

**CATEGORICAL EXCLUSION FOR LIDAR BUOY DEPLOYMENT,
MID-ATLANTIC OUTER CONTINENTAL SHELF
NEAR VIRGINIA BEACH, VIRGINIA
PACIFIC NORTHWEST NATIONAL LABORATORY,
RICHLAND, WASHINGTON**

Proposed Action:

The Pacific Northwest National Laboratory (PNNL) plans to deploy a Light Detection and Ranging (LIDAR) wind resource assessment buoy on the outer continental shelf east of Virginia Beach, Virginia. The deployment is scheduled for November or December 2014 and will last approximately 11 months. Upon completion of the deployment, the buoy and moorings will be removed from the water and stored at the Marine Sciences Laboratory (MSL) near Sequim, Washington, or another suitable location to await redeployment elsewhere in the United States.

Location of Action:

The buoy will be deployed at a point on the outer continental shelf, approximately 23 nautical miles (NM) (43 km) east of Virginia Beach, Virginia (Figures 1 and 2). Water depth at the deployment site is approximately 87 ft (26.5 m). Approximate deployment coordinates are 36.8668°N Latitude and -75.4922°W longitude.

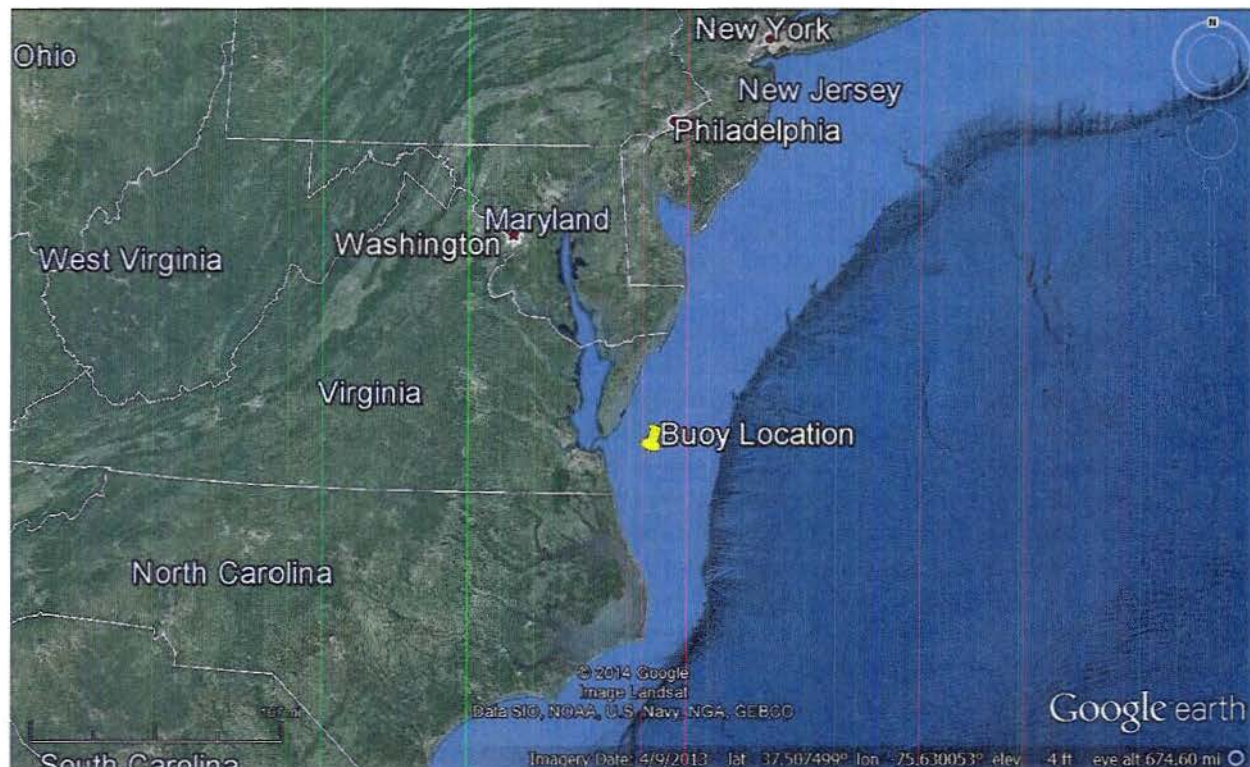


Figure 1. Project location off the east coast of Virginia.

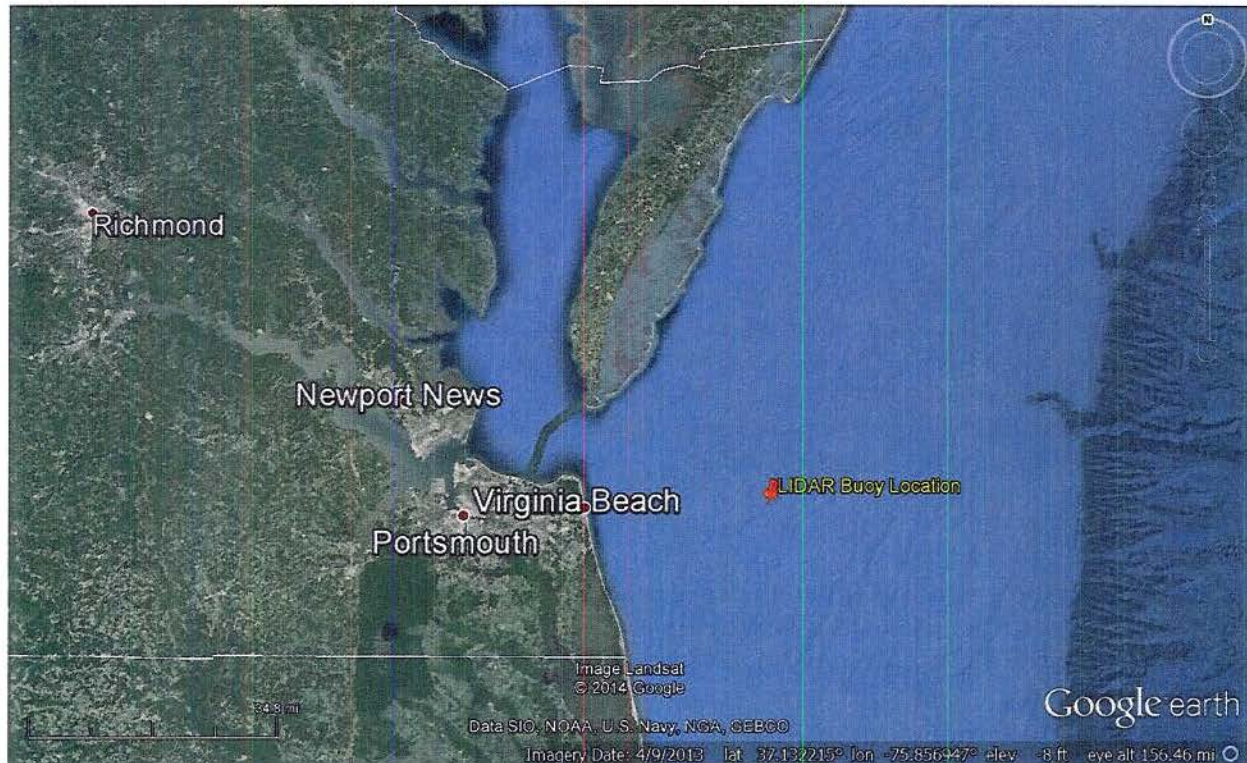


Figure 2. Location of LIDAR buoy deployment area relative to Virginia Beach, Virginia.

Description of the Proposed Action:

One scientific buoy will be installed to characterize wind resource characteristics for offshore wind energy development using marine-based, buoy-mounted LIDAR system at a location on the outer continental shelf approximately 23 NM (43 km) east of Virginia Beach, Virginia.

The preferred and expected mooring system will include placing a 4-ton (3600-kg)(wet weight) block-type anchor as the buoy mooring base. An alternative design that uses two, 2-ton [1800-kg] blocks could be used if the deploying vessel cannot handle the larger anchor block; this alternative is not preferred because DOE already owns the larger anchor block. Crane operation is required to pre-position the anchor on the deployment/retrieval vessel (i.e., ship or barge). The anchor would be lowered in a controlled fashion, either with a crane or hanging over the side of the ship or barge. It is estimated that the deployment would require one large vessel for mooring and towing, and one smaller vessel (e.g., a zodiac) for buoy control and compass swing. Placement of the buoy and mooring would likely be completed within 2 to 3 days. The buoys are designed for long-term operation; thus, maintenance or servicing is anticipated to be needed only once, about halfway through the 11-month deployment. Upon recovery, the buoy would receive maintenance and servicing onshore. All marine growth (e.g., barnacles and mussels) would be scraped off the hull, which would then be power washed. No chemicals would be used in cleaning the hull.

The LIDAR buoy would be attached vertically to a ~1.5-in. link chain (Figures 4 and 5). The chain length-to-water depth ratio for the preferred single-anchor would range from 1.83:1 to 3.2:1, depending on water depth (i.e., 20 to 35 m) (Figure 3). If a double-anchor is used, the chain length-to-water depth ratio would range from 2.6:1 to 4.55:1 (Figure 4). The purpose of these ratios is to assure that in extreme weather there is enough horizontal force on the buoy so that it remains above the water surface, instead of

becoming submerged, as might occur if more of the force were downward with lesser chain length-to-water depth ratios. The excursion radius is the maximum distance the LIDAR buoy would travel in a radius around its mooring anchor. The excursion radius for the preferred single-anchor mooring would range from 177 to 200 ft (54 to 61 m) (Figure 3). The excursion radius for the double-anchor mooring could range from 275 to 292 ft (84 to 89 m) (Figure 4). The estimated area of seabed scour (caused by the mooring chain and anchor) for the preferred single anchor mooring is about 1.9 ac (0.8 ha); this area would be slightly larger if the double anchor system were to be used.

The buoy consists of a fiber optic, fully motion-compensated LIDAR system; scientific instruments (e.g., surface wind speed, air temperature, barometer, sea surface temperature, wind, and current monitoring instruments including an Acoustic Doppler Current Profiler); data management and transmittal systems; and several power sources, including solar panels, wind turbines, batteries, and an emergency diesel generator; all mounted on a boat-shaped hull (Figure 5). The buoy is approximately 20 ft (6 m) long and 10 ft (3 m) wide, and the instruments extend ~13.5 ft (~4.1 m) above the water line. It is equipped with one navigation light mounted on the mast (Figure 5) and a radar reflector. The light is yellow, and has a range of at least 3 NM (5.5 km). The hull and most major components are painted bright safety yellow, while the smaller parts may be powder coated.

Buoy position is monitored using an onboard global positioning system (GPS) receiver mounted on the buoy mast to determine whether the buoy is within an area defined by the excursion radius noted above. If the buoy were to drift outside of its predefined area, a satellite transmitter would be activated and a location message sent.

The buoy will be attached to the anchors for approximately 11 months (starting in November or December 2014) while wind resource characterization is performed. There will be one planned servicing after approximately 6 months, at which time the buoy will be towed to shore for servicing and refueling. Upon completion of the deployment, the buoy will be towed to shore and then transported to Sequim Bay in Washington State for storage at the MSL or to another suitable location to await deployment elsewhere in the United States. The anchors and moorings will be retrieved at the end of deployment.

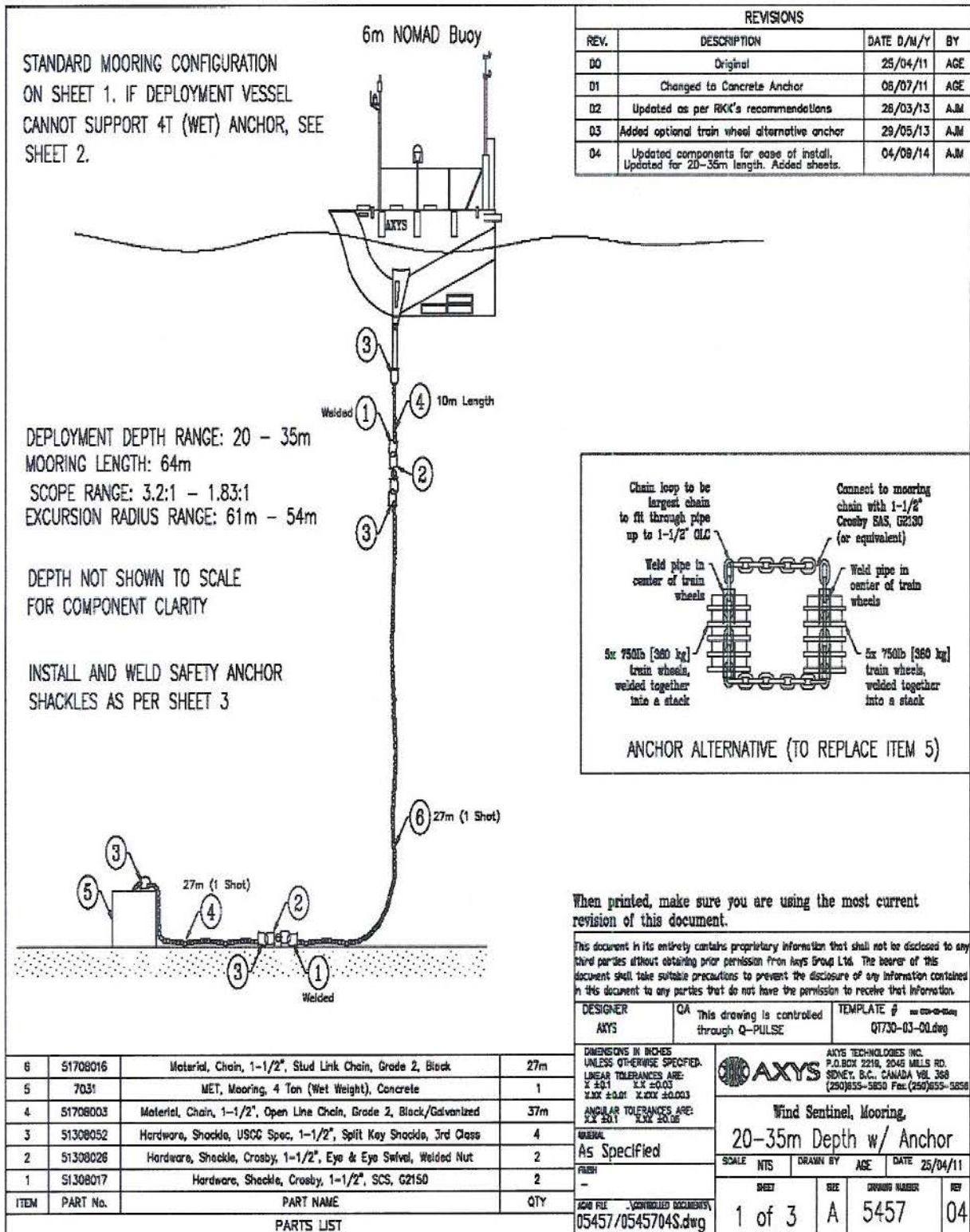


Figure 3. LIDAR buoy mooring design using one 4-ton anchor block.

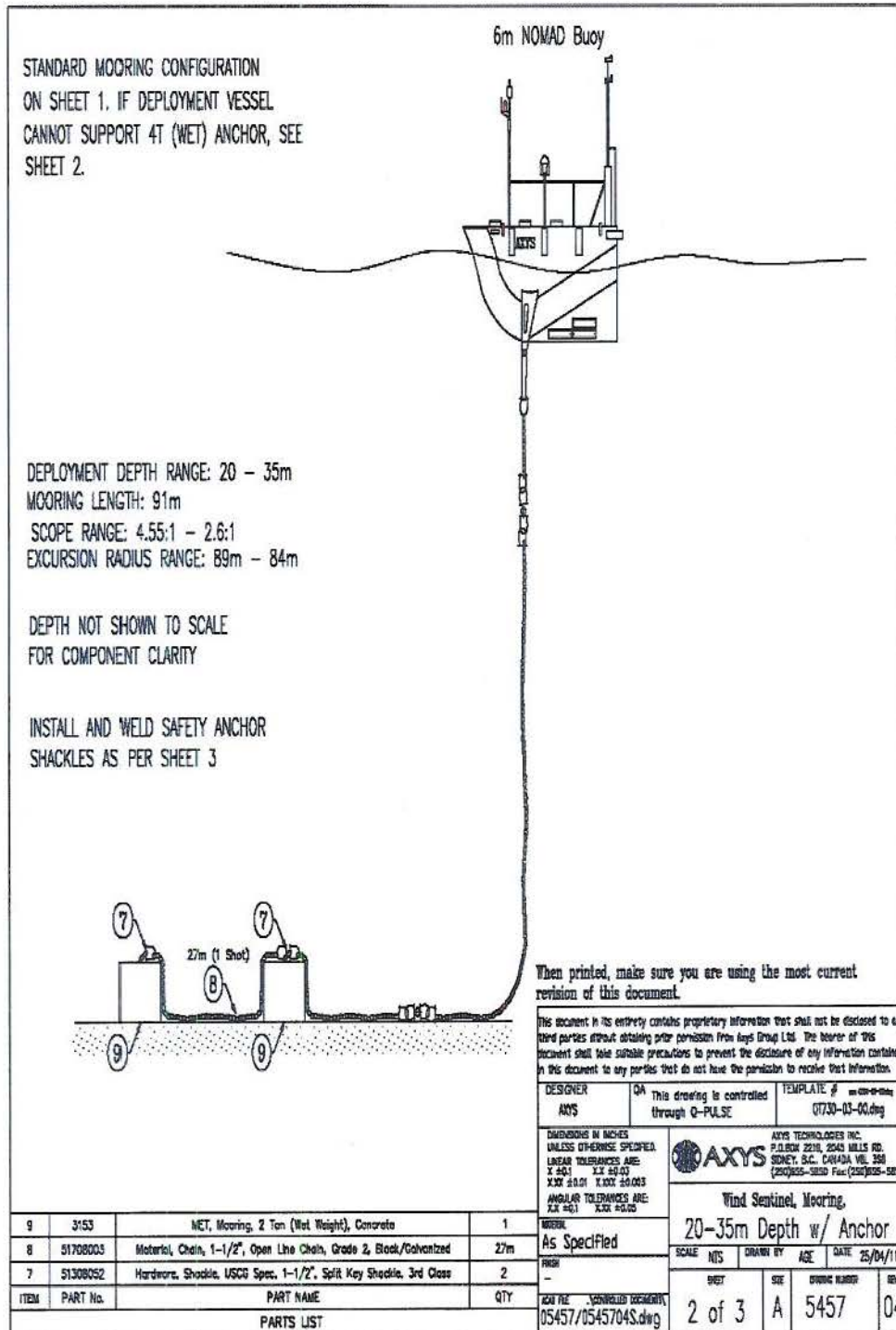


Figure 4. LIDAR buoy mooring design using two, 2-ton anchor blocks.

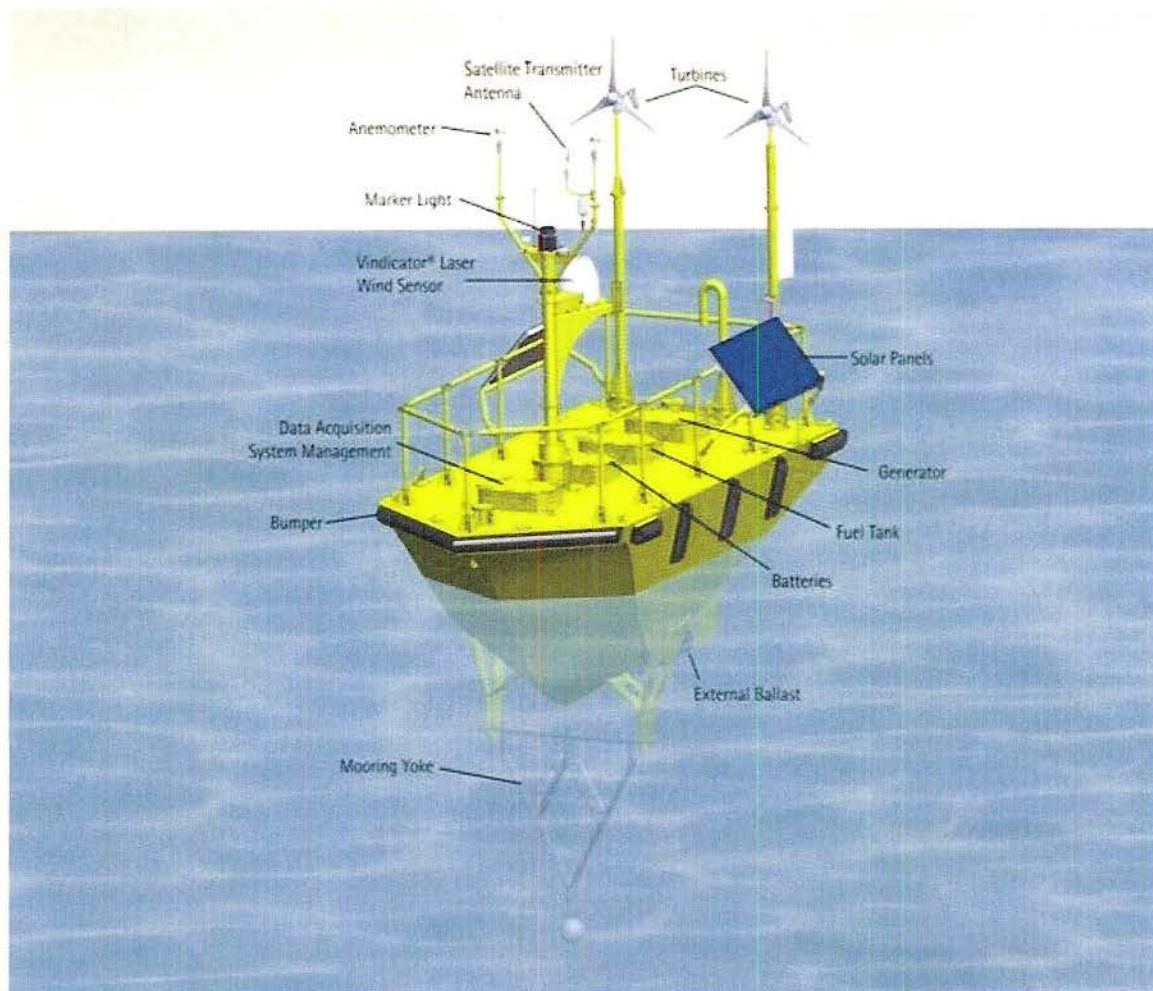


Figure 5. Generic diagram of a WindSentinel™ LIDAR wind resource assessment buoy

Biological and Cultural Resources:

Biological and cultural resource reviews have been conducted and determined that the installation and subsequent testing of the LIDAR buoy is unlikely to adversely affect sensitive biological or cultural resources.

Consultations with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service are being completed to evaluate potential impacts of the proposed project on species listed as threatened or endangered under Section 7 of the Endangered Species Act and potential effects on essential fish habitat as defined under the Magnuson-Stevens Fisheries Conservation and Management Act, and species protected under the Marine Mammal Protection Act. Species being evaluated include species of sea turtles, pinnipeds, cetaceans, fish, and sea birds. These evaluations have determined that the proposed actions either would have no effect on the considered species, or may affect, but are not likely to adversely affect, the considered species. These consultations must be completed prior to buoy deployment. If these agencies do not concur with these determinations, scope changes and/or additional National Environmental Policy Act (NEPA) analysis will be required.

Migratory birds are protected by the Migratory Bird Treaty Act (MBTA), and there is a small potential that birds protected by the MBTA could collide with the buoy (especially at night) or otherwise be adversely affected. Executive Order (E.O.) 13186 “Responsibilities of Federal Agencies to Protect Migratory Birds” requires federal agencies to consider impacts to migratory birds and minimize impacts due to federal actions, and to develop a Memorandum of Understanding (MOU) with the FWS regarding protection of migratory birds and implementation of E.O. 13186. The U.S. Department of Energy (DOE) and FWS signed a revised MOU in September 2013. DOE agreed to coordinate with FWS on the protection of migratory birds prior to starting operations and activities. Given the scope of the project, location of the action, and the limited timeframe the buoy will be deployed, DOE does not expect significant effects to migratory birds. However, as part of the consultation with FWS, DOE will consider implementation of impact minimization measures recommended by FWS to reduce the risk of potential impacts to migratory birds. If it becomes apparent that significant adverse effects to migratory birds are likely, scope changes and/or additional NEPA analysis will be required.

To meet the responsibilities under Section 106 of the National Historic Preservation Act, an archeologist prepared a cultural resources report to evaluate the potential impacts to cultural resources from the proposed action, and concluded that the buoy will be deployed in an area that may have been above sea level at the time of earliest human occupation of North America. However, because of the length of time since oceanic inundation and the open, sandy substrate, there is little potential for prehistoric archeological remains that would be affected by the project. Review of various databases indicated that there are no known shipwrecks within at least 0.7 NM (1.3 km). Thus the draft review concluded that there would be No Historic Properties Affected. The draft report has been provided to approximately 24 potentially affected tribes and the Virginia State Historic Preservation Officer for comment as consulting parties under Section 106 of the NHPA. This consultation must be completed prior to buoy deployment. If the consulting parties indicate that there are significant historic properties that may be adversely affected by the proposed action, the report will be revised and scope changes and/or additional NEPA analysis may be required.

Categorical Exclusion to Be Applied:

As the proposed action is to install and test wind characterization devices, the following categorical exclusion (CX), as listed in the DOE NEPA implementing procedures, 10 CFR 1021, would apply:

B5.25 Small-scale renewable energy research and development projects and small-scale pilot projects located in aquatic environments. Activities would be in accordance with, where applicable, an approved spill prevention, control, and response plan, and would incorporate appropriate control technologies and best management practices. Covered actions would not occur (1) Within areas of hazardous natural bottom conditions or (2) within the boundary of an established marine sanctuary or wildlife refuge, a governmentally proposed marine sanctuary or wildlife refuge, or a governmentally recognized area of high biological sensitivity, unless authorized by the agency responsible for such refuge, sanctuary, or area (or after consultation with the responsible agency, if no authorization is required). If the proposed activities would occur outside such refuge, sanctuary, or area and if the activities would have the potential to cause impacts within such refuge, sanctuary, or area, then the responsible agency shall be consulted in order to determine whether authorization is required and whether such activities would have the potential to cause significant impacts on such refuge, sanctuary, or area. Areas of high biological sensitivity include, but are not limited to, areas of known ecological importance, whale and marine mammal mating and calving/pupping areas, and fish and invertebrate spawning and nursery areas recognized as being limited or unique and vulnerable to perturbation; these areas can occur in bays, estuaries, near shore, and far offshore, and may vary seasonally. No permanent facilities or

devices would be constructed or installed. Covered actions do not include drilling of resource exploration or extraction wells, use of large-scale vibratory coring techniques, or seismic activities other than passive techniques.

Eligibility Criteria:

The proposed activity meets the eligibility criteria of 10 CFR 1021.410(b) because the proposed action does not have extraordinary circumstances that might affect the significance of the environmental effects, is not connected to other actions with potentially significant impacts [40 CFR 1508.25(a)(1)], is not related to other actions with individually insignificant but cumulatively significant impacts [40 CFR 1508.27(b)(7)], and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211 concerning limitations on actions during environmental impact statement preparation.

The “Integral Elements” of 10 CFR 1021 are satisfied as follows:

INTEGRAL ELEMENTS, 10 CFR 1021, SUBPART D, APPENDIX B (1)-(5)	
Would the Proposed Action:	EVALUATION:
Threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health?	The proposed action would not threaten a violation of regulations or DOE or Executive Orders.
Require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities?	No waste management facilities would be constructed under this CX. Any generated waste would be managed in accordance with applicable regulations in existing facilities. Waste disposal pathways would be identified prior to generating waste and waste generation would be minimized.
Disturb hazardous substances, pollutants, or contaminants that preexist in the environment such that there would be uncontrolled or unpermitted releases?	No preexisting hazardous substances, pollutants, or contaminants would be disturbed in a manner that or results in uncontrolled or unpermitted releases.
Have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to: <ul style="list-style-type: none"> • protected historic/archaeological resources • protected biological resources and habitat • jurisdictional wetlands, 100-year floodplains • Federal- or state-designated parks and wildlife refuges, wilderness areas, wild and scenic rivers, national monuments, marine sanctuaries, national natural landmarks, and scenic areas. 	<p>No environmentally sensitive resources would be adversely affected. Resource reviews have been conducted to evaluate for special circumstances. Refer to the Biological and Cultural Resources section for details regarding the application of cultural and biological resource reviews.</p> <p>The proposed action would not adversely affect floodplains, wetlands regulated under the Clean Water Act, national monuments, or other specially designated areas, prime agricultural lands, or special sources of water.</p>
Involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species?	The proposed action would not involve the use of genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements.

Checklist Summarizing Environmental Impacts:

The following checklist summarizes environmental impacts considered when preparing this CX determination. Answers to relevant questions are explained in detail following the checklist.

	<i>Would the Proposed Action:</i>	YES	NO
1	Result in more than minimal air impacts?		X
2	Increase offsite radiation dose measurably?		X
3	Require a radiological work permit?		X
4	Cause more than a minor or temporary increase in noise level?		X
5	Discharge any liquids to the environment?		X
6	Require a Spill Prevention, Control, and Countermeasures plan?	X	
7	Require an excavation permit (e.g., for test pits, wells, utility installation)?		X
8	Disturb an undeveloped area?		X
9	Use carcinogens, hazardous, or toxic chemicals/materials?		X
10	Involve hazardous, radioactive, polychlorinated biphenyl, or asbestos waste?		X
11	Require environmental permits?	X	

Explanations:

6. The LIDAR buoy will carry up to approximately 210 gal of diesel fuel for the emergency generator. The fuel tanks are certified and pressure tested, and the internal buoy compartments provide double containment in case of fuel tank failure or leakage. The tanks will be filled at an onshore marina prior to deployment and existing spill-prevention procedures developed for the marina will be followed. Project personnel will assure that the marina has all required spill-response equipment readily available at the fuel dock prior to fueling. At the mid-deployment servicing interval, the buoy will be towed to shore and the tanks will be refilled at a marina with spill-prevention equipment or at an onshore staging area.

11. Placement of the LIDAR buoys will require a permit from the U.S. Army Corps of Engineers under Section 10 of the Rivers and Harbors Act.

Compliance Action:

I have determined that the proposed action satisfies the DOE NEPA eligibility criteria and integral elements, does not pose extraordinary circumstances, and meets the requirements for the CX referenced above. Therefore, using the authority delegated to me by DOE Order 451.1 B, Change 3, I have determined that the proposed action may be categorically excluded from further NEPA review and documentation.

Signature:



Thomas M. McDermott
PNSO NEPA Compliance Officer

Date:

10-16-14

cc:

MR Sackschewsky, PNNL