Finding of No Adverse Effect
For the Approval of a Research Activities Plan
For the Virginia Offshore Wind Technology Advancement Project
On the Outer Continental Shelf Offshore Virginia

April 14, 2015

Finding

The Bureau of Ocean Energy Management (BOEM) has made a Finding of No Adverse Effect for this undertaking, pursuant to 36 CFR § 800.5(b). Though there are historic properties present within the area of potential effects, either the undertaking's effects do not meet the criteria of adverse effect at § 800.16(a)(1), or BOEM will require the lessee to operate under conditions designed to avoid adverse effects.

Documentation in Support of the Finding

I. Description of the Undertaking

Federal Involvement

The Energy Policy Act of 2005, Pub. L. No. 109-58, added subsection 8(p) to the Outer Continental Shelf Lands Act, which grants the Secretary of the Interior the authority to issue leases, easements, or rights-of-way on the Outer Continental Shelf (OCS) for the purpose of renewable energy development. The Secretary delegated this authority to the former Minerals Management Service, now the Bureau of Ocean Energy Management (BOEM). BOEM issues leases to other federal agencies and to the States for the purpose of conducting renewable energy research that supports the future production, transportation, or transmission of renewable energy pursuant to 30 CFR § 585.238. The terms of these types of research leases are negotiated by the Director of BOEM and the head of the federal agency or the governor of the relevant state, or their authorized representative on a case-by-case basis.

The Commonwealth of Virginia, Department of Mines Minerals and Energy (DMME), submitted a research lease application to BOEM on February 8, 2013, for the Virginia Offshore Wind Technology Advancement Project (VOWTAP). The Virginia Electric and Power Company, a wholly owned subsidiary of Dominion Resources, Inc. (Dominion) would be the operator of VOWTAP and would work under the terms of an operator agreement with DMME and the terms of the Section 238 research lease.

On July 30, 2013, BOEM published a "Public Notice of an Unsolicited Request for an Outer Continental Shelf (OCS) Research Lease, Request for Competitive Interest, and Request for Public Comment" (78 FR 45965). In December 2013, BOEM published a "Determination of No Competitive Interest" (78 FR 73882) for the research lease request. On January 30, 2014, BOEM made a Finding of No Historic Properties Affected pursuant to 36 CFR § 800.4 (d)(1) for the issuance of the requested research lease for the VOWTAP. *See:* www.boem.gov/Support-Finding-Historic-Properties-Affected-VOWTAP. The applicant subsequently submitted a research activities plan (RAP)

consistent with regulations at 30 CFR § 585.620–585.629 describing the proposed construction, operation, maintenance, and decommissioning of the project, along with the results of site characterization studies, including archaeological survey and historic property identification reports. *See*: http://www.boem.gov/Research-Activities-Plan.

This document describes BOEM's compliance with Section 106 of the National Historic Preservation Act and documents the agency's Finding of No Adverse Effect (Finding) for the undertaking of approving, or approving with conditions, the VOWTAP RAP under 36 CFR § 800.5(b). BOEM has prepared this documentation in support of the Finding following the standards outlined at 36 CFR § 800.11(e). This Finding and supporting documentation are being provided to the Virginia State Historic Preservation Officer (VA SHPO), the Narragansett Indian Tribe, the Lenape Indian Tribe of Delaware, the Virginia Army National Guard (VAARNG), Naval Facilities Engineering Command Mid-Atlantic, and the Virginia DMME, as consulting parties. The Finding will be made available for public inspection by placement on BOEM's public website prior to the bureau approving the undertaking.

Project Location and Description

The research lease area requested by DMME consists of six OCS sub-blocks within the Currituck Sound Protraction No. NJ18-11: from Block Number 6061, sub-blocks H, L, and P, and from Block Number 6111, sub-blocks D, H, and L (Figure 1). The six sub-blocks are located immediately adjacent to the western edge of the Virginia commercial lease area. The western edge of the research lease area is approximately 22.8 nautical miles (nmi; 42.3 kilometers [km]) from Virginia Beach and the eastern edge is approximately 23.5 nmi (43.5 km) from Virginia Beach. The entire area is approximately 2,135 acres (ac; 864 hectares [ha]).

The VOWTAP's offshore elements will consist of two Inward Battered Guide Structure (IBGS) foundations, an inter-array cable, an export cable and two, 6-megawatt wind turbine generators (WTGs) (see Figure 1). The WTGs and inter-array cables will be located within Federal waters on the OCS within Lease block 6111, aliquot H. Each of the WTGs will be installed atop Keystone IBGS foundations (Figure 2). The total footprint of each IBGS foundation is approximately 0.09 ac (0.04 ha) on the seafloor. The WTGs will be arranged in a north-south configuration spaced approximately 3,445 feet (ft., 1,050 meters [m]) apart, and will be connected by means of a 34.5 kilovolt alternating current, submarine inter-array cable. The inter-array cable will connect the two WTGs for a total length of approximately 0.54 nmi (1.00 km). During installation of the IBGS foundations, WTGs, and inter-array cable, bottom-disturbing activities may take place within a 190 ac (76.9 ha) construction footprint surrounding the turbine locations.

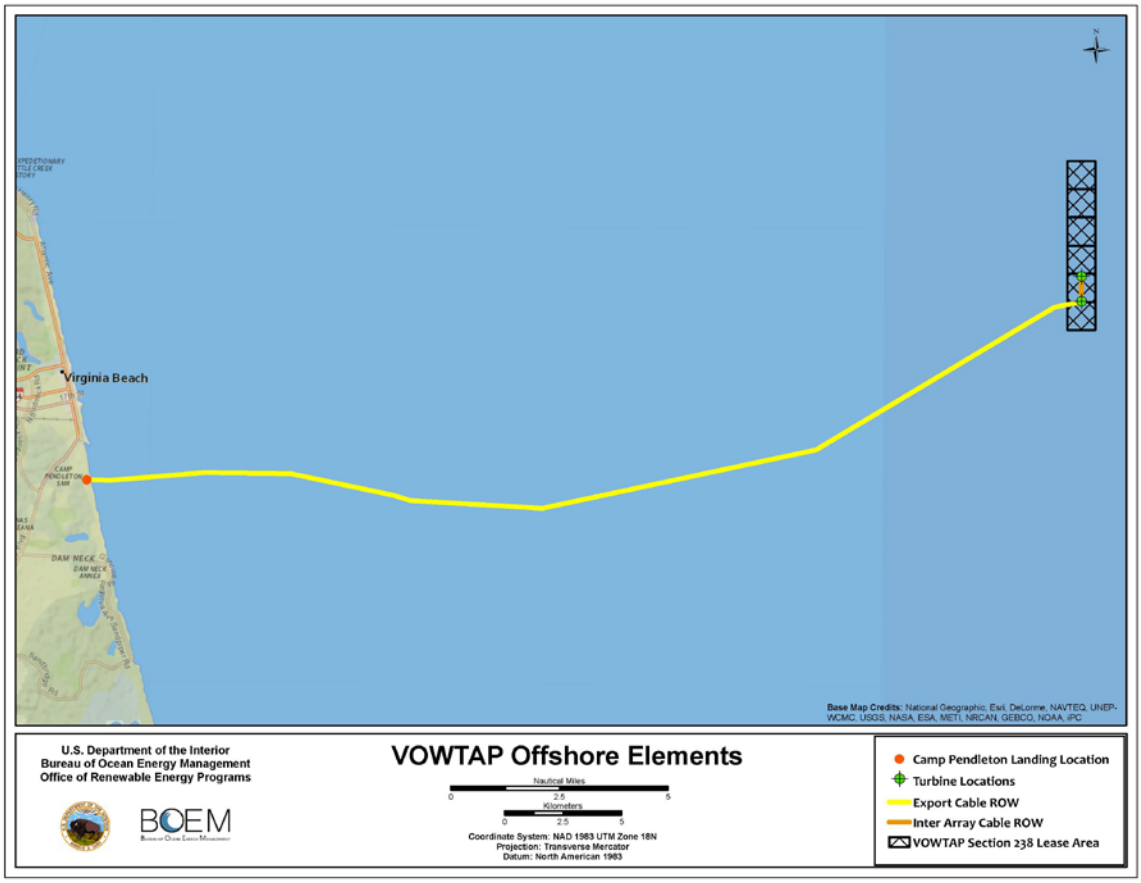

Figure 1. Project Offshore Location and Elements. The entirety of the export cable right-of-way and the six-block lease area have been surveyed.

A separate, bundled 34.5-kilovolt alternating current submarine transmission and communications cable, referred to as the export cable, will connect the WTGs to the existing onshore electrical grid. The export cable will originate at the southern WTG and travel approximately 27 nmi (43 km), traversing both Federal and State waters, to a landfall site located at Camp Pendleton Military Reservation (Camp Pendleton). The target depth of burial for the Export Cable is approximately 6.6 ft. (2 m). Installation of the cable will be achieved using a jet plow. Due to water-depth constraints, installation via jet plow will be supported by a maximum 8-point anchored barge from the proposed horizontal directional drilling (HDD) punch-out location, for a distance of approximately 3.9 nmi (7.2 km) followed by the use of dynamically positioned cable-lay vessel for the remainder of the route.

Figure 2. Inward Battered Guide Structure (IBGS) or "twisted jacket" foundation support structure for wind turbines. Left: Keystone Engineering. Right: National Renewable Energy Laboratory

The maximum height of each WTG is 584 ft. (178 m), measured from mean sea level to rotor tip. In compliance with Federal Aviation Administration (FAA) and U.S. Coast Guard (USCG) regulations, the WTGs will have nighttime lighting. FAA lighting will consist of an L-864 medium intensity aeronautical light with a flash rate of 20 flashes per minute (FPM) atop each WTG nacelle. USCG lighting will consist of two quick flashing, amber lights with 4 nmi (7.4 km) 360 degree visibility placed on the foundation of each WTG at a height of not more than 50 ft. (15 m) above the highest astronomical tide.

The VOWTAP's onshore elements include the onshore interconnection cable, fiber optic cable, switch cabinet, and interconnection station (Figure 3). The onshore interconnection cable will convey the energy produced by the two WTGs from the landfall site to existing transmission infrastructure located on the southern side of South Birdneck Road. The landfall site will serve as the transition point where the export cable will be spliced to the onshore interconnection cable and separate fiber optic cable. A 0.5 ac (0.2 ha) HDD work area will be established near the export cable landfall site. This temporary work area will support the offshore HDD drilling rig, associated pumping units, and mud ponds, as well as contain a site office and material storage area. The switch cabinet will measure approximately 6 ft. long by 6 ft. wide by 6 ft. tall (2 m long by 2 m wide by 2 m tall), and will be constructed within the footprint of the proposed onshore HDD work area.

From the switch cabinet, the onshore interconnection cable and fiber optic cable will be buried below ground using the HDD construction method to the proposed interconnection station. To support the construction and operation of the Onshore Interconnection Cable and Fiber Optic Cable, Dominion proposes a 30 ft. (9.1 m) temporary construction right-of-way along Rifle Range Road and the Gate 10 Access Road for installation of the cable. Upon completion of construction 15 ft. (4.6 m) will be retained as a permanent easement for access during operation. The Onshore Interconnection Cable and Fiber Optic Cable will be installed approximately 3 ft. (0.9 m) apart and buried to a minimum depth of 3.3 ft. (1 m) to be consistent with local utility standards. The interconnection station will be located at an existing paved turnout area at the southern end of the Gate 10 Access Road within Camp Pendleton. The interconnection station will consist of an approximately 0.2 ac (0.09 ha) area that will contain a revenue meter, 34.5 kilovolt switch gear, a shunt reactor, and a transformer. Additional details on these project elements are provided in the RAP.

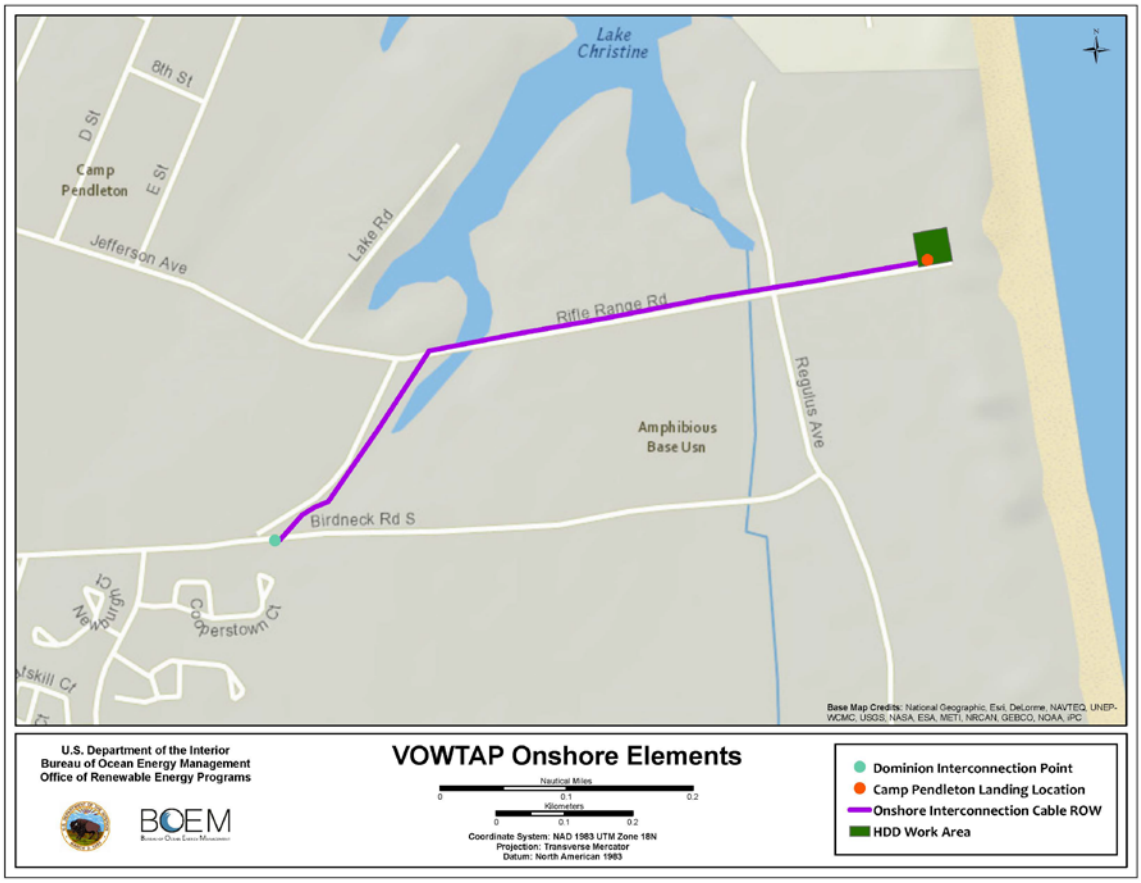

Figure 3. Project Onshore Location and Elements

Area of Potential Effects

As defined at 36 CFR§ 800.16(d), the Area of Potential Effects (APE) is the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may differ for different kinds of effects caused by the undertaking. The APE was determined by BOEM in consultation with the VA SHPO and other consulting parties through meetings and circulation of the VOWTAP survey reports and this Finding, in draft.

Specific to the undertaking under discussion in this Finding (the approval, or approval with conditions, of the RAP), the APE is considered as:

- the depth and breadth of the seabed potentially impacted by any proposed seafloor/bottom-disturbing activities offshore;
- the depth and breadth of the ground where ground-disturbing activities are proposed onshore; and
- the viewshed from which renewable energy structures would be visible.

As defined, the APE for the terrestrial archaeological survey includes the onshore construction footprint and any associated laydown or staging areas to the depth of disturbance (see Figure 3). The APE for marine archaeological survey includes the offshore construction footprint and any associated anchoring or construction impact areas to the depth of disturbance (see Figure 1). Finally, the APE for the viewshed from which renewable energy structures would be visible includes an area 25 statute miles (mi.; 22 nmi; 40 km) from the offshore WTGs; NRHP-Listed Properties within 0.25 mi. (0.22 nmi; 0.40 km) of shoreline and 10 mi. (8.7 nmi; 16 km) to north and south of aboveground facilities; and 0.5 mi (0.4 nmi; 0.8 km) from aboveground facilities (Figure 4).

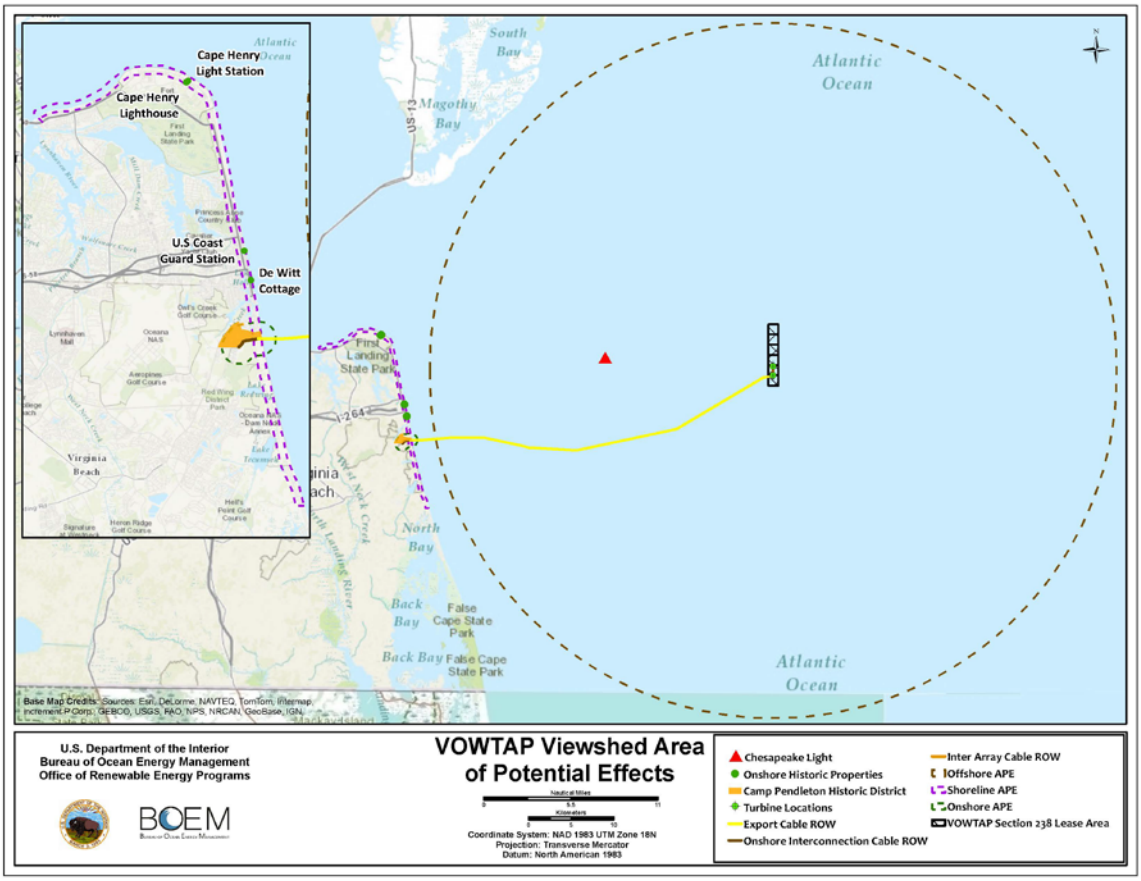

Figure 4. Project Viewshed Area of Potential Effects

II. Description of the Steps Taken to Identify Historic Properties

BOEM has reviewed existing and available information regarding historic properties within the APE. Sources of this information include consulting with the appropriate parties and the public; gathering information shared by the VA SHPO's office; reviewing archaeological survey and historic properties identification reports provided to BOEM in support of the RAP; and accessing information gathered by BOEM for an updated study of archaeological resource potential on the Atlantic OCS, known as the Atlantic Shipwreck Database (ASD). The ASD compiles information on historic shipwrecks and models the potential for archaeological sites predating European contact based on reconstruction of past landscapes, human settlement patterns, and site formation and preservation conditions (TRC Environmental Corporation 2012). Additionally, BOEM collected supplementary high resolution acoustic data and conducted scientific diving operations at locations identified in historic properties identification reports as being likely to contain archaeological sites.

BOEM's Atlantic Shipwreck Database

Existing government databases formed the core of the data for BOEM's ASD, which was then supplemented by commercial databases. The National Oceanic and Atmospheric Administration (NOAA) maintains the Automated Wreck and Obstructions Information System (AWOIS), a database of wrecks and obstructions compiled from hydrographic surveys and field reports. The U.S. Navy created the Non-Submarine Contact List (NSC) for military use in distinguishing shipwrecks from submarines hiding on the ocean floor. The U.S. Navy also maintains a database entitled *Partial List of Foundered U.S. Navy Craft*. Ships from this source were added to the database as well. Portions of three commercial databases were also obtained and included: The Global Maritime Wrecks Database, the International Registry of Sunken Ships, and the Northern Shipwrecks database (TRC Environmental Corporation 2012). BOEM's ASD does not represent a complete listing of all potential shipwrecks located on the Atlantic OCS, but rather it serves as a baseline source of existing and available information for the purposes of corroborating and supporting identification efforts. In many cases, the locational accuracy of database entries varies greatly.

A July 2014 review of BOEM's ASD resulted in no previously-reported shipwrecks or obstructions within the APE.

Consultation with Appropriate Parties and the Public

On March 14, 2014, BOEM formally notified the public through the *Federal Register* (79 FR 14534-5), of its intent to prepare an Environmental Assessment (EA) to consider the reasonably foreseeable environmental consequences associated with the project and to use responses to the notice and the EA to obtain public input for its Section 106 review (36 CFR § 800.2(d)(3)). None of the comments received concerned historic properties, the scope of historic properties identification efforts, or any other topic relevant to Section 106 review. On December 2, 2014, BOEM announced the publication of the EA for public review and comment (79 FR 71446). Specific to the Section 106 review, comments were submitted by Dominion and are discussed in Section VI below. No additional comments were received concerning historic properties, the scope of historic properties identification efforts, or any other topic relevant to Section 106 review.

Additionally, BOEM held public meetings in Virginia Beach, Virginia on April 3, 2014 and December 17, 2014, in part to solicit comments and information on historic properties to inform the bureau's Section 106 review of the VOWTAP. None of the comments received at these meetings concerned historic properties, the scope of historic properties identification efforts, or any other topic relevant to Section 106 review.

BOEM, with the consulting parties, will continue to involve the public through outreach, notifications, and request for comments throughout the Section 106 consultation and development of the EA. This includes publications in the *Federal Register* and on its website requesting information on historic properties and concerns regarding the undertaking.

BOEM initiated Section 106 consultation on April 3, 2014, through letters of invitation, telephone calls, and emails (Appendix A). This outreach and notification included contacting over 50 individuals and entities from 27 organizations, including federally-recognized tribes, local governments, SHPOs, state-recognized tribes, and the public (Table 1). Additionally, BOEM has conducted formal government-to-government consultation with the Narragansett Indian Tribe and the Shinnecock Indian Nation. Furthermore, BOEM has identified and contacted 16 state-recognized tribes, one of whom chose to consult with BOEM on this undertaking, the Lenape Indian Tribe of Delaware. Subsequently, BOEM held webinars and meetings to circulate and discuss the project survey reports and this Finding, in draft. This included an in-person meeting with the consulting parties held August 27, 2014, at the Virginia Department of Historic Resources.

Review of Archaeological Resources Survey and Historic Properties Identification Reports and BOEM's Additional Investigations

As discussed above, BOEM's renewable energy regulations require a lessee to provide the results of surveys with its plan for the areas potentially affected by the activities proposed in each plan (*see* 30 CFR § 585.610(b) and 585.626(a)), including the results of a shallow hazards survey, geological survey, geotechnical survey, and archaeological resource identification survey. BOEM refers to these surveys as "site characterization" activities and provides guidelines for the submission of the results of these activities. *See also Guidelines for Providing Geological and Geophysical, Hazards, and Archaeological Information Pursuant to 30 CFR Part 585* at: http://www.boem.gov/Renewable-Energy-Program/Regulatory-Information/GGARCH.aspx, which advises lessees to survey the proposed area of impact in its entirety. Additionally, BOEM requires lessees to provide the results of onshore historic properties identification activities conducted in accordance with the standards and guidelines of the relevant SHPOs, in this case the Virginia Department of Historic Resources.

In reviewing the RAP, BOEM also reviewed four appendices to the RAP, including a Marine Archaeological Assessment (Schmidt et al. 2014); a Terrestrial Archaeological Assessment (Tetra Tech 2014a); a Historic Structures Survey Report (Sexton 2014); and a Visual Impact Assessment (Tetra Tech 2014b). These four reports are also attached to this Finding (Appendices B through E) and their results are summarized below.

Table 1.

Entities Solicited for Information and Concerns Regarding Historic Properties and the Proposed Undertaking

Federal Agencies	*Local Governments*	*State-recognized Tribes*
Advisory Council on Historic Preservation	Accomack-Northampton Planning District Commission	Cheroenhaka (Nottoway) Indian Tribe
Bureau of Indian Affairs	Board of Supervisors Accomack County	Chickahominy Tribe
Fort Monroe National Monument	City of Chesapeake	Eastern Chickahominy Tribe
National Park Service	City of Hampton	Lenape Indian Tribe of Delaware
U.S. Army Corps of Engineers	City of Newport News	Mattaponi Tribe
U.S. Department of Energy	City of Norfolk	Monacan Indian Nation
Naval Facilities Engineering Command Mid-Atlantic	City of Portsmouth	Nansemond Tribe
	City of Suffolk	Nanticoke Indian Association, Inc.
State Agencies	City of Virginia Beach	Nanticoke Lenni-Lenape Indians
Virginia Department of Environmental Quality	Hampton Roads Planning District Commission	Nottoway Indian Tribe
Virginia Department of Historic Resources	James City County	Pamunkey Tribe
Virginia Department of Military Affairs-Virginia Army National Guard	Suffolk City Council	Patawomeck Indian Tribe
Virginia Department of Mines, Minerals, and Energy	Town of Accomac	Powhatan Renape Nation
Virginia Marine Resources Commission		Rampanough Mountain Indians
	Federally-recognized Tribes	Rappahannock Tribe
	Narragansett Indian Tribe	Upper Mattaponi Tribe
	Shinnecock Indian Nation	

Identification of Historic Period Shipwrecks within the Offshore APE

Within the offshore and nearshore submerged lands comprising the research lease area and the inter-array and export cable corridors, three potential historic period archaeological resources had been identified, which were interpreted from their geophysical signatures to be potential shipwrecks (Schmidt et al. 2014; Appendix F). These included targets CR001, CR002, and LA001. Subsequent to this survey, BOEM

independently collected additional high resolution data and conducted scientific diving operations on these three targets and removed one (CR002) from consideration, on the basis that it constitutes a modern concrete buoy mooring anchor (Figure 5). As it does not constitute a historic property, CR002 will not be discussed further in this Finding. However, seafloor disturbing activities associated with the undertaking have the potential to affect Targets CR001 and LA001; these potential historic properties are discussed in Section III, below.

Figure 5. Target CR002 was determined by BOEM to be a concrete buoy mooring anchor and will not be considered further in this Finding.

Identification of Paleochannels and Analysis of their Potential for Precontact Archaeological Resources within the Offshore APE

Eight paleochannels were identified in the cable corridor 10-20 km offshore in water depths of 15-20 m mean lower low water (MLLW) (Table 2). Paleochannels were identified from CHIRP seismic data based on evidence of erosion/incision, nature of the internal channel-fill reflectors, and overall geometry (Schmidt et al. 2014). These paleochannels were individually analyzed for their potential to contain intact remnants of the past landscape that could have the potential to contain precontact archaeological deposits. Paleochannels P–2 through P–5 clustered 11-12 km offshore in the depth range of 15-18 m MLLW. These may represent channel migration within a channel system rather than separate, individual channels. Paleochannel P-1 (located approximately 10.5 km offshore at depths of 10 m MLLW) and unmarked channel “a”, (located approximately 18 km offshore in water depths of 20 m MLLW) consist of multiple

channels, which may also reflect channel migration. Paleochannel P-6 (located approximately 13.5 km offshore in depths of 17 m MLLW) and Paleochannel P-7 (located approximately 15 km offshore in depths of 18 m MLLW) both exhibit narrow widths, and poorly defined features. All channels/systems appear to be oriented roughly shore parallel. Considering the evidence of extensive erosion/reworking of sedimentary units immediately below the transgressive sand sheet for all paleochannels, it is unlikely that natural levee sediments have been preserved, with the exception of the lowermost channel identified in P–1, which is too old to have experienced human occupation. Therefore, the 10-20 km segment of the cable corridor has a low potential for preservation of natural levee deposits and associated cultural materials. Based on these results, further core sampling was not recommended (Schmidt et al. 2014) and these paleochannels do not constitute historic properties. Thus, they will not be discussed further in this Finding.

Table 2.

Paleochannels identified within the Area of Potential Effects and their Potential for Pre-contact Archaeological Resources within the Offshore APE
(Descriptions and interpretations are quoted directly from Schmidt et al. 2014l)

Paleo-channel	*Distance Offshore*	*Water Depth MLLW*[1]	*Description*	*Potential for Pre-contact Archaeological Resources*
P-1	10.5 km	10 m	Poorly defined in the seismic profile data, with no visible flanks, but appears as a faint system of "cut and fill" structures. Exhibits up to 6 m relief, residing between 2 and 8 m below the seafloor (mbsf).	Two sediment cores (VC-005 and VC-006) collected in the general vicinity depict a transgressive sand sheet and ravinement surface. Low potential for preservation of pre-contact archaeological resources.
P-2	11 km	15 m	Narrow (.06 - 0.23 km) thin (2 - 4 mbsf) well-defined channel with prograding infill. Some lines exhibit multigenerational cut and fill structures suggesting multi-episodes of channel reactivation.	Two sediment cores (VC-005 and VC-006) collected in the general vicinity depict a transgressive sand sheet and ravinement surface. Low potential for preservation of pre-contact archaeological resources.
P-3	12 km	16 m	Consists of two distinct channels, both very well defined, with high-resolution prograding infill from the east Exhibits up to 7 m of relief, ranging from ~ 1 to ~8 mbsf and varies in width from ~0.09 to ~0.45 km.	Two sediment cores (VC-005 and VC-006) collected in the general vicinity depict a transgressive sand sheet and ravinement surface. Low potential for preservation of pre-contact archaeological resources.
P-4	12 km	17 m	Exhibits up to 5 m in relief, ranging	Prograding fill units appear to have

[1] MLLW refers to mean lower low water, a measurement of tidal datum that is the arithmetic mean of the lower low water heights of each tidal day observed over a specific 19-year Metonic cycle (the National Tidal Datum Epoch). For stations with shorter series, simultaneous observational comparisons are made with a control tide station to derive the equivalent of the National Tidal Datum Epoch. MLLW has been designated for use in lieu of MLW as the adopted reference NOS chart and sounding datum in most coastal tidal waters per the National Tidal Datum Convention of 1980.

Paleo-channel	*Distance Offshore*	*Water Depth MLLW*[1]	*Description*	*Potential for Pre-contact Archaeological Resources*
			from ~1 to ~6 mbsf and is well to very well defined consisting of high-resolution prograding channel fill units from the west.	truncated surfaces, suggesting erosion, likely by shoreface ravinement during the Holocene sea-level rise. Low potential for preservation of pre-contact archaeological resources.
P-5	12 km	17 m	Poorly defined and narrow, ranging from 0.06 to 0.12 km in width, and is relatively shallow ranging from 1 - 2 to 4 - 5 mbsf. The channel is poorly defined and internal reflectors are faint to nonexistent with no detectable infilling pattern. Holocene in age.	Lateral channel migration likely reworked any natural levee deposits present, thereby decreasing the preservation potential. Low potential for preservation of pre-contact archaeological resources.
P-6	13.5 km	17 m	Narrow with a consistent width of 0.06 - 0.08 km. It exhibits up to 2 m of relief ranging from 2 - 4 mbsf. The channel is poorly defined on seismic data and no internal reflectors were detected.	Truncation of the underlying channel, and associated levee deposits, likely occurred by shoreface ravinement during the Holocene transgression. The surficial 1.2 m of Core VC-007 includes a layer of dark gray silty sand with clay lenses that may be interpreted as natural levee deposits. While the clay would be consistent with levee deposition, the gravel component would suggest a channel lag or ravinement surface. More likely, it is an amalgamation of all three environments possibly reworked during the Holocene transgression. Low potential for preservation of pre-contact archaeological resources.
P-7	15 km	18 m	Very narrow, but consistently .03 km in width. The channel is not well-defined, but contains faint, parallel internal reflectors. P–7 exhibits up to 5 m in relief ranging from ~1 to 6 mbsf.	The overlying ~1 m-thick TSS has a relatively flat base and, although truncation of channel fill units is not visible, erosion has likely occurred as described for the other channels. Low potential for preservation of pre-contact archaeological resources.
P-a	18.5 km	20 m	A series of separate channels; should be considered a channel system. Individual channels exhibit up to 4 m relief, ranging from 1-2 to 6 mbsf. The system width extends beyond the end of two of the three seismic lines, but it is likely km-scale in width. Channels are poorly to well-defined on seismic data, with both parallel and prograding infill.	Shore face ravinement and lateral channel migration during the Holocene sea-level rise likely eroded, or reworked, channel fill and natural levee deposits. Low potential for preservation of pre-contact archaeological resources.

Identification of Historic Properties within the Onshore APE

Historic period archaeological resources situated onshore Virginia are associated primarily within Camp Pendleton State Military Reservation Historic District, which is listed on the National Register of Historic Places (NRHP; see Figure 4). Though Camp Pendleton's present listing documents the property's contributions to broad patterns of history and embodies architectural, military, and transportation elements of significance for the periods 1911-1950, the area had previously been subject to extensive landscape modifications. From post-contact period settlement through the development of the area for military training activities, the onshore project area was primarily agricultural (Tetra Tech 2014a). A previously identified archaeological site within the immediate vicinity of the project area, a 19th to early 20th century domestic trash pit (Tetra Tech 2014a), either predates or is contemporary with the earliest military activities. Consistently, within the onshore lands comprising the construction footprint and associated laydown or staging areas, multiple isolated historic period artifacts (glass, brick, and bullet fragments) were identified in various locations throughout, though none were of sufficient number in any given area to constitute an archaeological site (Tetra Tech 2014a). Thus, they will not be discussed further in this Finding.

As analyzed in BOEM (2007), visual impacts from the proposed project include a temporary increase in the volume of lighted vessel traffic. Lighted vessel traffic associated with the undertaking is indistinguishable from other existing vessel traffic and is temporary in nature. Moreover, the presence of the WTGs will have no effect (as defined in 36 CFR § 800.16(i)) upon the Camp Pendleton State Military Reservation Historic District, the Cape Henry Lighthouse, the Cape Henry Light Station, De Witt Cottage, the U.S. Coast Guard Station, and the Chesapeake Light because the undertaking will not change the attributes of the historic properties that have qualified them to be listed in the NRHP or to be recommended as NRHP eligible (Sexton 2014; Tetra Tech 2014b). Thus, the Cape Henry Lighthouse, the Cape Henry Light Station, De Witt Cottage, the U.S. Coast Guard Station, and the Chesapeake Light will not be further discussed in this Finding.

However, consultation with the VAARNG indicated that the proposed general location for the switch cabinet is in the vicinity of three resources that contribute to the National Register of Historic Places-listed Camp Pendleton/State Military Reservation Historic District (DHR Resource No. 134-0413): the Beachfront Rifle Range (DHR Resource No. 134-0413-0160), the Beachfront cultural landscape (DHR Resource No. 134-0413-0170), and the Observation Deck (DHR Resource No. 134-0413-0168). However, the use of additional vegetative screening and appropriate paint scheme will further reduce the visibility of the switch cabinet and ensure avoidance of any possible adverse effects.

III. Description of the Affected Properties

The following section includes a description of historic properties potentially affected by the undertaking, including information on the characteristics that qualify them for the National Register.

Offshore Historic Properties

BOEM's good faith effort to identify historic properties offshore resulted in the location of two potential historic period archaeological resources that have the potential to be affected by the proposed undertaking: CR001 and LA001. These properties are interpreted from their geophysical signatures to be potential shipwrecks (Schmidt et al. 2014) and may yield information important in history. BOEM administratively treats identified submerged potential historic properties as eligible for inclusion on the National Register under Criteria D, and requires lessees to avoid them unless lessees choose to conduct additional investigations to confirm or refute their qualifying characteristics. In this case, both submerged potential historic properties CR001 and LA001 will be avoided through conditions of BOEM's RAP approval, including the use of protective buffers. These potential historic properties were registered with the Virginia Department of Historic Resources and designated as sites 44VB0376 and 44VB0377.

Target CR001(44VB0376)

Target CR001 is located within the export cable survey corridor, in close proximity to the outer border of the APE, at a water depth of 15.5 m MLLW. This target comprises one magnetic anomaly; no side-scan sonar or sub-bottom anomalies were recorded that could be associated with this target. This target does not correlate with any shipwrecks or cultural resources identified during archival and background research. The target exhibits high amplitude (193.38 nT), and a medium duration (42.8 m) with a "dipolar" profile, but contour data captures only a single pole, indicating the anomaly extends outside the area of potential effect. It was recorded with a sensor height of 3.66 m. The lack of a side-scan sonar anomaly indicates that the target is buried. Magnetic contour analyses indicate that Target CR001 possesses characteristics that may represent a submerged cultural resource, such as a shipwreck (Schmidt et al. 2014).

Target LA001(44VB0377)

Target LA001 comprises two adjacent magnetic anomalies located in BOEM Lease Block 6111, Aliquot H at a water depth of 24.5 m MLLW; no side-scan sonar or sub-bottom anomalies were recorded that could be associated with this target. This target does not correlate with any shipwrecks or cultural resources identified during archival and background research. The first anomaly exhibits medium amplitude (55.45 nT), medium duration (28.7 m), and a dipolar signature. It was recorded with a sensor height of 3.27 m. The adjacent anomaly exhibits low amplitude (27.58 nT), medium duration (33.8 m), and a dipolar signature. It was recorded with a sensor height of 5.12 m. The magnetic characteristics of Target LA001 may represent a potential submerged cultural resource, such as a shipwreck (Schmidt et al. 2014).

Onshore Historic Properties

BOEM's good faith effort to identify historic properties onshore that may be potentially affected by the proposed undertaking includes one historic district potentially affected by

the introduction of a switch cabinet. Camp Pendleton State Military Reservation Historic District is a VAARNG facility located in the City of Virginia Beach. Originally located on farmland and beachfront, the district now occupies 343.01 ac (138.8 ha) of largely intact landscape defined by military architecture, recreational facilities, and native woodland vegetation. The district includes 121 contributing buildings and structures. The Camp Pendleton Rifle Range is a contributing element to this district, which is listed in the NRHP under Criteria A and C for its association with the military training and build-up associated with both world wars, and for its collection of exemplary military architecture. The Observation Deck is also a contributing element to this district, which is listed in the NRHP under Criteria A for its association with the history of Camp Pendleton through its use as a platform to watch for sightings of German U-boats off the Atlantic Coast.

IV. Description of the Undertaking's Effects on Historic Properties

The following section includes a description of the undertaking's effects on historic properties.

Offshore Historic Properties

The undertaking's effects on historic properties include proposed seafloor disturbance in the portion of the APE surrounding magnetic anomalies CR001 (44VB0376) and LA001 (44VB0377). Seafloor disturbance related to construction and operation of the VOWTAP has the potential to destroy or damage archaeological resources, thus directly and adversely affecting them.

Onshore Historic Properties

The undertaking's potential effects on historic properties include the introduction of a switch cabinet in the Croatan Beach parking lot north of the Camp Pendleton Rifle Range within the Camp Pendleton State Military Reservation Historic District. The proposed location for the switch cabinet is in the vicinity of three resources that contribute to the National Register of Historic Places-listed Camp Pendleton/State Military Reservation Historic District (DHR Resource No. 134-0413): the Beachfront Rifle Range (DHR Resource No. 134-0413-0160), the Beachfront cultural landscape (DHR Resource No. 134-0413-0170), and the Observation Deck (DHR Resource No. 134-0413-0168). The computer-generated viewshed model prepared for the purpose of determining potential visibility of onshore project elements suggests that visibility of the switch cabinet will be limited to undeveloped portions of Camp Pendleton and the observation deck, currently used as a picnic/grilling area (Tetra Tech 2014b, Sexton 2014).

V. Application of Criteria of Adverse Effect and Conditions to Avoid Effects to Historic Properties

Offshore Historic Properties

With respect to seafloor disturbance in the portion of the APE surrounding magnetic anomalies CR001 (44VB0376) and LA001(44VB0377), BOEM administratively treats identified submerged potential historic properties as eligible for inclusion on the National Register under Criteria D, and requires lessees to avoid them unless lessees choose to conduct additional investigations to confirm or refute their qualifying characteristics. In this case, both submerged potential historic properties CR001 (44VB0376) and LA001(44VB0377) will be avoided by the lessee through conditions of BOEM's RAP approval, including the use of protective buffers. BOEM has determined that a 50-meter buffer from the center point of both CR001 (44VB0376) and LA001 (44VB0377) will ensure that adverse effects to these potential historic properties will be avoided during construction and operation of the VOWTAP.

Onshore Historic Properties

With respect to the introduction of the switch cabinet, the application of the criteria of adverse effect concluded that the proposed introduction would not alter, directly or indirectly, any of the characteristics of the contributing historic properties that qualified them for inclusion in the National Register, nor would it diminish their integrity with respect to location, design, setting materials, workmanship, feeling, or association. Consideration was given to all qualifying characteristics of the contributing properties. Views of the switch cabinet would be partially to completely screened by existing vegetation, topography (i.e., sand dunes), and/or an existing restroom structure located just north of the switch cabinet which has already introduced vertical elements into the landscape. Portions of the switch cabinet that would be visible would be seen in the context of the existing restroom facility which is similar in form and line.

Nevertheless, in consultation with the VAARNG, BOEM concluded that the addition of subsequent screening and an appropriate paint scheme would further reduce the visibility of the switch cabinet from the Beachfront Rifle Range (DHR Resource No. 134-0413-0160), the Beachfront cultural landscape (DHR Resource No. 134-0413-0170), and the Observation Deck (DHR Resource No. 134-0413-0168), thus ensuring avoidance of possible adverse effects through application of the following conditions of BOEM's RAP approval:

> *The Virginia Department of Mines, Minerals and Energy must coordinate with the Virginia Department of Military Affairs – Virginia Army National Guard, in determining the final location, color, and installation of vegetative screening for the proposed switch cabinet. DMME must design the switch cabinet so that its placement and appearance minimize direct and visual impacts to historic properties on Camp Pendleton, and to the extent possible, the switch cabinet must be co-located with other facilities at the beach parking lot. The color of the*

switch cabinet must minimize its visibility. To screen the switch cabinet, vegetative material is preferred. Location, color, and screening of the switch cabinet must be consistent with guidance in the "Integrated Natural Resources Management Plan: Camp Pendleton Collective Training Center, City of Virginia Beach, Virginia, Fiscal Years 2013-2017" (draft) (Camp Pendleton INRMP), and the "Virginia Department of Military Affairs Camp Pendleton Real Property Master Plan Vision Plan," August 31, 2012, prepared by the Louis Berger Group, Inc. (Vision Plan).

VI. Views of Consulting Parties and the Public

This section summarizes views of the consulting parties provided to BOEM as part of its Section 106 review. The public have made no comments on this project pertaining to historic properties or to BOEM's Section 106 review.

VAARNG

At the August 27, 2014, consultation meeting, the VAARNG requested the use of vegetative screening around the switch cabinet on Camp Pendleton because the proposed general location for the switch cabinet is in the vicinity of three resources that contribute to the National Register of Historic Places-listed Camp Pendleton/State Military Reservation Historic District (DHR Resource No. 134-0413): the Beachfront Rifle Range (DHR Resource No. 134-0413-0160), the Beachfront cultural landscape (DHR Resource No. 134-0413-0170), and the Observation Deck (DHR Resource No. 134-0413-0168). VAARNG subsequently sent an email detailing its request for the opportunity to participate in determining the location and color of the cabinet as well as vegetative screening (see discussion in Section V, above). BOEM has incorporated this request as a condition of BOEM's RAP approval.

VA SHPO

VA SHPO corresponded with BOEM on September 11, 2014 and February 10, 2015 providing comments regarding the August 27, 2014, consultation meeting and review of the historic property identification reports and revisions (Appendix G and H). Regarding the onshore APE, VA SHPO concurred that no sites are present within this portion of the APE and that no further investigation is warranted. Regarding the viewshed APE, VA SHPO also concurred that additional survey is not warranted and that the undertaking will not adversely affect the Chesapeake Light Station or the five identified National Register of Historic Places-listed resources (Camp Pendleton [DHR Resource No. 134-0413], Cape Henry Lighthouse Historic District [DHR Resource No. 134-0007], Cape Henry Light Station [DHR Resource No. 134-0079], DeWitt Cottage [DHR Resource No. 134-0066], and the US Coast Guard Station [DHR Resource No. 134-00047]). Regarding the offshore APE, VA SHPO concurred with the results of the identification survey and the recommendation that targets CR001 and LA001 may represent historic period shipwrecks that should be avoided or subjected to further evaluation and that the identified paleochannels do not retain integrity and are unlikely to contain intact

archaeological deposits. VA SHPO correspondence references targets CR001, CR002, and LA001. In subsequent emails and telephone calls, VA SHPO clarified that target CR002 is not a potential site and does not warrant recordation based on BOEM's investigation that confirmed the target as a concrete buoy mooring anchor and not a potential shipwreck.

VA SHPO further requested that:

- Targets CR001 and LA001 are formally recorded with DHR as archaeological sites to aid in their future management;
- The Chesapeake Light Station is formally recorded with DHR as an architectural resource to aid in its future management, and;
- The existing survey forms are updated for the remaining NRHP-listed resources (Camp Pendleton [DHR Resource No. 134-0413], Cape Henry Lighthouse Historic District [DHR Resource No. 134-0007], Cape Henry Light Station [DHR Resource No. 134-0079], DeWitt Cottage [DHR Resource No. 134-0066], and the US Coast Guard Station [DHR Resource No. 134-00047]).

Dominion subsequently fulfilled these requests in March and April of 2015. CR001 and LA001 were registered with the Virginia Department of Historic Resources as sites 44VB0376 and 44VB0377, respectively. The Chesapeake Light Station was recorded as DHR Resource No. 134-5301.

Narragansett Indian Tribe

The Narragansett Indian Tribe of Charlestown, Rhode Island, requested to participate as a consulting party in this Section 106 review. BOEM met with the Narragansett in government-to-government consultation at the Narragansett Indian Longhouse in Rhode Island on June 25, 2014. The Narragansett also attended the Section 106 consultation meeting (via teleconference) on August 27, 2014. During the later meeting, the Narragansett Deputy Tribal Historic Preservation Officer (THPO) shared aspects of the tribe's oral traditions, including that native people have been present on the Outer Continental Shelf for more than 100,000 years. He requested that the agency should consider requiring direct archaeological sampling (e.g., vibracoring) of potential paleolandscape features of that age, not just horizons with archaeological potential falling within the time frame recognized by archaeologists to represent the known period of human habitation on the North American Continent (i.e., dating to circa 12,000 to 15,000 years B.P. or more recent). He also requested additional information and possibly another consultation meeting or webinar to review the sub-bottom and vibracoring data collected as part of the project.

BOEM held subsequent telephone consultations and exchanged emails with the Deputy THPO in an effort to provide additional information and dialogue concerning his requests (specifically his review of the sub-bottom and vibracoring data) and to schedule the requested additional consultation meeting or webinar. The Deputy THPO replied that he would review the reports and notify BOEM by September 23, 2014, if he still felt he desired the originally requested additional consultation meeting or webinar. The Deputy

THPO ultimately did not request the additional consultation meeting or webinar, but instead sent a letter on September 22, 2014, communicating the following points:

- the need to more adequately address the potential for encountering the presence of submerged relic Paleo-cultural resources as a component of this undertaking's identification and avoidance process;
- the recommendation for a "standard diagnostic technique" involving the placement of specific cores at locations identified by Tribal Historic Preservation Specialists; and
- the recommendation for an expanded role for THPOs and Tribal Historic Preservation Specialists to shape the search for the presence of submerged relic Paleo-cultural resources.

Deputy THPO Harris also suggested in his letter that there may have been a lack of systematic survey conducted on the OCS in general, and that it is a shortcoming of the identification effort that the vibracores used for ground truthing the geologic interpretation of the sub-bottom profiler data were not located specifically for the purpose of identifying archaeological resources. This letter is included as Appendix I.

With respect to these comments, BOEM has conducted a reasonable and good faith effort to identify historic properties, including specific consideration of pre-contact archaeological sites and paleolandscapes within the APE. The entirety of the APE was surveyed using industry-standard, state-of-the-art technologies and in a manner consistent with BOEM survey guidelines (Schmidt et al. 2014). All paleolandscape features were specifically analyzed for the potential presence of these types of historic properties (see Section II, above). BOEM believes that the placement of cores was sufficient both to ground truth geological interpretations of the sub-bottom profiler data as well as to adequately inform the archaeological analysis. Moreover, in response to requests from the Deputy THPO regarding tribal involvement in survey activities, BOEM has included provisions in its commercial leases to provide opportunities for the involvement of tribal representatives during geophysical data collection and geotechnical testing and exploration activities.

<u>Lenape Indian Tribe of Delaware</u>

The Lenape Indian Tribe of Delaware also requested to participate as a consulting party in this Section 106 review. During the August 27, 2014, consultation meeting, Chief Dennis Coker voiced agreement with Deputy THPO Harris (of the Narragansett Indian Tribe) concerning his desire to further review the results of the marine archaeological surveys with respect to the paleolandform reconstruction conducted. After reviewing the data and reports, Chief Coker held a telephone consultation with BOEM on September 22, 2014, during which he asked extensive questions about the vibracoring and sub-bottom profiling, and engaged in dialogue about the likelihood of identifying precontact sites post-approval given the nature of the undertaking and the ability of the geophysical instruments to remotely sense archaeological sites. He said he appreciated the inclusion of the post-review discoveries clause and the protections that it would afford any subsequently-discovered archaeological resources. Chief Coker also

reiterated that the Bureau's sensitivity to the possibility of submerged archaeological resources on the OCS was commendable. The Lenape Indian Tribe sent BOEM a letter on September 22, 2014, concurring with the conclusions and recommendations endorsed by BOEM as presented in the marine archaeological report. This letter is included as Appendix J.

Dominion

Dominion submitted comments in response to the December 2, 2014 publication of the EA for public review and comment (79 FR 71446). These comments stated that the results of the archaeological interpretation conducted by Schmidt et al. (2014) of the offshore survey data concluded that further study was warranted to determine whether magnetic anomalies CR001 and LA001 are potential archaeological resources, since it is not possible to make this determination based on the geophysical signature alone. The comments additionally stated that the archaeological consultants recommended an avoidance buffer of 50-meters for CR001 and 35-meters for LA001. These comments are included as Appendix K.

BOEM, through review of the archaeological report submitted by the applicant and in consultation with the parties under Section 106, has determined that two of the remote sensing anomalies have the potential to be historic properties (CR001 and LA001). BOEM is administratively treating these potential historic properties as eligible for inclusion on the National Register under Criteria D and will require the applicant to avoid them unless the applicant chooses to conduct additional investigations to confirm or refute their qualifying characteristics. This has been communicated with the consulting parties (of which the applicant is included) through the draft Finding of No Adverse Effect and during the August 2014 consultation meeting at the Virginia Department of Historic Resources. The applicant has indicated that avoidance of these targets is feasible. Therefore, BOEM will not require additional investigation of the targets and will continue, for the purpose of completing Section 106 review, to administratively treat the targets as eligible properties.

BOEM does not concur with the recommendation of the applicant regarding a 35-meter buffer for LA001. BOEM will require avoidance of both CR001 and LA001 by a 50-meter buffer through conditions of RAP approval. This has been communicated to the applicant via the draft Finding of No Adverse Effect and also during August 27, 2014, meeting at the Virginia Department of Historic Resources.

VII. The Basis for the Determination of No Adverse Effect

The APE for this undertaking has been surveyed for historic properties (Tetra Tech 2014a and 2014b; Schmidt et al. 2014; and Sexton 2014) and two potential historic period archaeological resources were identified which are interpreted from their geophysical signatures to be potential shipwrecks. BOEM will require the Lessee to avoid these two resources through conditions of RAP approval, by a buffer of 50 meters around the center

point of each. Therefore, adverse effects to these potential historic properties will be avoided.

Additionally, BOEM has determined that the introduction of a switch cabinet in the Croatan Beach parking lot north of the Camp Pendleton Rifle Range within the Camp Pendleton State Military Reservation Historic District does not meet the criteria of adverse effect pursuant to 36 CFR § 800.5(a)(1) (Sexton 2014). BOEM will additionally require any potential effects to be minimized through the introduction of vegetative screening and selection of appropriate paint colors in coordination with the Virginia Department of Military Affairs – Virginia Army National Guard.

Although effects to historic properties may occur from an unanticipated, post-review discovery during construction, the required implementation of the unanticipated discoveries clause at 30 CFR § 585.802 and the inclusion of a post-review discoveries clause as a condition of RAP approval, ensures that any discoveries are reported and reviewed under the National Historic Preservation Act.

REFERENCES

BOEM (US Department of the Interior Bureau of Ocean Energy Management). 2007. Final Programmatic Environmental Impact Statement for Alternative Energy Development and Production and Alternate Use of Facilities on the Outer Continental Shelf. OCS EIS/EA MMS 2007-046.

BOEM (US Department of the Interior Bureau of Ocean Energy Management). 2014. Atlantic Shipwreck Database. Accessed July 8, 2014.

Schmidt, J.S., K.A. Ryberg, D.A. McCullough, M. Williams, G. Brooks, and R. Larson. 2014. Marine Archaeological Resources Assessment. Virginia Offshore Wind Technology Advancement Project. Prepared for Dominion Resources, Inc. under Contract to Tetra Tech, Inc. by R. Christopher Goodwin & Associates, Inc. Appendix N of Research Activities Plan. 417 pp.

Sexton, James. 2014. Historic Properties Survey Report. Prepared for Dominion Resources, Inc. by Tetra Tech, Inc. Appendix P of Research Activities Plan. 54 pp.

Tetra Tech, Inc. 2014a. Terrestrial Archaeology Survey Report. Virginia Offshore Wind Technology Advancement Project. Prepared for Dominion Resources, Inc. Appendix O of Research Activities Plan. 140 pp.

Tetra Tech, Inc. 2014b. Visual Impact Assessment Report. Virginia Offshore Wind Technology Advancement Project. Prepared for Dominion Resources, Inc. Appendix Q of Research Activities Plan. 53 pp.

TRC Environmental Corporation. 2012. Inventory and analysis of archaeological site occurrence on the Atlantic outer continental shelf. U.S. Dept. of the Interior, Bureau of Ocean Energy, Gulf of Mexico OCS Region, New Orleans, LA. OCS Study BOEM 2012-008. 324 pp.

APPENDICES

Appendix A: Correspondence from BOEM to Virginia Department of Military Affairs – Virginia Army National Guard, April 3, 2014; a similar letter was sent to all potential consulting parties on this date.

Appendix B: Marine Archaeological Resources Assessment for the Virginia Offshore Wind Technology Advancement Project, with Attachments (previously shared with the consulting parties July 31, 2014).

Appendix C: Terrestrial Archaeology Survey Report for the Virginia Offshore Wind Technology Advancement Project (previously shared with the consulting parties on January 14, 2015).

Appendix D: Historic Properties Survey Report for the Virginia Offshore Wind Technology Advancement Project (previously shared with the consulting parties on January 14, 2015).

Appendix E: Visual Impact Assessment Report for the Virginia Offshore Wind Technology Advancement Project (previously shared with the consulting parties on January 14, 2015).

Appendix F: Location of Offshore Historic Properties and Avoidance Buffers.

Appendix G: Correspondence from Virginia Department of Historic Resources to BOEM, September 11, 2014.

Appendix H: Correspondence from Virginia Department of Historic Resources to BOEM, February 10, 2015.

Appendix I: Correspondence from the Narragansett Indian Tribe to BOEM, September 22, 2014.

Appendix J: Correspondence from the Lenape Indian Tribe of Delaware to BOEM, September 22, 2014.

Appendix K: Correspondence from Dominion Resources Services, Inc. to BOEM, January 5, 2015.