling along selected transects at half-mile intervals; (3) installing recall-markers on the bottom to reoccupy a station previously sampled, and to use divers as the major sampling mechanism; (4) analyzing sediment samples by size frequency distribution, mineralogy, distribution patterns, accumulation rates, and evaluation of sediment sources; (5) monitoring sediments surrounding drillsites at least once every three months during drilling and not less than yearly during the productions phase; and (6) requesting the National Ocean Survey to produce detailed bathymetric maps of each lease area at scales and contour intervals commensurate with the needs of the scientific studies.

STUDY PRODUCT: Smith, R. E. (ed.). 1974. Proceedings of Marine Environmental Implications of Offshore Drilling, Eastern Gulf of Mexico: 1974. Conference/workshops, January 31 - February 2, 1974. A final report by the Institute of Oceanography, State University System of Florida for the U.S. Department of the Interior, Bureau of Land Management, Washington, D.C. NTIS No. PB80-209539. Contract No. 08550-CT4-05. ix + 455 pp.