

STUDY TITLE: Gulf of Mexico OCS Cultural Resources Sensitivity Zone Mapping

REPORT TITLE: Cultural Resources Evaluation of the Northern Gulf of Mexico Continental Shelf, Volume I: Prehistoric Cultural Resource Potential, Volume II: Historical Cultural Resources, and Volume III: Maps

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SPONSORING OCS REGION: Gulf of Mexico

APPLICABLE PLANNING AREAS: Eastern Gulf of Mexico; Central Gulf of Mexico; Western Gulf of Mexico

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BACKGROUND: In 1974, the Interagency Archeological Services Division in conjunction with the U.S. Department of the Interior initiated investigations of potential impacts of offshore oil and gas leasing activities on submerged archeological resources. From these studies, it was surmised that each lease block need not be surveyed intensively, but that a system should be developed to identify areas of probable cultural resource occurrence (e.g., shipwreck and prehistoric human habitation sites). This information would allow managers to develop site-specific archeological hazards surveys in areas such as the Gulf of Mexico before damage from exploration activities occurred.

OBJECTIVES: (1) To identify potential aboriginal habitation sites based on particular geological indicators on the Outer Continental Shelf (OCS) and coastal geology and prehistoric archeology from the Gulf of Mexico; (2) to locate probable and existing shipwreck sites; (3) to develop a map of cultural resource zones for the OCS; and (4) to recommend search and recovery procedures for shipwrecks and submerged habitation sites.

DESCRIPTION: A review of pertinent literature concerning Quaternary geology, prehistoric archeology, and shipwreck archeology was completed. From the geological synthesis, geometric models of frequently occurring coastal physiographic features were developed and used to classify and identify similar but relict features on the OCS. The late Quaternary was investigated using maps and published descriptions to locate particular relict physiographic units. The Eustatic Sea, isostatic, and tectonic compounds of level fluctuations that resulted in the exposure of habitable area were studied. For prehistoric archeology, the Gulf of Mexico was divided into eastern, central, and western areas. From archeological literature concerning land areas, cultural manifestation (time and type) were identified and used to predict the occurrence of similar features on shelf areas that were concurrently exposed. Cultural manifestations were investigated for index artifacts, environmental use patterns, and particularly land forms favored as habitation sites. An inventory of known archeological sites occupied from 55,000 to 3,500 years BP and covering all three regions, was completed for Preprojectile Point, Paleo-Indian, Archaic, and Poverty Point periods. To assess the occurrence and distribution of shipwrecks, all information (maps, charts, logs, and literature descriptions) from colonial settlement to World War II (1500 to 1945) was examined. Several criteria based on destinations, home ports, and routes of ships traversing the Gulf of Mexico were used to select usable records of shipwreck occurrence. Finally, present methods of site-specific cultural resource surveys were described and improvements in protocol were recommended.

SIGNIFICANT CONCLUSIONS: Some relict landforms can be used as indicators of cultural resource presence, consequently, once located, they should be considered high probability areas. Survey techniques included direct observation by diving archeologists and remote sensing techniques that search for characteristic signatures. Site-specific surveys should employ tight line spacing, and towing speeds should not be more than 6 kn. Records from archeological surveys should be periodically reviewed by a panel of qualified archeologists. More detailed pilot studies are recommended to develop appropriate methodology for site-specific surveys. There is a shortage of qualified marine archeologists to meet the growing survey needs of the offshore oil and gas industry. Two thirds of the total shipwrecks located occurred within 1.5 km of the coast; most of these ships sank during the 19th century and the most important group was from the 16th, 17th, and 18th centuries.

STUDY RESULTS: Eleven geomorphic landforms were identified as high probability cultural resource sites. These 11 discrete site indicators were: quarries, salt domes, springs (sinkholes), valley margins, natural levees, point bars, bay margins, coastal dune lakes, shell middens, conical earth mounds, and crescentic and circular villages. These sites were assigned characteristic signatures based on location, artifacts, fossil remains, and geomorphology to facilitate their location on the OCS. Culture periods or stages were classified as: Poverty Point, Late Archaic, Middle Archaic, Early Archaic, Paleo-Indian, Pre-Fluted Point. The occurrence of site type by cultural stage was investigated, indicating that: all 11 sites probably occurred during the Poverty Point and Late Archaic periods; all sites except crescentic and circular villages also occurred during the Middle Archaic period; and shell middens, conical earth mounds, and crescentic and circular villages did not occur during the Early Archaic, Paleo-Indian, or

Pre-Fluted Point periods. Confirmation of one of these sites should rely on direct observation and remote sensing techniques. Remote surveys should include fathometer, subbottom profiler, side-scan sonar, and sampling for artifacts should employ box, bucket, corer, drag, and grab samples. Still photography and video tapes should be taken in conjunction with diver observations at verified sites.

An estimated 2,500 to 3,000 shipwrecks were confirmed for the region; about 70% of these wrecks were from the 19th century and the remaining, more historically significant wrecks were from the 16th, 17th, and 18th centuries. Two thirds of the total number of wrecks were found within 1.5 km of the coastline in the northern Gulf of Mexico; another 500 wrecks were located between 1.5 and 10 km from the coastline. Other debris, including military ordnance and discarded materials from fishing and offshore petroleum activities were found on the shelf. Magnetometers are the best remote sensing instruments for detecting shipwrecks and submerged debris. Side-scan sonar and subbottom profilers should augment a shipwreck survey. When not precluded by depth, direct observation by diving archeologists is strongly recommended when investigating a wreck site. From the interpreted ages of relict land forms and shipwreck distributions, a zone map was developed for the northern Gulf OCS. Zone 1 includes areas of high probability for prehistoric cultural remains from 12,000 to 3,000 years BP. The seaward limit of Zone 2 delimits the extent of Paleo-Indian habitation sites. The seaward limit of Zone 3a lies on the maximum low stand of sea level during the Wisconsin glacial stage. Zone 3b includes a series of banks probably exposed during the Wisconsin maximum low stand. Zone 4 displays relict shoreline features in water depths of 90 to 200 m of uncertain age.

STUDY PRODUCTS: Coastal Environments, Inc. 1977. Cultural Resources Evaluation of the Northern Gulf of Mexico Continental Shelf. Vol. I, Prehistoric Cultural Resource Potential. A final report for the U.S. Department of the Interior, National Park Service, Office of Archeology and Historic Preservation. NTIS No. PB276773/AS. Contract No. 08550-MU5-40. 361 pp.

Coastal Environments, Inc. 1977. Cultural Resources Evaluation of the Northern Gulf of Mexico Continental Shelf. Vol. II, Historical Cultural Resources. A final report for the U.S. Department of the Interior, National Park Service, Office of Archeology and Historic Preservation. NTIS No. PB276774/AS. Contract No. 08550-MU5-40. 171 pp.

Coastal Environments, Inc. 1977. Cultural Resources Evaluation of the Northern Gulf of Mexico Continental Shelf. Vol. III, Maps. A final report for the U.S. Department of the Interior, National Park Service, Office of Archeology and Historic Preservation. NTIS No. PB286874/AS. Contract No. 08550-MU5-40.

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