BOEM ENVIRONMENTAL STUDIES PROGRAM: ONGOING STUDIES

BOEM OCS Region: Gulf of Mexico

Title: Inventory and Analysis of Archaeological Site Occurrence on the Atlantic OCS (GM-09-10)

Planning Areas: Atlantic

Total Cost: $337,629.16 **Period of Performance:** FY 2009-2012

Conducting Organization: TRC-Environmental Corporation

BOEM Contact: David Ball

Description:

Background: It has been over 25 years since any type of archaeological study has been completed on the Atlantic OCS for MMS. The study *Summary and Analysis of Cultural Resources Information on the Continental Shelf from the Bay of Fundy to Cape Hatteras, Final Report - Volume I: Physical Environment*, *Volume II: Archaeology and Paleontology*, *Volume III: Historic Shipping*, and *Volume IV: Management* completed in 1979 evaluated potential submerged archaeological resources from Cape Hatteras, NC, northward; and a 1981 study *A Cultural Resource Survey of the Continental Shelf from Cape Hatteras to Key West, Volume I: Introduction and Physical Environment*, *Volume II: Prehistoric Archaeology*, *Volume III: Shipwreck Archaeology and Remote Sensing Technology*, *and Volume IV: Conclusions and Recommendations* addressed potential submerged archaeological resources from Cape Hatteras, NC, southward. Since that time, there have been a number of significant archaeological discoveries off the Atlantic coastline, including both historic shipwrecks and submerged prehistoric sites. As a result, there is a critical need to develop a database of known and reported submerged cultural resources along the Atlantic OCS and to identify areas where inundated prehistoric sites might be located. A similar effort was completed in the Gulf of Mexico Region OCS in 2003; *Refining and Revising the Gulf of Mexico Outer Continental Shelf Region High-Probability Model for Historic Shipwrecks, Final Report*; *Volume I: Executive Summary*, *Volume II: Technical Narrative*, *Volume III: Appendices*.

Objectives: The objectives of this study are to develop an inventory of known, reported, and potential archaeological sites for the Atlantic Planning Region similar to what has been developed for the Gulf of Mexico Region. The proposed study will develop an inventory of historic shipwrecks emphasizing the use of primary sources; assess areas of the Atlantic OCS for prehistoric site potential and develop a model for where prehistoric sites might be expected; and recommend appropriate survey methodology in order to detect and avoid impacts to such resources. While remote sensing surveys will be required of permitees in their area of effect, an inventory of potential archaeological resources developed by the proposed study will help guide decisionmakers in developing appropriate mitigation strategies for targets located by remote sensing. In addition, the development of an effective survey strategy is dependant upon knowing the nature of

TECHNICAL SUMMARY

Study Title: Atlantic Wind Energy Workshop Summary Report

Report Title: Atlantic Wind Energy Workshop Meeting Report

Contract Number: GS-07F-0591W

Sponsoring OCS Region: Headquarters– Office of Alternative Energy Program

Applicable Planning Areas: Atlantic Outer Continental Shelf

Completion Date of Report: August 2011

Costs: $219,257

Project Managers: Valerie Johnson and Kim Olsen

Affiliation (Project Manager): Performance-based Solutions, Inc. and CSA International, Inc.

Address: 5113 Leesburg Pike, Falls Church, Virginia 22041; 8502 SW Kansas Avenue, Stuart, Florida 34997

Principal Investigators: Brian Balcom, Melanie Cahill, David Blaha, Julia Tims, Dan White, Alan Finio

Key Words: alternative energy, offshore wind, offshore renewable energy, socioeconomics, offshore energy technology, environmental data, birds, bats

Background: The Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE) is a bureau under the U.S. Department of the Interior (DOI) that manages the nation's natural gas, oil, and other mineral resources on the Outer Continental Shelf (OCS). In managing the offshore oil and gas resources, Offshore Energy and Minerals Management (OEMM) conducts environmental studies, issues leases, and regulates operations conducted on the OCS. The regulatory responsibilities include issuing permits for oil and gas exploration, development, and production and inspecting operations during all of these activities. BOEMRE manages the offshore mineral resources in concert with other Federal, State, and local agencies and in consultation with the public. The November 23, 2010, launching of the Secretary of Interior's "Smart from the Start" wind energy initiative for the Atlantic OCS is aimed at facilitating the prioritization, rapid siting, and leasing of new projects. This workshop provided information to assist BOEMRE in the environmental review of wind energy areas and in the evaluation of sites for new offshore projects. A total of 172 people attended the workshop, including Federal and State agency staff that provided a summary of their agencies' regulatory role in the wind energy development process as well as numerous experts and project leaders that reported on completed and ongoing studies relevant to the development of offshore wind projects. The attendees participated in the workshop plenary and breakout sessions and were tasked to identify data gaps and develop partnerships for future studies.

Objectives: As part of the Secretary of the Interior's "Smart from the Start" wind energy initiative to spur renewable energy development on the OCS, this workshop provided information to assist BOEMRE and its Federal partners in environmental and technical reviews

of wind energy areas and in the evaluation of new projects. Additionally, this workshop was part of the DOI-Department of Energy (DOE), Memorandum of Understanding (MOU) process to coordinate environmental monitoring and baseline studies in support of environmental assessment and consultations for siting and leasing in the Atlantic wind energy areas.

Specific goals of the workshop included (1) providing an update of recent and ongoing environmental and social sciences research conducted since the Worldwide Synthesis and Analysis of Existing Information Regarding Environmental Effects of Alternative Energy Uses on the Outer Continental Shelf workshop in 2007 and BOEMRE technology and safety studies on renewable energy; (2) identifying key data needs and prioritize research gaps; and (3) developing partnerships and identifying potential synergies for future studies.

Description: The workshop began with a presentation by the Director Bromwich that touched on the role of offshore renewable energy development in the Administration's Blueprint for a Secure Energy Future, and explained how the bureau's Offshore Renewable Energy Program is being elevated through the overall reorganization of the former Minerals Management Service. Federal agencies then provided program updates, their respective legal mandates, and how they are coordinating with each other to increase efficiency and reduce duplication. The presentations provided a background for the later discussions in the breakout sessions. These breakout sessions consisted of: 1) Environmental; 2) Technology Assessment and Resource (TA&R); 3) Social-Economics; and 4) Birds, Bats and Offshore Wind Development. The four breakout sessions took different approaches to the panel discussions and development of identifying data needs. The Environmental; TA&R; and Birds, Bats and Offshore Wind Development sessions included technical presentations by experts that identified and discussed recent and ongoing studies and research, trends in technology, existing guidelines and standards, and existing resources available regarding the offshore wind energy program. In contrast, the Social-Economics sessions took a collaborative approach to the panel discussions that included Cultural and Historic Resources; Multi-Use Issues/Space-Use Conflicts; Public Perception, Legal Studies, Visual Impacts, and Tourism; and Economic Impact, Regulatory, Policy, Stakeholder Issues, and Infrastructure.

Although the breakout sessions developed different data needs, one primary common theme was identified by all four sessions: establishing guidelines and standards for the wind energy industry in the U.S. The needs for guidelines and standards were different for each breakout session, but the common theme persisted. The sessions identified that the types of guidelines and standards needed included: the determination of quality and quantity data sufficiency; establishment of impact thresholds for specific critical species; establishment of a structured decision making process; identification of resources; collection of baseline and monitoring data; interpretation of data; design, safety, and installation; and for the required reports and plans.

The Atlantic Wind Energy Workshop Meeting Report provides a summary of the workshop activities and results. The Report is also a resource for the permitting process and regulatory framework of the offshore wind energy program and includes a listing and summary of Federal and State agency missions and mandates. This summary includes Federal and State agencies' involvement from cradle to grave in the development, siting, construction, operation, and decommissioning of Wind Energy projects on the Atlantic OCS and all affected areas and includes links and contacts for further information, including applicable laws and rules.

Study Products: Cahill, M., K. Olsen, D. Blaha, J. Tims, A. Finio, M. Todorov, J. Ewald, J. Primo, L. Medley, D. Bigger, K. Skrupky, and B. Hooker. Atlantic Wind Energy Workshop Summary Report. U.S. Department of the Interior, Bureau of Ocean Energy Management, Regulation, and Enforcement. Herndon, VA. OCS Study BOEMRE 049-2011. 78 pp. + apps.

ENVIRONMENTAL STUDIES PROGRAM: ONGOING STUDIES

BOEM OCS Region: Atlantic

Title: Developing Protocols for Reconstructing Submerged Paleocultural Landscapes and Identifying Ancient Native American Archaeological Sites in Submerged Environments

Total Cost: $2,000,000 **Period of Performance:** FY 2012-2017

Conducting Organization: University of Rhode Island

BOEM Contact: Brian Jordan

Description:
Background: The absence of a scientifically proven, standardized, "best practices" methodology for identifying submerged relict landscapes on the Atlantic OCS, and the ancient tribal archaeological resources that these landscapes may contain, has long been a concern among Federal, State and Tribal historic preservation officers and has made environmental decision-making problematic for BOEM. In the last three decades, only three desktop studies have been completed for BOEM to evaluate the potential presence of submerged ancient Native American archaeological resources on the Atlantic OCS. These studies has been broad in scope, but none have included field investigations to test the hypotheses that they advance, and these studies have neither integrated tribal historic preservation concerns nor involved tribal research partners as part of their research designs. BOEM, in its recently completed 2011 Atlantic Wind Energy Workshop, identified the development of geospatial databases of known submerged ancient Native American archaeological resources and of areas featuring cultural sensitivity, and it also standardized methodologies for identifying these resources on the Atlantic OCS as critical data needs.

Objectives: The purposes of this study are to enhance and refine the understanding of submerged paleocultural landscape distribution on the Atlantic OCS, especially landscapes that have retained tribal significance, and to conduct collaborative research with regional Tribes to assess and identify culturally important landscapes.

Methods: The study will be implemented in five phases and will involve two types of fieldwork: high-resolution marine geophysical survey and geotechnical sampling, which may include the use of SCUBA divers.

The first phase will develop best-practice protocols, which will assist in identifying data needs for field survey and data analysis, developing modeling approaches for reconstructing submerged paleocultural landscapes, and identifying ancient Native American archaeological sites in submerged environments. Workshops with Tribal representatives, remote sensing experts, archaeologists, geologists, and regulators will be held at the beginning of the project to develop a consensus on the project objectives and

methodologies. Follow-up workshops with targeted groups will be held at 18 months and during the final year of the project.

The second phase will consist of developing a methodology to incorporate Tribal knowledge and oral histories into these best-practice protocols, which will be accomplished through multiple simultaneous phases of consultation, existing data review and aggregation (geological, archeological and tribal), hypothesis development and testing protocols. This information will be used to develop a paleocultural landscape model, which will serve as a predictive model for the identification of environments with varying archaeological sensitivity for containing ancient Native American archaeological resources representative of the variability likely to be encountered in the southern New England offshore area.

The third phase will develop training materials and opportunities for field research so that Tribal representatives become familiar with the method, theory, and application of high-resolution marine archaeological surveys, geotechnical sampling, and analysis and interpretation of the collected data. The training material should be available in multiple formats and media to ensure the ability of tribal communities to assimilate this information regardless of respective technological limitation.

The fourth phase is field investigation, data acquisition, post-processing, analysis and interpretation, and the development of baseline data that will form the foundation of management recommendations. These field investigations will take place on four distinctly different study locations, encompassing a range of offshore environments identified from the predictive model developed in phase two. Each of these four areas will be subjected to a variety of geoarchaeological survey and subsurface sampling, analysis, and interpretation techniques. The geological, geotechnical, and archaeological survey data will be combined with Tribal knowledge to create a more complete understanding of the paleocultural landscape of the region, as well as to test and refine the proposed survey methodology and protocols. Federal, State, and Tribal regulatory entities will be coordinated with to ensure the regulatory community ground truths the protocols from a regulatory perspective. This phase will culminate in a final report that incorporates all the material from this phase and the previous phases.

The final phase is the development of a documentary film to assist in outreach efforts on the science and traditional knowledge utilized during the course of the study to reconstruct submerged paleolandscapes and the attempt to identify ancient submerged Native American archaeological sites in the southern New England area.

Importance to BOEM: Due to deglaciation, sea level along the Atlantic coast has risen over the past 12,000 years, submerging coastal areas that were once inhabited by Native Americans. Limited data are currently available, though, which discuss either the identification or the assessment of submerged paleocultural sites, and there is no precedence for a standardized “best practices” survey of such sites. To achieve compliance with environmental and historic preservation laws, BOEM has developed regulations and guidance documents directing lease and permit holders to avoid

impacting any archaeological resources found during the survey or development of their leases, including Native American sites. Secretarial Order No. 3317 also mandates that government bureaus and offices seek the collaboration and participation of Tribal representatives when undertaking projects with Tribal implications. This project, therefore, presents an auspicious opportunity to further learn about the identification of submerged paleocultural sites and to directly incorporate regional Tribal knowledge to learn more about these important landscapes.

Current Status: The University of Rhode Island has been given the project's Statement of Work (SOW) and is currently preparing its proposal, which will undergo internal review by BOEM marine archaeologists, geological oceanographers, and physical oceanographers.

Completion**:** 2017

Publications: None

Affiliated WWW Sites: None

Updated: January 17, 2012

ENVIRONMENTAL STUDIES PROGRAM: ONGOING STUDIES

BOEM OCS Region: Atlantic

Title: Commercial Fishing Hang Data as a Proxy for Locating Shipwreck Sites off the Mid-Atlantic Coast

Total Cost: $250,000 **Period of Performance:** 2011-2013

Conducting Organization: East Carolina University

BOEM Contact: Brian Jordan

Description:
Background: The low spatial accuracy of reported shipwreck sites within existing historical sources and/or existing databases (e.g., NOAA's Automated Wrecks and Obstructions Information System – AWOIS) makes reliance on these data for environmental decision-making problematic. Because of the manner in which data were reported (e.g., lost between points A and B, or off the coast of C) or collected (e.g., Loran, low-accuracy GPS, line-of-site), these data sets only provide a general indication of the number of shipwreck losses in a particular area. Additionally, information within these data sets is often heavily weighted toward wrecks occurring within the 19th and 20th centuries, when wrecking events were more likely to be recorded. Unlike the Gulf of Mexico Region, which has extensive oil and gas development and a Fishermen's Contingency Fund, the mid-Atlantic region does not have a formal mechanism for collecting fishing hang data. Moreover, because of the lack of current development activity in the Atlantic, it is postulated that fishing hangs would more likely be associated with historic shipwrecks having a degree of relief above the seafloor. Current research shows that 70% of a sample of known shipwrecks has 1 to 5 nets and/or dredges on-site. Fishing hang data could substantially contribute to the formation of a historic shipwreck dataset for the mid-Atlantic region.

Objectives: The purposes of this study are to develop a methodology for collecting fishing hang data from commercial fishermen, to identify a procedure to convert the data into a reliable spatial format within GIS, to field-test the data through a sample of sites, and to gain a better understanding of fishing hang data as a means to locate shipwrecks.

Methods: The study has four phases, and three types of fieldwork will be conducted: fishermen interviews on the coast, high-resolution marine remote-sensing surveys, and diving inspections of possible shipwrecks.

The final report will incorporate the findings of the study and addresses the question of how effectively commercial fishing hang data can be used to locate shipwrecks. Products developed through the study include a database of fishing hang sites within the mid-Atlantic region and a final report that describes the data collection methodology along with the results from the field survey. The study will complement the recently completed

Atlantic Inventory study (TRC, 2011) and will provide a template for gathering similar data in other BOEM regions.

Importance to BOEM: Mid-Atlantic States are focusing on developing offshore wind energy to supplement or fulfill their alternative energy objectives. Fishing hang data from ethnographic surveys of the commercial fisheries sector may provide a method for developing a more reliable data set of historic shipwreck locations in the mid-Atlantic region. Developing a proven methodology for collecting and testing this data could assist BOEM to evaluate proposed offshore energy projects via appropriate survey and mitigation measures and avoid harming significant cultural resources and associated marine habitats.

Current Status: A post award meeting was held and a tentative timeline was agreed upon for survey work to occur in the summer of 2012. The ethnographic interview schedule has been approved by BOEM and the East Carolina University Internal Review Board. Interviews are currently being conducted with commercial fishermen within the mid-Atlantic region. Quotes are being obtained from potential survey vessels in the area.

Completion: August 2013

Publications: None

Affiliated WWW Sites: None

Updated: January 17, 2012

ENVIRONMENTAL STUDIES PROGRAM: ONGOING STUDIES

BOEM OCS Region: National

Title: Synthesis, Legislative Review, and Case Law History applicable to Cultural Heritage in the Marine Environment

Total Cost: $150,000 **Period of Performance:** FY 2011-2013

Conducting Organization: NOAA, Office of General Council for International Law

BOEM Contact: Brian Jordan

Description:
Background: The interpretation of how cultural resource legislation is related to maritime heritage that is located on the outer continental shelf is a challenging topic, relying on the understanding of U.S. law, customary maritime law, international conventions, and often confusing and overlapping maritime jurisdictions. Statutory interpretation is often complicated due to confusion surrounding agency jurisdiction over different resources on and under the seafloor. Many court cases revolving around the ownership, protection, and management of historic shipwrecks have relied on legal precedent and the analysis of congressional intent to come to a final decision. Without access to the extensive legal resources on which law firms and the courts rely to make these decisions, it is difficult for BOEM subject matter experts and management to have reliability in the limited interpretation of the existing statutes and regulations with which they must comply.

Objectives: This study involves the synthesis of the information pertaining to cultural heritage legislation and case law that are relevant to BOEM's jurisdiction on the OCS, and this work will assist BOEM archaeologists and DOI solicitors with developing legally sound regulations and guidance. Products that the study will generate include the following: a digital collection of all of the sources used in the study, an annotated bibliography focusing on statute applicability toward cultural resources on the OCS, a bibliographic database of the sources hyperlinked to the digital collection, and a report describing the methods and results of the study.

Methods: The study entails developing legislative histories of all of the major statutes related to cultural resource and environmental protection of maritime heritage in the marine environment. A sample of some of the laws to be considered include: Outer Continental Shelf Lands Act, National Historic Preservation Act of 1966, National Environmental Protection Act, Archaeological Resource Protection Act of 1979, Antiquities Act of 1906, Abandoned Shipwreck Act of 1987, National Marine Sanctuaries Act, Sunken Military Craft Act, Archeological and Historic Preservation Act of 1974, Native American Graves Protection and Repatriation Act (NAGPRA), American Indian Religious Freedom Act (AIRFA), Admiralty Law, and the United Nations Convention on the Law of the Sea. All of the source documents (statutes, statutory

history, regulations, congressional material, case law, executive orders, international conventions, etc.) will be digitized and provided to BOEM in a searchable and an indexed portable document format (pdf). An annotated bibliography will be developed referencing the pdf and focusing on each statute's applicability toward cultural resources on the OCS. All sources used in the study will be entered into reference management software (e.g., Endnote), tagged with key words, and hyperlinked to a digital copy of the document.

Importance to BOEM: The majority of the legal guidance regarding BOEM's responsibilities for the survey and protection of archaeological resources was developed in the early 1980s, and periodic revisions were performed in the 1990s. All of this guidance is dated, however, and does not take into account revisions to the NHPA law and regulations or BOEM's expanded responsibilities for renewable energy development on the OCS. This study will synthesis all of the information pertaining to cultural heritage legislation and case law relevant to BOEM's jurisdiction on the OCS in order to assist BOEM archaeologists and DOI solicitors with developing legally sound regulations and guidance.

Current Status: Legislative histories have been compiled for the National Historic Preservation Act of 1996, as amended, the Antiquities Act of 1906, and the National Environmental Policy Act. The histories have been sent to the contractor for digitization and will be soon posted on their server. The digital histories will also be supplied to BOEM on compact discs.

Completion: September 2013

Publications: None

Affiliated WWW Sites: None

Updated: January 17, 2012

MMS ENVIRONMENTAL STUDIES PROGRAM: ONGOING STUDIES

MMS OCS Region: Atlantic Region

Title: Evaluation of Visual Impacts on Historic Properties (GM-08-10)

Planning Areas: North Atlantic, Mid-Atlantic, South Atlantic, and Florida Straits

Total Cost: $299,628.00 **Period of Performance:** FY 2008 - 2010

Conducting Organization: John Milner Associates, Inc.

MMS Contact: Dr. Christopher E. Horrell

Description:

Background: The Minerals Management Service (MMS), an agency of the U.S. Department of the Interior, is charged with the responsibility of considering the effects of its actions on significant cultural resources on the Outer Continental Shelf (OCS) of the United States, from State waters to the limit of the Exclusive Economic Zone. This program arose out of a variety of legislation enacted to ensure proper management and protection of the nation's cultural heritage. The most pertinent of these laws are the National Historic Preservation Act (NHPA) of 1966 (as amended), the National Environmental Policy Act (NEPA), and the Outer Continental Shelf Lands Act (OCSLA) of 1978.

While impacts to cultural resources on the OCS have traditionally been the purview of the MMS, other potential impacts to archaeological resources and properties are also of great concern, especially as alternative energy becomes a reality. One of the most important concerns with the development of offshore wind facilities is the visual impacts these installations will have on-shore, both from the structures and the lighting, on archaeological resources and properties listed on, or potentially eligible for listing on, the National Register of Historic Places. These properties include historic structures, historic archaeological sites, and prehistoric archaeological sites. Our coastlines are lined with many historic properties that potentially could be impacted visually. The determination of whether a property may be adversely impacted is a requirement of Section 106 of the NHPA. The basis for making the determination of whether a property is adversely impacted depends upon the description within the property listing. If within the description the rationale for listing the property or its potential eligibility includes the visual aspects of its surroundings, then the property may be adversely impacted by visual disruption.

Additionally, analyses under NEPA will be made as to whether visual impacts could affect the revenue from the property. In particular where a property is open to the public for a fee, a concern is whether visitation of the property would be affected by an altered

visual experience. The first step in making this evaluation is to determine which properties are open to the public and what level visitation occurs.

Objectives: Identify those properties that could be adversely impacted by alteration of the view of the ocean and to identify which properties are open to the public and generate revenue.

Methods: Collect information from each State along the eastern seaboard for every historic property that could be visually impacted by offshore development. With this information, create a searchable web-based database with the appropriate information to make Section 106 determinations.

Products: A GIS database and final report.

Importance to MMS: This study will aid in planning purposes for alternative energy development in the Atlantic Region.

Current Status: Awarded and in progress.

Final Report Due:	July 2010
Publications:	None
Affiliated WWW Sites:	None
Revised date:	March 2010
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these resources and where they most likely may be located.

Methods: The proposed study will develop an inventory of historic shipwrecks emphasizing the use of original sources; assess areas of the OCS for prehistoric site potential by evaluating current theories on prehistoric settlement patterns, paleo-shorelines, sea level rise, and regional geology; and synthesize this information to recommend an appropriate survey methodology in order to detect and avoid impacts to archaeological resources. The database should be developed using the same format as the current GOMR shipwreck database and should link to a Geographic Information System compatible to the existing MMS GIS.

Products: A final report of findings and a GIS database of archaeological resources will be completed under this contract.

Importance to BOEM: With recent interest in alternative energy sources and new leasing activity planned for the Atlantic Region, development in this area will increase. Therefore, a current inventory and analysis of where submerged cultural resources might be expected will be crucial for mitigating adverse affects to these resources as required under Section 106 of the National Historic Preservation Act and Executive Order 11593, which require that Federal agencies must apply the National Register Criteria to properties that may be affected by an undertaking.

Current Status: The final report is going through the publications process.

Final Report Due:	November 2011
Publications:	None
Affiliated WWW Sites:	None
Revised date:	November 2011
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