

<p style="text-align: center;">UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF OCEAN ENERGY MANAGEMENT</p> <p style="text-align: center;">COMMERCIAL LEASE OF SUBMERGED LANDS FOR RENEWABLE ENERGY DEVELOPMENT ON THE OUTER CONTINENTAL SHELF</p> <p><i>Paperwork Reduction Act of 1995 statement: This form does not constitute an information collection as defined by 44 U.S.C. § 3501 et seq. and therefore does not require approval by the Office of Management and Budget.</i></p>	Office	Renewable Energy Lease Number
	Herndon, VA	OCS-A 0487
	Cash Bonus and/or Acquisition Fee	Resource Type
		Wind
	Effective Date	Block Number(s)
		See Addendum A

This lease, which includes any addenda hereto, is hereby entered into by and between the United States of America, ("Lessor"), acting through the Bureau of Ocean Energy Management ("BOEM"), its authorized officer, and

Lessee	Interest Held
	100%

("Lessee"). This lease is effective on the date written above ("Effective Date") and will continue in effect until the lease terminates as set forth in Addendum "B." In consideration of any cash payment heretofore made by the Lessee to the Lessor and in consideration of the promises, terms, conditions, covenants, and stipulations contained herein and attached hereto, the Lessee and the Lessor agree as follows:

Section 1: Statutes and Regulations.

This lease is issued pursuant to subsection 8(p) of the Outer Continental Shelf Lands Act ("the Act"), 43 U.S.C. §§ 1331 *et seq.* This lease is subject to the Act and regulations promulgated pursuant to the Act, including but not limited to, offshore renewable energy and alternate use regulations at 30 CFR Part 585 as well as other applicable statutes and regulations in existence on the Effective Date of this lease. This lease is also subject to those statutes enacted (including amendments to the Act or other statutes) and regulations promulgated thereafter, except to the extent that they explicitly conflict with an express provision of this lease. It is expressly understood that amendments to existing statutes, including but not limited to the Act, and regulations may be made, and/or new statutes may be enacted or new regulations promulgated, which do not explicitly conflict with an express provision of this lease, and that the Lessee bears the risk that such amendments, regulations, and statutes may increase or decrease the Lessee's obligations under the lease.

Section 2: Rights of the Lessee.

- (a) The Lessor hereby grants and leases to the Lessee the exclusive right and privilege, subject to the terms and conditions of this lease and applicable regulations, to: (1) submit to the Lessor for approval a Site Assessment Plan (SAP) and Construction and Operations Plan (COP) for the project identified in Addendum "A" of this lease; and (2) conduct activities in the area identified in Addendum "A" of this lease ("leased area") that are described in a SAP or COP that has been approved by the Lessor. This lease does not, by itself, authorize any activity within the leased area.
- (b) The rights granted to the Lessee herein are limited to those activities described in any SAP or COP approved by the Lessor. The rights granted to the Lessee are limited by the lease-specific terms, conditions, and stipulations required by the Lessor per Addendum "C."
- (c) This lease does not authorize the Lessee to conduct activities on the Outer Continental Shelf (OCS) relating to or associated with the exploration for, or development or production of, oil, gas, other seabed minerals, or renewable energy resources other than those renewable energy resources identified in Addendum "A."

Section 3: Reservations to the Lessor.

- (a) All rights in the leased area not expressly granted to the Lessee by the Act, applicable regulations, this lease, or any approved SAP or COP, are hereby reserved to the Lessor.
- (b) The Lessor will decide whether to approve a SAP or COP in accordance with the applicable regulations in 30 CFR Part 585. The Lessor retains the right to disapprove a SAP or COP based on the Lessor's determination that the proposed activities would have unacceptable environmental consequences, would conflict with one or more of the requirements set forth in subsection 8(p)(4) of the Act (43 U.S.C. § 1337(p)(4)), or for other reasons provided by the Lessor pursuant to 30 CFR 585.613(e)(2) or 30 CFR 585.628(f)(2). Disapproval of plans will not subject the Lessor to liability. The Lessor also retains the right to approve with modifications a SAP or COP, as provided in applicable regulations.
- (c) The Lessor reserves the right to suspend the Lessee's operations in accordance with the national security and defense provisions of section 12 of the Act and applicable regulations.
- (d) The Lessor reserves the right to authorize other uses within the leased area that will not unreasonably interfere with activities described in Addendum "A."

Section 4: Payments.

- (a) The Lessee must make all rent payments to the Lessor in accordance with applicable regulations in 30 CFR Part 585, unless otherwise specified in Addendum "B."
- (b) The Lessee must make all operating fee payments to the Lessor in accordance with applicable regulations in 30 CFR Part 585, as specified in Addendum "B."

Section 5: Plans.

The Lessee may conduct those activities described in Addendum “A” only in accordance with a SAP or COP approved by the Lessor. The Lessee may not deviate from an approved SAP or COP except as provided in applicable regulations in 30 CFR Part 585.

Section 6: Associated Project Easements.

Pursuant to 30 CFR 585.200(b), the Lessee has the right to one or more project easements, without further competition, for the purpose of installing gathering, transmission, and distribution cables, pipelines, and appurtenances on the OCS, as necessary for the full enjoyment of the lease, and under applicable regulations in 30 CFR Part 585. As part of submitting a COP for approval, the Lessee may request that one or more easement(s) be granted by the Lessor. If the Lessee requests that one or more easement(s) be granted when submitting a COP for approval, such project easements will be granted by the Lessor in accordance with the Act and applicable regulations in 30 CFR Part 585 upon approval of the COP in which the Lessee has demonstrated a need for such easements. Such easements must be in a location acceptable to the Lessor, and will be subject to such conditions as the Lessor may require. The project easement(s) that would be issued in conjunction with an approved COP under this lease will be described in Addendum “D” to this lease, which will be updated as necessary.

Section 7: Conduct of Activities.

The Lessee must conduct, and agrees to conduct, all activities in the leased area in accordance with an approved SAP or COP, and with all applicable laws and regulations.

The Lessee further agrees that no activities authorized by this lease will be carried out in a manner that:

- (a) could unreasonably interfere with or endanger activities or operations carried out under any lease or grant issued or maintained pursuant to the Act, or under any other license or approval from any Federal agency;
- (b) could cause any undue harm or damage to the environment;
- (c) could create hazardous or unsafe conditions; or
- (d) could adversely affect sites, structures, or objects of historical, cultural, or archaeological significance, without notice to and direction from the Lessor on how to proceed.

Section 8: Violations, Suspensions, Cancellations, and Remedies.

If the Lessee fails to comply with (1) any of the applicable provisions of the Act or regulations, (2) the approved SAP or COP, or (3) the terms of this lease, including associated Addenda, the Lessor may exercise any of the remedies that are provided under

the Act and applicable regulations, including, without limitation, issuance of cessation of operations orders, suspension or cancellation of the lease, and/or the imposition of penalties, in accordance with the Act and applicable regulations.

The Lessor may also cancel this lease for reasons set forth in subsection 5(a)(2) of the Act (43 U.S.C. § 1334(a)(2)), or for other reasons provided by the Lessor pursuant to 30 CFR 585.437.

Non-enforcement by the Lessor of a remedy for any particular violation of the applicable provisions of the Act or regulations, or the terms of this lease, will not prevent the Lessor from exercising any remedy, including cancellation of this lease, for any other violation or for the same violation occurring at any other time.

Section 9: Indemnification.

The Lessee hereby agrees to indemnify the Lessor for, and hold the Lessor harmless from, any claim caused by or resulting from any of the Lessee's operations or activities on the leased area or project easements or arising out of any activities conducted by or on behalf of the Lessee or its employees, contractors (including Operator, if applicable), subcontractors, or their employees, under this lease, including claims for:

- a. loss or damage to natural resources,
- b. the release of any petroleum or any Hazardous Materials,
- c. other environmental injury of any kind,
- d. damage to property,
- e. injury to persons, and/or
- f. costs or expenses incurred by the Lessor.

Except as provided in any addenda to this lease, the Lessee will not be liable for any losses or damages proximately caused by the activities of the Lessor or the Lessor's employees, contractors, subcontractors, or their employees. The Lessee must pay the Lessor for damage, cost, or expense due and pursuant to this section within 90 days after written demand by the Lessor. Nothing in this lease will be construed to waive any liability or relieve the Lessee from any penalties, sanctions, or claims that would otherwise apply by statute, regulation, operation of law, or could be imposed by the Lessor or other government agency acting under such laws.

"Hazardous Material" means

1. Any substance or material defined as hazardous, a pollutant, or a contaminant under the *Comprehensive Environmental Response, Compensation, and Liability Act* at 42 U.S.C. §§ 9601(14) and (33);
2. Any regulated substance as defined by the Resource Conservation and Recovery Act ("RCRA") at 42 U.S.C. § 6991 (7), whether or not contained in or released from underground storage tanks, and any hazardous waste regulated under RCRA pursuant to 42 U.S.C. §§ 6921 *et seq.*;

3. Oil, as defined by the Clean Water Act at 33 U.S.C. § 1321(a)(1) and the Oil Pollution Act at 33 U.S.C. § 2701(23); or
4. Other substances that applicable Federal, state, tribal, or local laws define and regulate as “hazardous.”

Section 10: Financial Assurance.

The Lessee must provide and maintain at all times a surety bond(s) or other form(s) of financial assurance approved by the Lessor in the amount specified in Addendum “B.” As required by the applicable regulations in 30 CFR Part 585, if, at any time during the term of this lease, the Lessor requires additional financial assurance, then the Lessee must furnish the additional financial assurance required by the Lessor in a form acceptable to the Lessor within 90 days after receipt of the Lessor’s notice of such adjustment.

Section 11: Assignment or Transfer of Lease.

This lease may not be assigned or transferred in whole or in part without written approval of the Lessor. The Lessor reserves the right, in its sole discretion, to deny approval of the Lessee’s application to transfer or assign all or part of this lease. Any assignment will be effective on the date the Lessor approves the Lessee’s application. Any assignment made in contravention of this section is void.

Section 12: Relinquishment of Lease.

The Lessee may relinquish this entire lease or any officially designated subdivision thereof by filing with the appropriate office of the Lessor a written relinquishment application, in accordance with applicable regulations in 30 CFR Part 585. No relinquishment of this lease or any portion thereof will relieve the Lessee or its surety of the obligations accrued hereunder, including but not limited to, the responsibility to remove property and restore the leased area pursuant to section 13 of this lease and applicable regulations.

Section 13: Removal of Property and Restoration of the Leased Area on Termination of Lease.

Unless otherwise authorized by the Lessor, pursuant to the applicable regulations in 30 CFR Part 585, the Lessee must remove or decommission all facilities, projects, cables, pipelines, and obstructions and clear the seafloor of all obstructions created by activities on the leased area, including any project easements within two years following lease termination, whether by expiration, cancellation, contraction, or relinquishment, in accordance with any approved SAP, COP, or approved Decommissioning Application, and applicable regulations in 30 CFR Part 585.

Section 14: Safety Requirements.

The Lessee must:

- a. maintain all places of employment for activities authorized under this lease in compliance with occupational safety and health standards and, in addition, free from recognized hazards to employees of the Lessee or of any contractor or subcontractor operating under this lease;
- b. maintain all operations within the leased area in compliance with regulations in 30 CFR Part 585 and orders from the Lessor and other Federal agencies with jurisdiction, intended to protect persons, property and the environment on the OCS; and
- c. provide any requested documents and records, which are pertinent to occupational or public health, safety, or environmental protection, and allow prompt access, at the site of any operation or activity conducted under this lease, to any inspector authorized by the Lessor or other Federal agency with jurisdiction.

Section 15: Debarment Compliance.

The Lessee must comply with the Department of the Interior's non-procurement debarment and suspension regulations set forth in 2 CFR Parts 180 and 1400 and must communicate the requirement to comply with these regulations to persons with whom it does business related to this lease by including this requirement in all relevant contracts and transactions.

Section 16: Notices.

All notices or reports provided from one party to the other under the terms of this lease must be in writing, except as provided herein and in the applicable regulations in 30 CFR Part 585. Written notices must be delivered to the party's Lease Representative, as specifically listed in Addendum "A," either electronically, by hand, by facsimile, or by United States first class mail, adequate postage prepaid. Either party may notify the other of a change of address by doing so in writing. Until notice of any change of address is delivered as provided in this section, the last recorded address of either party will be deemed the address for all notices required under this lease. For all operational matters, notices must be provided to the party's Operations Representative, as specifically listed in Addendum "A," as well as the Lease Representative.

Section 17: Severability Clause.

If any provision of this lease is held unenforceable, all remaining provisions of this lease will remain in full force and effect.

Section 18: Modification.

Unless otherwise authorized by the applicable regulations in 30 CFR Part 585, this lease may be modified or amended only by mutual agreement of the Lessor and the Lessee. No such modification or amendment will be binding unless it is in writing and signed by the Lease Representatives of both the Lessor and the Lessee.

_____ Lessee	_____ The United States of America Lessor
_____ (Signature of Authorized Officer)	_____ (Signature of Authorized Officer)
_____ (Name of Signatory)	_____ (Name of Signatory)
_____ (Title)	_____ (Title)
_____ (Date)	_____ (Date)

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF OCEAN ENERGY MANAGEMENT

ADDENDUM "A"

DESCRIPTION OF LEASED AREA AND LEASE ACTIVITIES

Lease Number OCS-A 0487

I. Lessor and Lessee Contact Information

Lessee Company Number: _____

(a) Lessor's Contact Information

	Lease Representative	Operations Representative
Name	Maureen A. Bornholdt	Same as Lease Representative.
Title	Program Manager	
Address	U.S. Department of the Interior Bureau of Ocean Energy Management 381 Elden Street, HM1328 Herndon, Virginia 20170	
Phone	(703) 787-1300	
Fax	(703) 787-1708	
Email	Maureen.Bornholdt@boem.gov	

(b) Lessee's Contact Information

	Lease Representative	Operations Representative
Name		
Title		
Address		
Phone		
Fax		
Email		

II. Description of Leased Area

The total acreage of the lease area is approximately 67,252 acres.

This area is subject to later adjustment, in accordance with applicable regulations (*e.g.*, contraction, relinquishment, etc.).

Lease OCS-A 0487

The following Blocks or portions of Blocks lying within Official Protraction Diagram Providence NK19-07, are depicted on the map below and comprise approximately 67,252 acres.

- 1) Block 7014, E1/2 of SW1/4; S1/2 of SE1/4
- 2) Block 7015, S1/2 of SW1/4
- 3) Block 7019, SE1/4 of SE1/4
- 4) Block 7020, SW1/4 of SW1/4
- 5) Block 7021, NE1/4; S1/2 of NW1/4; N1/2 of S1/2
- 6) Block 7064, All of Block
- 7) Block 7065, S1/2 of NE1/4; NW1/4; S1/2
- 8) Block 7066, S1/2 of N1/2; S1/2
- 9) Block 7067, S1/2 of N1/2; S1/2
- 10) Block 7068, S1/2 of N1/2; S1/2
- 11) Block 7069, All of Block
- 12) Block 7070, NW1/4 of NW1/4; S1/2 of N1/2; S1/2
- 13) Block 7071, S1/2 of N1/2; S1/2
- 14) Block 7114, All of Block
- 15) Block 7115, All of Block
- 16) Block 7116, All of Block
- 17) Block 7117, All of Block

For the purposes of these calculations, a full Block is 2,304 hectares. The acreage of a hectare is 2.471043930.



III. Renewable Energy Resource

Wind

IV. Description of the Project

A project to generate energy using wind turbine generators and any associated resource assessment activities, located on the OCS in the leased area, as well as associated offshore substation platforms, inner array cables, and subsea export cables.

V. Description of Project Easement(s)

Once approved, the Lessor will incorporate Lessee's project easement(s) in this lease as Addendum "D."

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF OCEAN ENERGY MANAGEMENT

ADDENDUM “B”

LEASE TERM AND FINANCIAL SCHEDULE

Lease Number OCS-A 0487

I. Lease Term

The duration of each term of the lease is described below. The terms may be extended or otherwise modified in accordance with applicable regulations in 30 C.F.R. Part 585.

Lease Term	Duration
Preliminary Term	6 months
Site Assessment Term	5 years
Operations Term	25 years

Schedule: Addendum C includes a schedule and reporting requirements for conducting site characterization activities.

Renewal: The Lessee may request renewal of the operations term of this lease, in accordance with applicable regulations in 30 CFR Part 585. The Lessor, at its discretion, may approve a renewal request to conduct substantially similar activities as were originally authorized under this lease or in an approved plan. The Lessor will not approve a renewal request that involves development of a type of renewable energy not originally authorized in the lease. The Lessor may revise or adjust payment terms of the original lease as a condition of lease renewal.

Unless otherwise described below, the Preliminary Term begins on the Effective Date of this lease for leases issued competitively. Unless otherwise described below, for noncompetitively issued leases, the Site Assessment Term begins on the Effective Date of this lease. The Operations Term begins on the date that the Lessor approves the Lessee’s Construction and Operations Plan (COP).

II. Definitions

“Lease Issuance Date” refers to the date on which this lease has been signed by *both* the Lessee and the Lessor.

“Effective Date” has the same meaning as “effective date” in BOEM regulations provided in 30 CFR 585.237.

“Lease Anniversary” refers to the anniversary of the Effective Date of the lease.

“End Date” refers to the earlier of a) the last calendar day of the last month of the Operations Term; or b) the date on which the lease terminates in the event of a lease termination.

“Commercial Operations” means the generation of electricity or other energy product for commercial use, sale, or distribution.

“Commercial Operation Date,” or “COD,” refers to the date on which the Lessee first begins Commercial Operations on the lease.

“Delivery Point” is the meter identified in the COP where the Lessee’s facility interconnects with the electric grid to deliver electricity for sale.

An individual wind generation turbine is said to be “available for Commercial Operations” on or after the first day that it engages in Commercial Operations on the lease; and to be no longer available for Commercial Operations on or after the day when it is permanently decommissioned. These dates are determined by the COP.

III. Payments

Unless otherwise authorized by the Lessor in accordance with the applicable regulations in 30 CFR Part 585, the Lessee must make payments as described below.

(a) **Rent.** The Lessee must pay rent as described below:

Rent payments prior to the COD, or prior to the lease End Date in the event that the lease terminates prior to the COD, are calculated by multiplying the acres in the leased area times the rental rate per acre as follows:

Lease OCS-A 0487

- Acres in Project Area: 67,252
- Annual Rental Rate: \$3.00 per acre or fraction thereof
- Rental Fee for Entire Project Area: \$3.00 x 67,252 = \$201,756

The first year’s rent payment of \$201,756 is due within 45 days of the date that the lease is received by the Lessee for execution. Rent for the entire leased area for the next year and for each subsequent year is due on or before each Lease Anniversary through the year in which the COD occurs. The rent for each year subsequent to the COD on the portion of the lease not authorized for Commercial Operations is due on or before each Lease Anniversary. The portion of the lease that is not authorized for Commercial Operations at each Lease Anniversary in year t , S_t , and the corresponding Adjusted Annual Rent Payment will be determined as follows:

$$(A) S_t = \left(1 - \frac{M'_t}{MAX(M'_t: \text{for all } t \geq 2)}\right)$$

(B) *Adjusted Annual Rent Payment* = S_t * *Rental Fee for Entire Leased Area*

Where:

S_t = Portion of the lease not authorized for Commercial Operations in year t based on the definition of t in Section III (b) (4) below.

M'_t = Actual Nameplate capacity expressed in megawatts (MW) rounded to the nearest second decimal in year t of Commercial Operations on the lease as defined in Section III (b) (4) below prior to any adjustments as specified in the most recent approved COP for turbine maintenance, replacements, repowering, or decommissioning.

$MAX(M'_t)$ = Highest value of M'_t projected in the most recent approved version of the COP to be achieved in any year of Commercial Operations on the lease.

The Adjusted Annual Rent Payment calculated in Equation (A) herein will be rounded up to the nearest dollar. The annual rent payments will be set forth in Addendum “E” when the COP is initially approved or subsequently revised.

Consider an example of a 1,000 MW project on a lease with an Effective Date of January 1, 2014 and a COD of January 1, 2022 on a lease area consisting of 100,000 acres as follows:

Payment (Jan. 1 st)	M'_t (MW)	$MAX(M'_t)$ (MW)	$\left(1 - \frac{M'_t}{MAX(M'_t)}\right)$	Rental Fee for Entire Area	Payment Amount
2014	0	1,000	1.0	\$300,000	\$300,000
...
2021	0		1.0		\$300,000
2022	500		0.5		\$150,000
2023	500		0.5		\$150,000
2024	500		0.5		\$150,000
2025	800		0.2		\$60,000
2026	800		0.2		\$60,000
2027	800		0.2		\$60,000
2028	1,000		0.0		\$0

In the event a revised COP is approved by BOEM that identifies an alternative installation schedule that differs from the previously-approved COP, the Lessee will make subsequent payments based on the revised installation schedule. In addition, the Lessee will make a payment equal to the sum of any incremental annual rent payments that would have been due at the Lease Anniversary of prior years based on the differences between the Initial Installation Schedules specified in the previously-approved COP and the revised COP, plus interest on the annual balances in accordance with 30 CFR 1218.54.

Consider an example whereby the initial COP specified an installation schedule with all 1,000 MW online at the COD, i.e., M'_t is 1,000 MW at COD. The following table demonstrates how the back rent payments would be calculated if the project was initially scheduled as a

single phase, but then later determined to be the three-phase project as shown in the previous example in a revised COP approved prior to the payment due on January 1, 2023.

Payment (Jan. 1 st)	Initial M'_t (MW)	Revised M'_t (MW)	Single-Phase Payment Amount	Three-Phase Payment Amount	Back Rent Payment Amount	Subsequent Rent Payment Amount
2014	0	0	\$300,000	\$300,000	\$0	\$0
...
2021	0	0	\$300,000	\$300,000	\$0	\$0
2022	1,000	500	\$0	\$150,000	\$150,000	\$0
2023	1,000	500	\$0	\$150,000	\$0	\$150,000
2024	1,000	500	\$0	\$150,000	\$0	\$150,000
2025	1,000	800	\$0	\$60,000	\$0	\$60,000
2026	1,000	800	\$0	\$60,000	\$0	\$60,000
2027	1,000	800	\$0	\$60,000	\$0	\$60,000
2028	1,000	1,000	\$0	0	\$0	\$0

The last rent payment prior to Commercial Operations being authorized on the entire lease area, i.e., the year in which the value of S_t is equal to zero, or prior to the lease End Date in the event that the lease terminates prior to Commercial Operations being authorized on the entire lease area, will represent the final rent payment unless a revised COP identifying an alternative maximum initial capacity is approved by BOEM. All rent payments, including the last rent payment, are payable for the full year and will not be prorated to the COD or other installation milestones. The COD is equivalent to the authorization date for the first phase of development on the lease to be updated based on the initial or revised approved COP documentation. The schedule of rent payments on the lease is defined in Addendum “E”. All rent payments must be made as required in 30 CFR 1218.51. Late rent payments will be charged interest in accordance with 30 CFR 1218.54.

(1) *Project Easement.*

Rent for any project easement(s) is described in Addendum “D”.

(2) *Relinquishment.*

If the Lessee submits an application for relinquishment of a portion of the leased area within the first 45 calendar days following the date that the lease is received by the Lessee for execution, and the Lessor approves that application, no rent payment will be due on that relinquished portion of the leased area. Later relinquishments of any leased area will reduce the Lessee’s rent payments due the year following the Lessor’s approval of the relinquishment through a reduction in the Acres in Leased Area and the corresponding Rental Fee for the Entire Leased Area and any related Adjusted Annual Rent Payments.

(b) *Operating Fee.* The Lessee must pay an operating fee as described below:

(1) Initial Operating Fee Payment.

The Lessee must pay an initial prorated operating fee within 45 calendar days after the COD. The initial operating fee payment covers the first year of Commercial Operations on the lease and will be calculated in accordance with subsection (4) below, using an operating fee rate of 0.02 and a capacity factor of 0.4.

(2) Annual Operating Fee Payments.

The Lessee must pay the operating fee for each subsequent year of Commercial Operations on or before each Lease Anniversary following the formula in subsection (4) below. The Lessee must calculate each operating fee annually subsequent to the initial operating fee payment using an operating fee rate of 0.02 through the eighth year of Commercial Operations. Starting in the ninth year of Commercial Operations the operating fee rate will be 0.04 and will remain in effect until the End Date. The capacity factor of 0.4 will remain in effect until the Lease Anniversary of the year in which the Lessor adjusts the capacity factor.

(3) Final Operating Fee Payment.

The final operating fee payment is due on the Lease Anniversary prior to the End Date. The final operating fee payment covers the last year of Commercial Operations on the lease and will be calculated in accordance with the formula in subsection (4) below.

(4) The formula for calculating the operating fee in year t .

F_t	=	M_t	*	H	*	c_p	*	P_t	*	r_t
(annual operating fee)		(nameplate capacity)		(hours per year)		(capacity factor)		(power price)		(operating fee rate)

Where:

t =	the year of Commercial Operations on the lease starting from each Lease Anniversary, where t equals 1 represents the year beginning on the Lease Anniversary prior to, or on, the COD.
F_t =	the dollar amount of the annual operating fee in year t .
M_t =	<p>the nameplate capacity expressed in megawatts (MW) rounded to the nearest second decimal place in year t of Commercial Operations on the lease.</p> <p>The value of M_t, reflecting the availability of turbines, will be determined based on the COP. This value will be adjusted to reflect any modifications to the COP approved by BOEM as of the date each operating fee payment is due, in accordance with the calculation in Equation 1, for each year of Commercial Operations on the lease.</p>

$$(1) M_t = \sum_{w=1}^{W_t} \left(N_w * \left[\frac{\left(\sum_{d=1}^D E_{w,t,d} \right)}{D} \right] \right)$$

Where:

W_t = Number of individual wind generation turbines, w , that will be available for Commercial Operations during any day of the year, t , per the COP.

N_w = Nameplate capacity of individual wind generation turbine, w , per the COP expressed in MW.

$E_{w,t,d}$ = Indicates whether individual wind generation turbine, w , will be available for Commercial Operations on day d of year t . The value is set to 1 for any day in year t for which the condition is true, i.e., the wind turbine will be available for Commercial Operations, and zero for any day in year t for which the condition is false, i.e., the wind turbine will not be available for Commercial Operations. The month of February is always assumed to have 28 days for purposes of this calculation, where March 1st will be counted as the first day of Commercial Operations if Commercial Operations commence on February 29th of a leap year.

D = Days in the year set equal to 365 in all years for purposes of this calculation.

M_t may be reduced only in the event that installed capacity is permanently decommissioned per the COP. M_t will not be changed in response to routine or unplanned maintenance of units, including the temporary removal of a nacelle for off-site repair or replacement with a similar unit.

EXAMPLE: Assume that the Lease Anniversary is January 1st, the COD is July 1, 2018, that the facility will ultimately have 100 individual wind generation turbines with a nameplate capacity of 5.0 MW each, and that the COP specifies the following, cumulative installation schedule for wind turbines to become available for Commercial Operations:

- July 1, 2018 (COD): 20 turbines (20 new units);
- October 1, 2018: 45 turbines (25 new units);
- January 1, 2019: 50 turbines (5 new units);
- July 1, 2019: 65 turbines (15 new units);
- January 1, 2020: 95 turbines (30 new units);
- February 29, 2020: 100 turbines (5 new units).

Further assume that the COP calls for 50 of the turbines to be decommissioned after September 30, 2039 ($t = 22$), and that the remaining turbines are decommissioned at the End Date of March 15, 2040 ($t = 23$).

The value of M_t would be estimated as demonstrated in Table 1a for each year of Commercial Operations on the lease in this example.

Table 1a: Example of M_t Calculations for Installation and Decommissioning

t	Turbines	MW	Commercial Operations Period	Comm. Ops. Days	Days in Year	Share of Days	MW	M_t
1	20	100	Jul. 1 st to Dec. 31 st	184	365	50.41%	50.41	81.92
	25	125	Oct. 1 st to Dec. 31 st	92		25.21%	31.51	
2	50	250	Jan. 1 st to Dec. 31 st	365		100.00%	250.00	287.81
	15	75	Jul. 1 st to Dec. 31 st	184		50.41%	37.81	
3	95	475	Jan. 1 st to Dec. 31 st	365		100.00%	475.00	495.96
	5	25	Mar. 1 st to Dec. 31 st	306		83.84%	20.96	
4	100	500	Jan. 1 st to Dec. 31 st	365		100.00%	500.00	500.00
...
21	100	500	Jan. 1 st to Dec. 31 st	365		100.00%	500.00	500.00
22	50	250	Jan. 1 st to Dec. 31 st	365		100.00%	250.00	436.98
	50	250	Jan. 1 st to Sep. 30 th	273		74.79%	186.98	
23	50	250	Jan. 1 st to Mar. 15 th	74		20.27%	50.68	50.68

To illustrate the impact of decommissioning a portion of the individual wind generation turbines and replacing them with units of greater capacity on the calculation of M_t , assume that at the end of March 31, 2022, 10 units are to be made unavailable due to decommissioning, and that the incremental units have a capacity of 7.0 MW and are expected to be made available for Commercial Operations on September 15, 2022. The impact on M_t in 2022 and in subsequent years starting in 2023 and continuing until decommissioning is illustrated in Table 1b.

Table 1b: Example of M_t Calculations for Repowering

t	Turbines	MW	Commercial Operations Period	Comm. Ops. Days	Days in Year	Share of Days	MW	M_t
5	90 (5.0)	450	Jan. 1 st to Dec. 31 st	365	365	100.00%	450.00	483.04
	10 (5.0)	50	Jan. 1 st . to Mar. 31 st	90		24.66%	12.33	
	10 (7.0)	70	Sep. 15 th to Dec. 31 st	108		29.59%	20.71	
6	90 (5.0)	450	Jan. 1 st to Dec. 31 st	365		100.00%	450.00	520.00
	10 (7.0)	70	Jan. 1 st to Dec. 31 st	365		100.00%	70.00	

H = the number of hours in the year for billing purposes which is equal to 8,760 for all years of Commercial Operations on the lease.

c_p = the “Capacity Factor” in Performance Period p, which represents the share of anticipated generation of the facility relative to its generation at continuous full power operation at the nameplate capacity, expressed as a decimal between zero and one.

The initial Capacity Factor (C_0) will be set to 0.4.

The Capacity Factor will be subject to adjustment at the end of each Performance

Period. After the sixth year of Commercial Operations on the lease has concluded, the Lessee will utilize data gathered from years two through six of Commercial Operations on the lease and determine the Capacity Factor to be used to calculate subsequent annual payments, as provided for in Table 2 below. A similar process will be conducted at the conclusion of each five-year Performance Period, thereafter.

Table 2: Definition of Performance Periods

Performance Period (p)	Commercial Operation Years (t)	Payments Affected by Adjustment	Capacity Factor (C)	Date End Year (n)
0 (COD)	Not Applicable	Payments 1 to 7	$C_0=0.4$	--
1	$t = 2$ to 6	Payments 8 to 12	C_1	$n_1=6$
2	$t = 7$ to 11	Payments 13 to 17	C_2	$n_2=11$
3	$t = 12$ to 16	Payments 18 to 22	C_3	$n_3=16$
4	$t = 17$ to 21	Payments 23 to End Date	C_4	$n_4=21$

Adjustments to the Capacity Factor

The Actual 5-year Average Capacity Factor (X_p) is calculated for each Performance Period after COD ($p > 0$) per Equation 2 below. X_p represents the sum of actual, metered electricity generation in megawatt-hours (MWh) at the Delivery Point to the electric grid (A_t) divided by the amount of electricity generation in MWh that would have been produced if the facility operated continuously at its full, stated capacity (M_t) in all of the hours (h_t) in each year, t , of the corresponding five-year period.

$$(2) \quad X_p = \left(\frac{\sum_{t=n-4}^n A_t}{\sum_{t=n-4}^n M_t * h_t} \right)$$

Where:

M_t = Nameplate Capacity as defined above.

n = "Date End Year" value for the Performance Period, p , as defined in Table 2.

p = Performance Period as defined in Table 2.

A_t = Actual generation in MWh associated with each year of Commercial Operations, t , on the lease; delivery point meter data supporting the values submitted for annual actual generation may be requested by BOEM in evaluating changes to the capacity factor.

h_t = Hours in the year on which the Actual Generation associated with each year of Commercial Operations, t , on the lease is based; this definition of "hours in the year" differs from the definition of H in the operating fee equation above. The hours in the year for purposes of calculating the capacity factor must take into account the actual number of hours, including those in leap years.

The value of the Capacity Factor at the outset of Commercial Operations ($p = 0$) is set

	<p>to 0.4 as stated in equation 3:</p> <p>(3) $c_0 = 0.4$</p> <p>The value of the Capacity Factor corresponding to each Performance Period (c_p) is set according to equations 4A, 4B, and 4C as follows for each value of p greater than zero. The Capacity Factor is set equal to the Actual 5-Year Average Capacity Factor provided that the value falls within a range of plus or minus 10 percent of the previous Performance Period's capacity factor.</p> <p>(4A) $c_p = X_p$ for $c_{p-1} * 0.90 \leq X_p \leq c_{p-1} * 1.10$</p> <p>(4B) $c_p = c_{p-1} * 0.90$ for $X_p < c_{p-1} * 0.90$</p> <p>(4C) $c_p = c_{p-1} * 1.10$ for $X_p > c_{p-1} * 1.10$</p> <p>All values for c_p must be rounded to the nearest third decimal place.</p>
$P_t =$	<p>a measure of the annual average wholesale electric power price expressed in dollars per MW hour.</p> <p>The Lessee must calculate P_t at the time each operating fee payment is due, subject to approval by the Lessor. The Base Price (P_b) must equal the weighted average of the peak and off-peak spot price indices for the Northeast – Mass Hub power market for the most recent year of data available as reported by the Federal Energy Regulatory Commission (FERC) as part of its annual <u>State of the Markets Report</u> with specific reference to the summary entitled “Electric Market Overview: Regional Spot Prices.” The latest version of this report is available at http://www.ferc.gov/market-oversight/mkt-electric/overview/elec-ovr-3yr-regional-elec-pr.pdf. If FERC stops publishing its annual <u>State of the Markets Report</u> required for this calculation or the specified location of the data changes over time, the Lessor must specify an alternate source of data and methodology that is approximately equivalent.</p> <p>The peak and off-peak price indices must be weighted 52.40% and 47.60%, respectively, for purposes of estimating the weighted index value for the Base Price. For example, in the March 12, 2012 <u>State of the Markets Report</u> the peak price index for 2011 was \$52.64/MWh and the corresponding off-peak price index for 2011 was \$37.95/MWh, resulting in a weighted index value for the Base Price for 2011 (P_{2011}) of \$45.65/MWh ($= 52.40\% * \\$52.64 / \text{MWh} + 47.60\% * \\$37.95 / \text{MWh}$). The calculation of P_b must be rounded up to the nearest, second decimal place.</p> <p>The Base Price must be adjusted for inflation from the year associated with the published spot prices to the year in which the operating fee is to be paid as shown in equations (5A) and (5B):</p>

$$(5A) P_t = P_b * \left(\frac{GDP_g}{GDP_{g-1}} \right)^{y-g} * \left(\frac{GDP_g}{GDP_b} \right) \text{ for } g \geq b$$

$$(5B) P_t = P_b * \left(\frac{GDP_g}{GDP_{g-1}} \right)^{y-b} \text{ for } g < b$$

Where:

GDP = Annual Implicit Price Deflators for Gross Domestic Product (GDP deflator index) from Table 1.1.9, line 1, in the Survey of Current Business published by the U.S. Bureau of Economic Analysis (BEA) in the specified period; the latest version of this data is currently available at:

<http://bea.gov/iTable/iTable.cfm?ReqID=9&step=1>

If BEA stops publishing the data required for this calculation, or the specified location of the data changes over time, the Lessor will specify an alternative source of data and methodology that it considers approximately equivalent.

b = The most recent year for which FERC reports the appropriate electricity spot price data expressed as the year, e.g., 2009 as in the illustrative example below.

g = The most recent year for which GDP deflator indices are available from BEA expressed as the year, e.g., 2011 as in the illustrative example below.

y = The year the annual payment is due expressed as the year corresponding to the value of *t* described above, e.g., 2013 as in the illustrative example below.

The second term on the right-hand side of equation (5A) represents a projected annual change in the index of inflation employing the last year of data available from BEA, while the third term represents the cumulative change in the index of inflation up to the previous year.

Example:

The following hypothetical example is provided to illustrate the methodology using Equation (5A) and the illustrative values provided for *b*, *g*, and *y* above applied to historical GDP deflator data. If the actual FERC price indices are based on 2009 data and the GDP deflator indices are available for 2011, the inflation-adjusted price index value would be determined from equation (5A) as follows for a payment occurring in *y* = 2013:

	$P_{t(2013)} = P_{2009} * \left(\frac{GDP_{2011}}{GDP_{2010}} \right)^{2013-2011} * \left(\frac{GDP_{2011}}{GDP_{2009}} \right) = \frac{\$40.69}{\text{MWh}} * \left(\frac{113.361}{110.992} \right)^2 * \left(\frac{113.361}{109.729} \right) = \frac{\$43.85}{\text{MWh}}$ <p>Note: The current GDP deflator index is 113.361 for 2011, 110.992 for 2010, and 109.729 for 2009 (last revised by BEA on April 27, 2012); the FERC index price for the year 2009 is \$40.69/MWh (On-peak: \$46.24/MWh; Off-peak: \$34.57/MWh; last revised March 12, 2012). Although 2011 FERC prices are available, the 2009 prices are used in the example to illustrate the concept.</p> <p>The Lessor and the Lessee will use the latest FERC price indices and revised BEA GDP deflator index values at the time the pricing adjustments are made. The source of data used in the calculations must be noted in the Lessee's documentation supporting their estimate of the value of P_t each year for review and approval by the Lessor.</p>
$r_t =$	<p>the operating fee rate.</p> <p>For the first eight years of Commercial Operations on the lease ($t = 1$ to 8) the operating fee rate will be 0.02. Starting in the ninth year and continuing throughout the remaining years of the lease term ($t \geq 9$), the operating fee rate will be 0.04.</p>

(c) Reporting, Validation, Audits, and Late Payments.

The Lessee must submit the values used in the operating fee formula to the Lessor at the time the annual payment based on these values is made. Submission of this and other reporting, validation, audit and late payment information as requested by the Lessor must be sent to the Lessor using the contact information indicated in Addendum "A", unless the Lessor directs otherwise. Failure to submit the estimated values and the associated documentation on time to the Lessor may result in penalties as specified in applicable regulations.

Within 60 days of the submission by the Lessee of the annual payment, the Lessor will review the data submitted and validate that the operating fee formula was applied correctly. If the Lessor validation results in a different operating fee amount, the amount of the annual operating fee payment will be revised to the amount determined by the Lessor.

The Lessor also reserves the right to audit the meter data upon which the Actual 5-year Average Capacity Factor is based. If, as a result of such audit, the Lessor determines that any annual operating fee payment was calculated incorrectly, the Lessor has the right to correct any errors and collect the correct annual operating fee payment amount.

If the annual operating fee is revised downward as a result of the Lessee's calculations, as validated by the Lessor, or an audit of meter data conducted by the Lessee or Lessor, the Lessee will be refunded the difference between the amount of the payment received and the amount of the revised annual operating fee, without interest. Similarly, if the payment

amount is revised upward, the Lessee is required to pay the difference between the amount of the payment received and the amount of the revised annual operating fee, plus interest on the balance in accordance with 30 CFR § 1218.54.

Late operating fee payments will be charged interest in accordance with 30 CFR § 1218.54.

III. Financial Assurance

The Lessor will base the determination for the amounts of all SAP, COP, and decommissioning financial assurance requirements on estimates of the cost to meet all accrued lease obligations. The Lessor determines the amount of supplemental and decommissioning financial assurance requirements on a case-by-case basis. The amount of financial assurance required to meet all lease obligations includes:

- The projected amount of rent and other payments due the Lessor over the next 12 months;
 - Any past due rent and other payments;
 - Other monetary obligations (e.g., fines, liens); and
 - The estimated cost of facility decommissioning.
- (a) **Initial Financial Assurance Due Prior to Lease Issuance Date.** The Lessee must provide the required financial assurance as described herein in a form acceptable to the Lessor prior to the Lease Issuance Date:
- An initial lease-specific bond, or other approved means of meeting the Lessor's initial financial assurance requirements, in the amount of \$100,000, and
 - A supplemental bond, or other approved means of meeting the Lessor's supplemental financial assurance requirements, in the amount of \$201,756. This supplemental bond amount guarantees lease obligations and is in an amount equal to rental payments due to the Lessor over the first 12 months.
- (b) **Additional Financial Assurance.** In addition to the initial lease-specific and supplemental financial assurance discussed above, the Lessee is also required to provide an additional supplemental bond, or other form of financial assurance, and a decommissioning bond or other approved means of meeting the Lessee's decommissioning obligations.
- (1) Prior to the Lessor's approval of a SAP, the Lessor will require an additional supplemental bond or other form of financial assurance in an amount determined by the Lessor based on the complexity, number, and location of all facilities involved in the site assessment activities planned in the SAP, and estimates of the costs to meet all accrued obligations, in accordance with applicable BOEM regulations (30 CFR 585.515-537). The supplemental financial assurance requirement is in addition to the initial lease-specific financial assurance in the amount of \$100,000 and the initial supplemental financial assurance in the amount of \$201,756. The

Lessee may meet these obligations by providing a new bond or other acceptable form of financial assurance, or increasing the amount of its existing bond or other form of financial assurance.

- (2) Prior to the Lessor's approval of a COP, the Lessor will require an additional supplemental bond or other form of financial assurance in an amount determined by the Lessor based on the complexity, number, location of all facilities, activities and Commercial Operations planned in the COP, and estimates of the costs to meet all accrued obligations, in accordance with applicable BOEM regulations (30 CFR 585.515-537). The supplemental financial assurance requirement is in addition to the initial lease-specific financial assurance in the amount of \$100,000, the initial supplemental financial assurance in the amount of \$201,756 and any additional supplemental bond or other form of financial assurance required with the SAP. The Lessee may meet these obligations by providing a new bond or other acceptable form of financial assurance, or increasing the amount of its existing bond or other form of financial assurance.
- (3) The Lessor will determine the amount and the schedule for providing the decommissioning bond or other financial assurance based on the anticipated decommissioning costs in accordance with applicable BOEM regulations (30 CFR 585.515-537). The decommissioning obligation must be guaranteed through an acceptable form of financial assurance and will be due according to the schedule beginning before commencement of the installation of commercial facilities on a date or dates to be determined by the Lessor.

- (C) **Adjustments to Financial Assurance Amounts.** The Lessor reserves the right to adjust the amount of any financial assurance requirement (initial, supplemental or decommissioning) associated with this lease and/or reassess the Lessee's cumulative lease obligations, including decommissioning obligations, at any time. If the Lessee's cumulative lease obligations and/or liabilities increase or decrease, the Lessor will notify the Lessee of any adjustment to the financial assurance requirements and provide the Lessee an opportunity to comment in accordance with applicable BOEM regulations.

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF OCEAN ENERGY MANAGEMENT

ADDENDUM “C”

LEASE-SPECIFIC TERMS, CONDITIONS, AND STIPULATIONS

Lease Number OCS-A 0487

The Lessee’s rights to conduct activities on the leased area are subject to the following terms, conditions, and stipulations. The Lessor reserves the right to impose additional terms and conditions incident to the future approval or approval with modifications of plans, such as a Site Assessment Plan (SAP) or Construction and Operations Plan (COP).

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1 DEFINITIONS

- 1.1 Definition of “Archaeological Resource”: The term “archaeological resource” has the same meaning as “archaeological resource” in BOEM regulations provided in 30 CFR 585.112.
- 1.2 Definition of “Dynamic Management Area (DMA)”: The term “DMA” refers to a temporary area designated by the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) and consisting of a circle around a confirmed North Atlantic right whale sighting. The radius of this circle expands incrementally with the number of whales sighted, and a buffer is included beyond the core area to allow for whale movement. Mandatory or voluntary speed restrictions may be applied by NOAA NMFS within DMAs. Information regarding the location and status of applicable DMAs is available from the NMFS Office of Protected Resources.
- 1.3 Definition of “Effective Date”: The term “Effective Date” has the same meaning as “effective date” in BOEM regulations provided in 30 CFR 585.237.
- 1.4 Definition of “Geological and Geophysical Survey (G&G Survey)”: The term “G&G Survey” serves as a collective term for surveys that collect data on the geology of the seafloor and landforms below the seafloor. High resolution geophysical surveys and geotechnical (sub-bottom) sampling are components of G&G surveys.
- 1.5 Definition of “Geotechnical Sampling”: The term “Geotechnical Sampling,” also referred to as “Sub-bottom Sampling,” or “Geotechnical Testing,” is used to collectively refer to site specific sediment and underlying geologic data acquired from the seafloor and the sub-bottom and includes geotechnical surveys utilizing deep borings, vibracores, and cone penetration tests.
- 1.6 Definition of “High Resolution Geophysical Survey (HRG Survey)”: The term “HRG Survey” means a marine remote-sensing survey using, but not limited to, such equipment as side-scan sonar, magnetometer, shallow and medium (Seismic) penetration sub-bottom profiler systems, narrow beam or multibeam echo sounder, or other such equipment employed for the purposes of providing data on geological conditions, identifying shallow hazards, identifying archaeological resources, charting bathymetry, and gathering other site characterization information.
- 1.7 Definition of “Listed Species”: The term “listed species,” also referred to in adjective form as “listed” means any species of fish, wildlife, or plant that has been determined to be endangered or threatened under Section 4 of the Endangered Species Act. Listed species are provided in 50 CFR 17.11-12.
- 1.8 Definition of “Protected-Species Observer”: The term “protected-species observer,” or “observer,” means an individual who is trained in the shipboard identification and behavior of protected species. Protected species include marine mammals (those protected under the Endangered Species Act and those protected under the Marine Mammal Protection Act) and sea turtles.

- 1.9 Definition of “Ramp-up”: The term “ramp-up” means the process of incrementally increasing the acoustic source level of the survey equipment when conducting HRG surveys until it reaches the operational setting.
- 1.10 Definition of “Site Assessment Activities”: The term “site assessment activities” or “site assessment,” has the same meaning as “site assessment activities” in 30 CFR 585.112.
- 1.11 Definition of “Qualified Marine Archaeologist”: The term “qualified marine archaeologist” means a person retained by the Lessee who meets the Secretary of the Interior's Professional Qualifications Standards for Archaeology (48 FR 44738-44739), and has experience analyzing marine geophysical data.
- 1.12 Definition of “Take”: The terms “Takes,” “Taken,” and “Taking” shall have the same meaning as the term “take” as defined in 16 U.S.C. § 1532(19).

2 SCHEDULE

2.1 Site Characterization

2.1.1 Survey Plan(s).

- 2.1.1.1 SAP Survey Plan. If the Lessee proposes to conduct site assessment activities during the site assessment term, then the Lessee must submit to the Lessor a complete SAP survey plan. This SAP survey plan must include details of the surveys to be conducted on this lease necessary to support the submission of a SAP.

The Lessee must submit the SAP survey plan to the Lessor at least 30 calendar days prior to the date of the required pre-survey meeting with the Lessor (See 2.1.2). The Lessor may require that the Lessee modify the SAP survey plan to address any comments the Lessor submits to the Lessee on the contents of the SAP survey plan in a manner deemed satisfactory to the Lessor prior to the commencement of the survey activities described in the SAP survey plan.

- 2.1.1.2 COP Survey Plan. The Lessee must submit to the Lessor a complete COP survey plan providing details and timelines of the surveys to be conducted on this lease that are necessary to support the submission of a COP. The COP survey plan must be submitted to the Lessor no later than on the first anniversary of this lease's Effective Date and at least 30 calendar days prior to the date of the required pre-survey meeting with the Lessor (See 2.1.2). The Lessee must modify the COP survey plan to address any comments the Lessor submits to the Lessee on the contents of the COP survey plan in a manner deemed satisfactory to the Lessor prior to the commencement of the survey activities described in the COP survey plan.

- 2.1.2 Pre-Survey Meeting(s) with the Lessor. At least 60 days prior to the initiation of survey activities in support of the submission of a plan (i.e., SAP and/or COP), the Lessee must hold a pre-survey meeting with the Lessor to discuss the applicable proposed survey plan and timelines. The Lessee must ensure the presence of a Qualified Marine Archaeologist at this meeting (See 4.2.2).
- 2.1.3 HRG Survey Milestone. The Lessee must complete the HRG surveys that are necessary to support the submission of a COP no later than the third anniversary of this lease's Effective Date. The Lessee must include this milestone in the COP survey plan (See 2.1.1.2).

2.2 Progress Reporting

- 2.2.1 Semi-Annual Progress Report. The Lessee must submit to the Lessor a semi-annual (i.e., every six months) progress report through the duration of the site assessment term that includes a brief narrative of the overall progress since the last progress report, or – in the case of the first report – since the Effective Date. The progress report must include an update regarding progress in executing the activities included in the survey plan(s), and include as an enclosure an updated survey plan(s) accounting for any modifications in schedule.

3 NATIONAL SECURITY AND MILITARY OPERATIONS

The Lessee must comply with the requirements specified in stipulations 3.1, 3.2 and 3.3 when conducting site characterization activities in support of plan (i.e., SAP and/or COP) submittal.

3.1 Hold and Save Harmless

Whether compensation for such damage or injury might be due under a theory of strict or absolute liability or otherwise, the Lessee assumes all risks of damage or injury to persons or property, which occur in, on, or above the OCS, to any persons or to any property of any person or persons in connection with any activities being performed by the Lessee in, on, or above the OCS, if such injury or damage to such person or property occurs by reason of the activities of any agency of the United States Government, its contractors, or subcontractors, or any of its officers, agents or employees, being conducted as a part of, or in connection with, the programs or activities of the individual military command headquarters (hereinafter "the appropriate command headquarters") listed in the contact information provided as an Enclosure to this lease.

Notwithstanding any limitation of the Lessee's liability in Section 9 of the lease, the Lessee assumes this risk whether such injury or damage is caused in whole or in part by any act or omission, regardless of negligence or fault, of the United States, its contractors or subcontractors, or any of its officers, agents, or employees. The Lessee further agrees to indemnify and save harmless the United States against all claims for loss, damage, or injury in connection with the programs or activities of the command headquarters, whether the same be caused in whole or in part by the negligence or fault of the United States, its contractors, or subcontractors, or any of its officers, agents, or employees and whether such claims might be sustained under a theory of strict or absolute liability or otherwise.

3.2 Evacuation or Suspension of Activities

- 3.2.1 General. The Lessee hereby recognizes and agrees that the United States reserves and has the right to temporarily suspend operations and/or require evacuation on this lease in the interest of national security pursuant to Section 3(c) of this lease.
- 3.2.2 Notification. Every effort will be made by the appropriate military agency to provide as much advance notice as possible of the need to suspend operations and/or evacuate. Advance notice will normally be given before requiring a suspension or evacuation. Temporary suspension of operations may include, but is not limited to the evacuation of personnel and appropriate sheltering of personnel not evacuated. "Appropriate sheltering" means the protection of all Lessee personnel for the entire duration of any Department of Defense activity from flying or falling objects or substances and will be implemented by an order (oral and/or written) from the BOEM Office of Renewable Energy Programs (OREP) Program Manager, after consultation with the appropriate command headquarters or other appropriate military agency, or higher Federal authority. The appropriate command headquarters, military agency, or higher authority will provide information to allow the Lessee to assess the degree of risk to, and provide sufficient protection for, the Lessee's personnel and property.
- 3.2.3 Duration. Suspensions or evacuations for national security reasons will not generally exceed seventy-two (72) hours; however, any such suspension may be extended by order of the OREP Program Manager. During such periods, equipment may remain in place, but all operations, if any, must cease for the duration of the temporary suspension if so directed by the OREP Program Manager. Upon cessation of any temporary suspension, the OREP Program Manager will immediately notify the Lessee such suspension has terminated and operations on the leased area can resume.
- 3.2.4 Lessee Point-of-Contact for Evacuation/Suspension Notifications. The Lessee must inform the Lessor of the persons/offices to be notified to implement the terms of 3.2.2 and 3.2.3.

- 3.2.5 Coordination with Command Headquarters. The Lessee must establish and maintain early contact and coordination with the appropriate command headquarters, in order to avoid or minimize the potential to conflict with and minimize the potential effects of conflicts with military operations.
- 3.2.6 Reimbursement. The Lessee is not entitled to reimbursement for any costs or expenses associated with the suspension of operations or activities or the evacuation of property or personnel in fulfillment of the military mission in accordance with 3.2.1 through 3.2.5 above.

3.3 Electromagnetic Emissions

The Lessee, prior to entry into any designated defense operating area, warning area, or water test area, for the purpose of commencing survey activities undertaken to support SAP or COP submittal must enter into an agreement with the commander of the appropriate command headquarters, to coordinate the electromagnetic emissions associated with such survey activities. The Lessee must ensure that all electromagnetic emissions associated with such survey activities are controlled as directed by the commander of the appropriate command headquarters.

4 STANDARD OPERATING CONDITIONS

4.1 General

- 4.1.1 Vessel Strike Avoidance Measures. The Lessee must ensure that all vessels associated with site characterization activities performed in support of plan (i.e., SAP and/or COP) submittal comply with the vessel-strike avoidance measures specified in stipulations 4.1.1.1 through 4.1.1.7, except under extraordinary circumstances when the safety of the vessel or crew are in doubt or the safety of life at sea is in question.
- 4.1.1.1 The Lessee must ensure that vessel operators and crews maintain a vigilant watch for cetaceans, pinnipeds, and sea turtles and must slow down or stop their vessel to avoid striking these protected species.
- 4.1.1.2 North Atlantic right whales.
- 4.1.1.2.1 The Lessee must ensure all vessels maintain a separation distance of 500 yards (460 meters) or greater from any sighted North Atlantic right whale in accordance with 50 CFR 224.103.
- 4.1.1.2.2 If a North Atlantic right whale is sighted approaching the minimum separation distance, the Lessee must ensure that any vessel underway remains parallel to the sighted North Atlantic right whale's course whenever possible, and avoid excessive speed or abrupt changes in direction.

- 4.1.1.2.3 When a North Atlantic right whale is sighted in a moving vessel's path within the minimum separation distance, the Lessee must reduce the vessel's speed and shift the engine to neutral, and must not engage the engines until the North Atlantic right whale has moved beyond the minimum separation distance.
- 4.1.1.2.4 The Lessee must reduce vessel speed to 10 knots (18.5 km/h) or less when mother/calf pairs, pods, or large assemblages of North Atlantic right whales are observed approaching or within the minimum separation distance.
- 4.1.1.3 Non-delphinoid cetaceans other than the North Atlantic right whale.
- 4.1.1.3.1 The Lessee must ensure all vessels maintain a separation distance of 100 yards (91 meters) or greater from any sighted non-delphinoid cetacean other than a North Atlantic right whale.
- 4.1.1.3.2 If a non-delphinoid cetacean is sighted approaching the minimum separation distance, the Lessee must ensure that any vessel underway remains parallel to the sighted non-delphinoid cetacean's course whenever possible, and avoid excessive speed or abrupt changes in direction.
- 4.1.1.3.3 When a non-delphinoid cetacean is sighted in a moving vessel's path within the minimum separation distance, the Lessee must reduce the vessel's speed and shift the engine to neutral, and must not engage the engines until the non-delphinoid cetacean has moved beyond the minimum separation distance.
- 4.1.1.3.4 The Lessee must reduce vessel speed to 10 knots (18.5 km/h) or less when mother/calf pairs, pods, or large assemblages of non-delphinoid cetaceans are observed approaching or within the minimum separation distance.
- 4.1.1.4 Delphinoid cetaceans.
- 4.1.1.4.1 The Lessee must ensure that all vessels maintain a separation distance of 50 yards (45 m) or greater from any sighted delphinoid cetacean.
- 4.1.1.4.2 When a delphinoid cetacean is sighted approaching the minimum separation distance, the Lessee must ensure that any vessel underway remain parallel to a sighted delphinoid cetacean's course whenever possible, and avoid excessive speed or abrupt changes in direction.
- 4.1.1.4.3 The Lessee must reduce vessel speed to 10 knots (18.5 km/h) or less when mother/calf pairs, pods, or large assemblages of delphinoid cetaceans are observed approaching or within the minimum separation distance.
- 4.1.1.5 Sea Turtles.
- 4.1.1.5.1 The Lessee must ensure all vessels maintain a separation distance of 50 yards (45 meters) or greater from any sighted sea turtle.

- 4.1.1.6 The Lessee must ensure that all vessels 65 feet in length or greater, operating from November 1 through April 30, operate at speeds less than 10 knots. In addition, vessel operators must comply with speed restrictions in any DMA.
- 4.1.1.7 The Lessee must ensure that all vessel operators are briefed to ensure they are familiar with the requirements specified in 4.1.1.
- 4.1.2 Marine Trash and Debris Prevention. The Lessee must ensure that vessel operators, employees, and contractors actively engaged in activity in support of plan (i.e., SAP and/or COP) submittal are briefed on marine trash and debris awareness and elimination, as described in the BSEE NTL No. 2012-G01 (“Marine Trash and Debris Awareness and Elimination”) or any NTL that supersedes this NTL, except that the Lessor will not require the Lessee, vessel operators, employees, and contractors to undergo formal training or post placards. The Lessee must ensure that these vessel operator employees and contractors are made aware of the environmental and socioeconomic impacts associated with marine trash and debris and their responsibilities for ensuring that trash and debris are not intentionally or accidentally discharged into the marine environment. The above-referenced NTL provides information the Lessee may use for this awareness training.

4.2 Archaeological Survey Requirements

- 4.2.1 Archaeological Survey Procedures. For site characterization surveys conducted for the purpose of identifying archaeological resources in support of plan (i.e., SAP and/or COP) submittal, the Lessee must comply with Appendix A.
- 4.2.2 Qualified Marine Archaeologist. The Lessee must ensure that the analysis of archaeological survey data collected in support of plan (e.g., SAP and/or COP) submittal and the preparation of archaeological reports in support of plan submittal are conducted by a Qualified Marine Archaeologist.
- 4.2.3 Tribal Pre-Survey Meeting. Subsequent to any pre-survey meeting with the Lessor (see 2.1.2) and at least 45 calendar days prior to commencing survey activities performed in support of plan (i.e., SAP and/or COP) submittal, the Lessee must invite by certified mail the Narragansett Indian Tribe, the Mashpee Wampanoag Tribe, and the Wampanoag Tribe of Gay Head (Aquinnah) to a tribal pre-survey meeting. The purpose of this meeting will be for the Lessee and the Qualified Marine Archaeologist to discuss the Lessee’s Survey Plan and consider requests to monitor portions of the archaeological survey and the geotechnical sampling activities, including the visual logging and analysis of geotechnical samples (e.g., cores, etc.). The meeting must be scheduled for a date at least 30 calendar days prior to commencing survey and at a location and time that affords the participants a reasonable opportunity to participate. The anticipated date for the meeting must be identified in the timeline of activities described in the applicable survey plan (see 2.1.1).

- 4.2.4 Geotechnical (Sub-bottom) Sampling. The Lessee may only conduct geotechnical sampling activities performed in support of plan (i.e., SAP and/or COP) submittal in locations where an analysis of the results of geophysical surveys has been completed. This analysis must include a determination by a Qualified Marine Archaeologist as to whether any potential archaeological resources are present in the area. Except as allowed by the Lessor under 4.2.6, the geotechnical sampling activities must avoid potential archaeological resources by a minimum of 50 meters, and the avoidance distance must be calculated from the maximum discernible extent of the archaeological resource. A Qualified Marine Archaeologist must certify, in the Lessee's archaeological reports, that geotechnical sampling activities did not impact potential historic properties identified as a result of the HRG surveys performed in support of plan submittal, except as provided in Appendix A, section IV(A).
- 4.2.5 Monitoring and Avoidance. The Lessee must inform the Qualified Marine Archaeologist that he or she may be present during HRG surveys and bottom-disturbing activities performed in support of plan (i.e., SAP and/or COP) submittal to ensure avoidance of potential archaeological resources, as determined by the Qualified Marine Archaeologist (including bathymetric, seismic, and magnetic anomalies; side scan sonar contacts; and other seafloor or sub-surface features that exhibit potential to represent or contain potential archaeological sites or other historic properties). In the event that this Qualified Marine Archaeologist indicates that he or she wishes to be present, the Lessee must facilitate the Qualified Marine Archaeologist's presence, as requested by the Qualified Marine Archaeologist, and provide the Qualified Marine Archaeologist the opportunity to inspect data quality.
- 4.2.6 No Impact without Approval. In no case may the Lessee knowingly impact a potential archaeological resource without the Lessor's prior approval.
- 4.2.7 Post-Review Discovery Clauses. If the Lessee, while conducting site characterization activities in support of plan (i.e., SAP and/or COP) submittal, discovers a potential archaeological resource, as determined by a Qualified Marine Archaeologist – such as the presence of a shipwreck (e.g., a sonar image or visual confirmation of an iron, steel, or wooden hull, wooden timbers, anchors, concentrations of historic objects, piles of ballast rock), prehistoric artifacts, and/or relict landforms, etc. within the project area, the Lessee must:
- 4.2.7.1 Immediately halt seafloor/bottom-disturbing activities within the area of discovery;
 - 4.2.7.2 Notify the Lessor within 24 hours of discovery;
 - 4.2.7.3 Notify the Lessor in writing via report to the Lessor within 72 hours of its discovery;

- 4.2.7.4 Keep the location of the discovery confidential and take no action that may adversely affect the archaeological resource until the Lessor has made an evaluation and instructs the applicant on how to proceed; and
- 4.2.7.5 Conduct any additional investigations as directed by the Lessor to determine if the resource is eligible for listing in the National Register of Historic Places (30 CFR 585.802(b)). The Lessor will do this if: (1) the site has been impacted by the Lessee's project activities; or (2) impacts to the site or to the area of potential effect cannot be avoided. If investigations indicate that the resource is potentially eligible for listing in the National Register of Historic Places, the Lessor will tell the Lessee how to protect the resource or how to mitigate adverse effects to the site. If the Lessor incurs costs in protecting the resource, under Section 110(g) of the National Historic Preservation Act, the Lessor may charge the Lessee reasonable costs for carrying out preservation responsibilities under the OCS Lands Act (30 CFR 585.802(c-d)).

4.3 Geological and Geophysical (G&G) Survey Requirements

- 4.3.1 Visibility. The Lessee must not conduct G&G surveys in support of plan (i.e., SAP and/or COP) submittal at any time when lighting or weather conditions (e.g., darkness, rain, fog, sea state) prevents visual monitoring of the HRG survey exclusion zone (see 4.3.4) or the geotechnical sampling exclusion zone (see 4.3.5). If the Lessee intends to conduct G&G survey operations in support of plan submittal at night or when visual observation is otherwise impaired, it must submit to the Lessor an alternative monitoring plan detailing the alternative monitoring methodology (e.g. active or passive acoustic monitoring technologies). The Lessor may, after consultation with NMFS, decide to allow the Lessee to conduct G&G surveys in support of plan submittal at night or when visual observation is otherwise impaired using the proposed alternative monitoring methodology.
- 4.3.2 Protected-Species Observer. The Lessee must ensure that the exclusion zone for all G&G surveys performed in support of plan (i.e., SAP and/or COP) submittal is monitored by a NMFS-approved protected-species observer. The Lessee must provide to the Lessor a list of observers and their résumés no later than 45 calendar days prior to the scheduled start of surveys performed in support of plan submittal. The résumés of additional observers must be provided 15 calendar days prior to each observer's start date. The Lessor will send the observer's information to NMFS for approval.
- 4.3.3 Optical Device Availability. The Lessee must ensure that binoculars or other suitable equipment are available to each observer to adequately perceive and monitor protected species within the exclusion zone during surveys conducted in support of plan (i.e., SAP and/or COP) submittal.
- 4.3.4 High-Resolution Geophysical (HRG) Surveys. Stipulations specific to HRG surveys conducted in support of plan (i.e., SAP and/or COP) submittal are provided in 4.3.4.1 through 4.3.4.8:
- 4.3.4.1 Establishment of Default Exclusion Zone. The Lessee must ensure a 200-meter default exclusion zone for cetaceans, pinnipeds, and sea turtles. The Lessee must ensure that the exclusion zone will be monitored by a protected species observer around a survey vessel actively using electromechanical survey equipment. The Lessee may not use HRG survey devices that emit sound levels that exceed the 180 dB Level A harassment zone boundary without approval by the Lessor. As a condition of approval, the Lessor may impose additional, relevant requirements on the Lessee, including but not limited to, required expansion of this exclusion zone.

- 4.3.4.2 Modification of Exclusion Zone Per Lessee Request. The Lessee may use the field-verification method described in 4.3.4.3 to request modification of the exclusion zone for specific HRG survey equipment under consideration. Any new exclusion zone radius proposed by the Lessee must be based on the most conservative measurement of the 180 dB Level A harassment zone. This modified zone must be used for all subsequent use of field-verified equipment and may be periodically reevaluated based on the regular sound monitoring described in 4.3.4.3. The Lessee must obtain Lessor approval of any new exclusion zone before it may be implemented.
- 4.3.4.3 Field Verification of Exclusion Zone. If the Lessee wishes to modify the existing exclusion zone, the Lessee must conduct field verification of the exclusion zone for specific HRG survey equipment. The results of the sound measurements from the survey equipment must be used to establish a new exclusion zone, which may be greater than or less than the existing exclusion zone depending on the results of the field tests. The Lessee must take acoustic measurements at a minimum of two reference locations. The first location must be at the exclusion zone boundary and the second location must be as close to the sound source as technically feasible. Sound measurements must be taken at the reference locations at two depths (i.e., a depth at mid-water and a depth at approximately 1 meter above the seafloor). Sound pressure levels must be measured and reported in the field in dB re 1 μ Pa rms (impulse).
- 4.3.4.4 Clearance of Exclusion Zone. The Lessee must ensure that active acoustic sound sources will not be activated until the protected species observer has reported the exclusion zone clear of all cetaceans, pinnipeds, and sea turtles for 60 minutes.
- 4.3.4.5 Electromechanical Survey Equipment Ramp-Up. The Lessee must ensure that when technically feasible, a ramp-up of the electromechanical survey equipment occurs at the start or re-start of HRG survey activities. A ramp-up would begin with the power of the smallest acoustic equipment for the HRG survey at its lowest power output. The power output would be gradually turned up and other acoustic sources added in a way such that the source level would increase in steps not exceeding 6 dB per 5-min period.
- 4.3.4.6 Shut Down for Non-Delphinoid Cetaceans and Sea Turtles. If a non-delphinoid cetacean or sea turtle is sighted within or transiting toward the exclusion zone, an immediate shutdown of the electromechanical survey equipment is required. The vessel operator must comply immediately with such a call by the observer. Any disagreement should be discussed only after shut-down. Subsequent restart of the electromechanical survey equipment must use the ramp-up provisions described above and may only occur following clearance of the exclusion zone of all cetaceans, pinnipeds, and sea turtles for 60 minutes.

- 4.3.4.7 Power Down for Delphinoid Cetaceans and Pinnipeds. If a delphinoid cetacean or pinniped is sighted within or transiting towards the exclusion zone, the electromechanical survey equipment must be powered down to the lowest power output that is technically feasible. The vessel operator must comply immediately with such a call by the observer. Any disagreement or discussion should occur only after power-down. Subsequent power up of the electromechanical survey equipment must use the ramp-up provisions described above and may occur after (1) the exclusion zone is clear of a delphinoid cetacean and/or pinniped or (2) a determination by the protected species observer after a minimum of 10 minutes of observation that the delphinoid cetacean and/or pinniped is approaching the vessel or towed equipment at a speed and vector that indicates voluntary approach to bow-ride or chase towed equipment. An incursion into the exclusion zone by a non-delphinoid cetacean or sea turtle during a power-down requires implementation of the shut-down procedures described above.
- 4.3.4.8 Pauses in Electromechanical Survey Sound Source. The Lessee must ensure that if the electromechanical sound source shuts down for reasons other than encroachment into the exclusion zone by a non-delphinoid cetacean or sea turtle, including, but not limited to, mechanical or electronic failure, resulting in the cessation of the sound source for a period greater than 20 minutes, the Lessee must restart the electromechanical survey equipment using the full ramp-up procedures and clearance of the exclusion zone of all cetaceans, pinnipeds, and sea turtles for 60 minutes. If the pause is less than 20 minutes then the equipment may be re-started as soon as practicable at its operational level as long as visual surveys were continued diligently throughout the silent period and the exclusion zone remained clear of cetaceans, pinnipeds, and sea turtles. If visual surveys were not continued diligently during the pause of 20-minutes or less, the Lessee must restart the electromechanical survey equipment using the full ramp-up procedures and clearance of the exclusion zone of all cetaceans, pinnipeds, and sea turtles for 60 minutes.
- 4.3.5 Geotechnical (Sub-bottom) Sampling. Stipulations specific to geotechnical sampling conducted in support of plan (i.e., SAP and/or COP) submittal are provided in 4.3.5.1 through 4.3.5.5.
- 4.3.5.1 Establishment of Default Exclusion Zone. The Lessee must ensure that a 200-meter default exclusion zone for all cetaceans, pinnipeds, and sea turtles will be monitored by a protected species observer around any vessel conducting geotechnical surveys.

- 4.3.5.2 Modification of Exclusion Zone Per Lessee Request. The Lessee may use the field-verification method described in 4.3.5.3 to request modification of the exclusion zone for specific geotechnical sampling equipment under consideration. Any new exclusion zone radius proposed by the Lessee must be based on the most conservative measurement of the 180 dB Level A harassment zone. This modified zone must be used for all subsequent use of field-verified equipment and may be periodically reevaluated based on the regular sound monitoring described in 4.3.5.3. The Lessee must obtain Lessor approval of any new exclusion zone before it may be implemented.
- 4.3.5.3 Field Verification of Exclusion Zone. If the Lessee wishes to modify the existing exclusion zone, the Lessee must conduct field verification of the exclusion zone for the specific geotechnical sampling equipment. The results of the sound measurements from the survey equipment must be used to establish a new exclusion zone, which may be greater than or less than the existing exclusion zone depending on the results of the field tests. The Lessee must take acoustic measurements at a minimum of two reference locations. The first location must be at the exclusion zone boundary and the second location must be as close to the sound source as technically feasible. Sound measurements must be taken at the reference locations at two depths (i.e., a depth at mid-water and a depth at approximately 1 meter above the seafloor). Sound pressure levels must be measured and reported in the field in dB re 1 μ Pa rms (impulse).
- 4.3.5.4 Clearance of Exclusion Zone. The Lessee must ensure that geotechnical sound source must not be activated until the protected species observer has reported the exclusion zone clear of all cetaceans, pinnipeds, and sea turtles for 60 minutes.
- 4.3.5.5 Shut Down for Non-Delphinoid Cetaceans and Sea Turtles. If any non-delphinoid cetaceans or sea turtles are sighted within or transiting towards the exclusion zone, an immediate shutdown of the geotechnical survey equipment is required. The vessel operator must comply immediately with such a call by the observer. Any disagreement or discussion should occur only after shut-down. Subsequent restart of the geotechnical survey equipment may only occur following clearance of the exclusion zone for 60 minutes.

- 4.3.5.6 Pauses in Geotechnical Survey Sound Source. The Lessee must ensure that if the geotechnical sound source shuts down for reasons other than encroachment into the exclusion zone by a non-delphinoid cetacean or sea turtle, including, but not limited to, mechanical or electronic failure, resulting in the cessation of the sound source for a period greater than 20 minutes, the Lessee must ensure clearance of the exclusion zone of all cetaceans, pinnipeds, and sea turtles for 60 minutes before restarting the geotechnical survey equipment. If the pause is less than 20 minutes, the equipment may be re-started as soon as practicable as long as visual surveys were continued diligently throughout the silent period and the exclusion zone remained clear of cetaceans, pinnipeds, and sea turtles. If visual surveys were not continued diligently during the pause of 20-minutes or less, the Lessee must restart the geotechnical survey equipment only after the clearance of the exclusion zone of all cetaceans, pinnipeds, and sea turtles for 60 minutes.

4.4 Protected-Species Reporting Requirements

The Lessee must ensure compliance with the following reporting requirements for site characterization activities performed in support of plan (i.e., SAP and/or COP) submittal and must use the contact information provided as an Enclosure to this lease, or updated contact information as provided by the Lessor, to fulfill these requirements:

- 4.4.1 Reporting Injured or Dead Protected Species. The Lessee must ensure that sightings of any injured or dead protected species (e.g., marine mammals or sea turtles) are reported to the NMFS Northeast Region's Stranding Hotline (800-900-3622 or current) within 24 hours of sighting, regardless of whether the injury or death is caused by a vessel. In addition, if the injury or death was caused by a collision with a project-related vessel, the Lessee must ensure that the Lessor is notified of the strike within 24 hours. The notification of such strike must include the date and location (latitude/longitude) of the strike, the name of the vessel involved, and the species identification or a description of the animal, if possible. If the Lessee's activity is responsible for the injury or death, the Lessee must ensure that the vessel assist in any salvage effort as requested by NMFS.
- 4.4.2 Reporting Observed Impacts to Protected Species. The observer must report any observations concerning impacts on Endangered Species Act listed marine mammals or sea turtles to the Lessor and NMFS within 48 hours. Any observed takes of listed marine mammals or sea turtles resulting in injury or mortality must be reported within 24 hours to the Lessor and NMFS.
- 4.4.3 Report of Activities and Observations. The Lessee must provide the Lessor and NMFS with a report within 90 calendar days following the commencement of HRG and/or geotechnical sampling activities that includes a summary of the survey activities and an estimate of the number of listed marine mammals and sea turtles observed or Taken during these survey activities.

- 4.4.4 Report Information. Data on all protected-species observations must be recorded based on standard marine mammal observer collection data by the protected-species observer. This information must include: dates, times, and locations of survey operations; time of observation, location and weather; details of marine mammal sightings (e.g., species, numbers, behavior); and details of any observed Taking (e.g., behavioral disturbances or injury/mortality).

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF OCEAN ENERGY MANAGEMENT

Appendix A to Addendum C

Lease Number OCS-A 0487

HIGH RESOLUTION GEOPHYSICAL (HRG) SURVEYS & ANALYSIS
FOR THE IDENTIFICATION OR REPORTING OF ARCHAEOLOGICAL RESOURCES

The Lessee must perform surveys for the identification of archaeological resources in support of plan (i.e., Site Assessment Plan (SAP) and/or Construction and Operations Plan (COP)) submittal as described below. Surveys for the identification of archaeological resources performed in support of plan submittal are hereinafter referred to as “archaeological surveys.”

In accordance with the reporting requirements described in this Appendix, the Lessee must prepare an archaeological-resource assessment report which presents the results of the archaeological surveys. The Lessee must submit an archaeological-resource assessment report to the Lessor with any plan required to be submitted by the Lessee for activities associated with this lease.

I. Navigation

The Lessee must use a state-of-the-art navigation system that can continuously determine the surface position of each survey vessel. The Lessee must ensure that the precision of the navigation system is ± 1 meter (m). The Lessee must ensure that equipment position is logged digitally at least every 12.5 m along the vessel track and annotated on all records at intervals no greater than 150 m. The Lessee must show position on the final shot point chart at intervals no greater than 150 m.

II. Survey Patterns

A. Area Surveys

The Lessee must ensure that archaeological surveys cover the vertical and horizontal extent of the area of the seafloor that the Lessee proposes to physically disturb. The area of physical disturbance includes, but is not limited to, the area within which construction vessel or work-barge anchors may be placed.

The Lessee must ensure that the archaeological surveys are run along parallel primary lines spaced at a maximum of 30 m. The Lessee must ensure that cross-tie lines are run perpendicular to the primary lines spaced at a maximum of 900 m. A minimum of at least three equidistant tie-lines must be surveyed; this may mean in some instances that tighter line spacing is necessary for the tie-lines.

B. Linear Surveys

Where the Lessee proposes to install subsea cables in areas not already covered by an area survey described above, the Lessee must ensure that the survey pattern consists of a line run along the proposed cable route (centerline), and a minimum of two offset parallel lines on either side of the centerline, located at a maximum of 30 m from the centerline. This equals no fewer than five parallel survey tracts. The Lessee must ensure that the number of offset parallel lines is sufficient to provide coverage of the entire area that could be physically disturbed by the cable-laying activities. The area of physical disturbances includes, but is not limited to, the area where cable lay barge anchors will be placed, plus a buffer of 50 m. The Lessee must ensure that cross-tie lines run perpendicular to the centerline are spaced at a maximum of 150 m.

III. Data Acquisition Instrumentation

The Lessee must ensure that the HRG instrumentation used during the archaeological surveys is state-of-the-art in technological development and is deployed in a manner that minimizes interference among other instrumentation systems. The Lessee must ensure that all data recorders are interfaced with the navigation system of the vessel so that there is proper integration of data collection and the navigation system. The Lessee must ensure that all instrumentation is adequately tuned and that all recorded data are readable, accurate, and properly annotated.

A. Magnetometer

The Lessee must use a proton precession, overhauser, or Cesium total field magnetometer to detect ferrous and other magnetically susceptible metals. The Lessee must tow the magnetometer sensor as near as possible to the seafloor, but no more than 6 m above the seafloor. The Lessee must tow the magnetometer sensor in a fashion that minimizes interference from the vessel hull and any other survey instruments.

The Lessee must ensure that a depth sensor is attached to the magnetometer sensor and annotate each survey line with "tow sensor height off seafloor" and with the time that each survey line was started and ended. The Lessee must ensure that magnetometer sensitivity is one gamma (γ) or one nano-Tesla (nT) or less, and that the data sampling interval does not exceed one (1) second. The Lessee must ensure that the background noise level does not exceed a total of 3 gammas peak to peak.

The Lessee must ensure that data are recorded on a digital medium in such a way that they can be linked electronically to the positioning data. The Lessee must ensure that the recording scales are set no higher than 1,000-gamma and 100-gamma full scale, respectively. The Lessee must ensure that shot points and recorder speed are annotated.

B. Dual Channel Side Scan Sonar

The Lessee must use a dual-channel, dual-frequency, side scan sonar system to provide continuous planimetric images of the seafloor. The side scan sonar system selected must operate in the 300- to 500-kHz range or greater. The Lessee must ensure that the number and orientation of survey lines, line spacing, and display range selected will result in the collection of data providing overlapping sonar coverage of the survey area (including coverage of the nadir below the towfish on adjacent lines). The Lessee must ensure that the side scan sonar sensor is towed above the seafloor at a distance that is 10 to 20 percent of the range of the instrument (see table below for appropriate coverage areas).

The Lessee must ensure that the side scan sonar data is displayed live on a graphic recorder capable of adjusting the data for slant range effects and variable speed along the survey line to give a true plan view of the seabed conditions as the survey progresses.

The Lessee must record the data digitally to allow signal processing to improve data quality further and allow export to a workstation for integrated interpretation and mapping of the data. For all archaeological surveys, the Lessee must image-process and export the recorded sonar data in mosaic form. The Lessee must export such mosaics as a geo-referenced digital model of the seabed.

Appropriate Side Scan Sonar Coverage Areas

Height Above Seafloor	Range at 10% of Fish Altitude	Range at 20% of Fish Altitude
5 m	50 m/channel	25 m/channel
10 m	100 m/channel	50 m/channel
15 m	150 m/channel	75 m/channel
20 m	200 m/channel	100 m/channel

C. Sub-bottom Profiler

The Lessee must use a high-frequency sub-bottom acoustic profiler operating within the 1.5 to 4.5 kHz bandwidth to provide continuous and very high-resolution information of near-surface geological features within the uppermost 15 m of sediment. The Lessee must run the sub-bottom profiler system to provide penetration that exceeds the depth of the proposed seabed disturbance. The Lessee must ensure that the sub-bottom profiler system is capable of achieving a resolution of vertical bed separation of at least one foot in the uppermost 15 m below the mudline. The Lessee must record the data digitally to allow signal processing to improve data quality further and allow export to a workstation for integrated interpretation and mapping of the data. The Lessee must acquire sufficient geological information to map and characterize any existing relict paleolandforms that might be

present in the survey area and possibly disturbed by lease or plan-related activities.

D. Echo Sounder

The Lessee must employ either a hull mounted, high-frequency, narrow beam hydrographic echo sounder or multibeam bathymetry to obtain bathymetric data. The Lessee must ensure that the data is displayed on a graphic recorder and is logged digitally and continuously. The Lessee must ensure that the echo sounder records with a sweep appropriate to the range of water depths expected in the survey area. The Lessee must use a heave compensator in conjunction with the echo sounder system to remove the effects of vessel movement from the data.

The Lessee must ensure that water column sound velocity is calibrated at the start and end of the survey with a conductivity temperature depth (CTD) sensor or velocity probe capable of recording in the maximum water depth expected in the survey area.

E. Additional Investigations

During the Lessee's pre-survey meeting with the Lessor (see Addendum "C", 2.1.2), the Lessee must present to the Lessor any proposed additional or alternate instrumentation and methods other than those described above, such as underwater imaging, diver investigation, remotely operated vehicles, coring, and additional survey lines.

IV. Contents of Archaeological Resources Assessment Report

The archaeological resources assessment report (hereinafter "report") must be a stand-alone report that represents an evaluation and synthesis of the data gathered during the archaeological survey. The report and analyses presented therein must be prepared by a Qualified Marine Archaeologist. Any changes to the plans the Lessee submits for activities on its lease and any additional information required by the Lessor must be incorporated into a revised report.

The Lessee must submit one paper copy and one electronic version of the report, including all large format map layouts. The electronic version of the report must be submitted on a compact disc (CD), digital video disc (DVD), or Windows-compatible hard drive in PDF format.

The Lessee must ensure that the report includes the following components, preferably organized as follows:

A. Front Matter

This section of the report includes the cover, the certification, executive summary, table of contents, and lists. Lists must include lists of tables, figures, and appendices.

Per Addendum "C", 4.2.4, the Lessee and the Qualified Marine Archaeologist who prepared the report must certify that geotechnical sampling activities did not impact potential historic properties identified in the archaeological surveys without the Lessor's prior approval. This certification must be a single page, signed by the Lessee and the Qualified Marine Archaeologist, which states that the Lessee's activities did not impact any potential historic properties, as defined by the Qualified Marine Archaeologist, including paleolandscapes, without the Lessor's prior approval.

In the event that the geotechnical sampling activities did impact potential historic properties identified in the archaeological surveys without the Lessor's prior approval, the Lessee and the Qualified Marine Archaeologist who prepared the report must instead provide a statement documenting the extent of these impacts.

B. Introduction

This section of the report must describe the proposed activities considered under the lease plan(s) (e.g., SAP, COP), including a description of the surveyed area (OCS lease number(s), block number(s), and lease area(s) and minimum and maximum water depths); the exact number, location(s), dimensions, and other salient aspects of the technology to be deployed under the plan; and associated activities that would be involved. This section must also introduce the findings of the report, including how many potential historic properties were identified and how many properties may or may not be impacted by the activities in the proposed plan. The narrative must be accompanied by maps and plan drawings, as appropriate, illustrating these points. This includes at least one reproducible (photocopy) geographic area map (generally page size = 8.5" x 11" and/or 11" x 17" fold-out) showing proposed facility and/or transmission cable route relative to nearby geographic features, if such is proposed in the plan.

C. Cultural and Environmental Context

This section of the report must include an analysis of the potential for pre-contact sites and historic shipwrecks within the area. For pre-contact sites, the context must include:

1. A review of current literature on late Pleistocene and Holocene geology, paleogeography, and sea level change in the area (if relevant); marine and coastal prehistory (if relevant); and previous archaeological resource reports pertaining to the area, if available.
2. A discussion of relict geomorphic features and their archaeological potential, which includes the type, age, and association of the mapped features; the acoustic characteristics of channels and their fill material; evidence for preservation or erosion of channel margins; evidence for more than one generation of fluvial downcutting; and the relative sea level curves used in the assessment. Any geological and sediment data collected during coring or

boring activities associated with developing the lease and any available data collected during previous geological or geotechnical surveys within the area must be incorporated into the discussion and the potential for the survival of submerged and buried pre-contact sites must be assessed.

3. A discussion, based on the capabilities of current technology in relation to the thickness and composition of sediments overlying the area of a potential site, of the potential for identification and evaluation of buried pre-contact sites.

For historic shipwrecks, the context includes:

1. A current review of existing information regarding reported shipwreck locations within 1 kilometer (km) of the leasehold and within 1 km of any bottom-disturbing activities proposed outside of the leasehold (e.g., cable routes).
2. A discussion of the potential for shipwreck preservation in terms of bottom sediment type and thickness, and the effects of past and present marine processes in the survey area.
3. A discussion of the capabilities of current technology to identify historic shipwrecks in relation to the water depth, probable thickness and composition of sediments overlying the potential shipwreck location, and the preservation potential.

D. Methodology

This section of the report must discuss the methods used to obtain the survey data, the exact equipment used, the dates the surveys were conducted, the sea state during the surveys, and other salient features of the surveys. Representative data samples from each survey instrument in the vicinity of proposed seafloor/bottom-disturbance must be included to demonstrate the quality of the data collected. Additionally, a personnel list noting their functional responsibilities must be included comprised of a list of the individuals involved in survey planning, fieldwork, and report preparation, and a brief description of their duties. Technical specifications of the survey equipment must include:

- A brief description of survey instrumentation, including scale and sensitivity settings, sampling rates, and tow heights off the seafloor for the magnetometer and side scan sonar sensors.
- A description or diagram of the survey vessels, including their sizes, sensor configurations, navigation antenna locations, cable lengths, and distances from sensors to navigation antennas.
- Vessel speeds, course changes, sea states and weather conditions.

- A complete copy of the daily survey operations logs (for the entire duration of the survey(s)).
- A description of survey procedures, including a statement of survey and data quality, a comparison of data from survey line crossings, and a discussion of any problems that may have affected the ability of the Qualified Marine Archaeologist to identify and analyze potential archaeological resources in the surveyed area.

E. Results

This section of the report must provide discussion narratives and maps of the results of the survey. The Lessee must present potential archaeological resources, as determined by the Qualified Marine Archaeologist, with locations presented in latitude and longitude (decimal degrees) and Universal Transverse Mercator projection and grid system (UTM) coordinates. The section of the report must include the following features, at a minimum:

1. A summary of field operations, including unusual incidents.
2. A table of the unidentified magnetic anomalies with the OCS block, Shot Point (SP), and survey line location (corrected for sensor offset); gamma intensity; lateral extent (duration); whether the anomaly is characterized by a dipolar, monopolar, or complex signature; the magnetometer sensor tow height off seafloor; the appropriate decimal degree coordinates of the center of each unidentified anomaly; and the recommended avoidance zone. The following table is an example, including sample information, for listing unidentified magnetic anomalies.

Anomaly Number	Area/Block	Line No.	Shot Pt.	Tow Height (m)	Signature	Intensity (gammas)	Duration (m)	NAD 83 Coordinates (in decimal degrees)	Minimum Avoidance Distance (m)
1	MP 100	002	11.4	18	Dipole	15	75		150

3. A table of side scan sonar contacts with the lease block, SP, and survey line location (corrected for sensor offset); size; shape; height of protrusion above the seafloor; the appropriate decimal degree coordinates; and recommended avoidance distance, as determined by the Qualified Marine Archaeologist, of each. The following table is an example, including sample information, for listing side scan sonar contacts.

Anomaly Number	Area/Block	Magnetometer Association	Dimensions LxWxH (m)	Shape	NAD 83 Coordinates (in decimal degrees)	Minimum Avoidance Distance (m)
1	MP 100	Mag. Anomaly 1, Line 0020, SP 11.4	100 x 50 x 5	Linear		225

4. A discussion of any magnetic anomalies and side scan sonar contacts of unknown source in terms of their potential as historic shipwrecks (include an analysis of reported nearby wrecks and their potential association with these contacts on the basis of vessel size and anomaly characterization);
5. A discussion of any correlation between magnetic anomalies or side scan sonar contacts and known or probable or possible sources;
6. For any archaeological resources that can be positively identified from remote-sensing data, an analysis of their possible significance and recommendations for any further research or special precautions that may be necessary.
7. A discussion of the data and results from any additional investigations that the Lessor may have directed.

If potential archaeological resources were identified, the Lessee must include the following data samples in the report:

1. A sample of sub-bottom profiler data for each type of relict landform identified. When more than one generation of fluvial channeling is evident, include a sample that depicts each generation. Each sample must be readable and must include horizontal and vertical scales. If any interpretive highlighting or annotation of the sample data is provided, it must be provided either as a separate overlay or a copy of the sample data. The original survey data must not be highlighted.
2. Copies of all side scan sonar data, where contacts representing unidentified objects are recorded. The copies must be readable and must include

horizontal and vertical scales. If any interpretive highlighting or annotation of the data is provided, it must be provided as a separate overlay or additional image. The original survey data must not be highlighted. A digital copy of computer-generated mosaics as a geo-referenced Tagged Image Format (TIFF) file must be included.

The results section of the report also must include a paleolandscape reconstruction using marine geophysical, geological, and paleoenvironmental data.

1. The results section must include a reconstruction of sea-level history based on a computer-modeled simulation of relative sea level (RSL) changes that predicts the depth of submerged shorelines at specific time intervals. This simulation, commonly referred to as glacio-isostatic adjustment (GIA) model, must consist of a numerical estimate of the earth's response to ice loading during the last glacial cycle.
2. The results section must include RSL simulations to digitally shade or contour a bathymetric surface of the seabed to produce paleogeographic maps charting the evolution of the coast. This will predict former shorelines and exclude areas that were underwater even during lowstands. The results section must scrutinize exposed areas for geomorphic features relating to the past landscape that, in favorable circumstances, may have survived transgression and are preserved on the seabed. Examples include fluvial paleochannels, shore platforms, spits, and barriers.
3. The results section must include an analysis of the sub-bottom profiler data collected to determine if elements of the past landscape are buried beneath modern seabed sediments. Buried geomorphic features must be identified, including freshwater lake basins, lagoons, shoreline terraces, in-filled paleochannels, etc., if possible. The results section must also identify buried layers that may require further sampling to conclusively determine their nature.
4. The results section must include analyses of core samples collected during geotechnical sub-bottom sampling activities, if such samples were collected. Analyses may include accounts of visual observance of the presence of intact paleosols, subsampling of organics for paleoenvironmental analysis, temporal dating for building transgression chronologies, or other applicable analyses.
5. The results section must integrate data referred to in numerals 1 (one) to 4 (four) of this section into an evolutionary model of the submerged landscape of the survey area. Buried layers identified on sub-bottom profiles on the basis of their acoustic character and/or sampling must be digitally traced, geo-referenced, and linked to produce a continuous landsurface, indicating

limitations based on data gaps. The model must be depicted in one or more map-based figures with accompanying descriptive narrative text.

6. The results section must map archaeological potential based on landscape attributes that were favored by past humans, given what is known from terrestrial sites; and landscape settings that have the greatest potential for preservation of archaeological deposits, given what is known of seabed geology. The archaeological potential must be depicted in one or more map-based figures with accompanying descriptive narrative text.

F. Summary and Conclusions

This section of the report must include a summary of conclusions and recommendations supported by the archaeological resource field survey data and archaeological analyses, including a discussion of known or potential archaeological resources and recommendations for avoidance or for further archaeological investigations, citing the relevant language as found in the National Historic Preservation Act (NHPA) (1966, as amended).

G. Back Matter

This section of the report must include bibliographic references, appendices, and metadata discussions, as appropriate.

V. Formatting Requirements for Digital Data and Maps

A. Maps

The Lessee must annotate all maps with linear bar-scales (feet and meters), geographic and plane coordinates (latitude and longitude, UTM), lease boundaries, lease numbers, geologic/geotechnical sampling locations, proposed facility site(s) and cable transmission corridors. Large-scale map data must be in a format compatible with the BOEM Geographic Information System (GIS) in current use.

The Lessee must submit, with its report, the following set of maps at a standard scale (generally 1:12,000) and oriented to true north:

1. Archaeological resource map that includes the following:
 - Navigation Post-Plot Map of the surveyed area, showing survey lines and directions, and navigational SPs at intervals of no more than 150 m.
 - The location of the proposed project activities in addition to illustration of any areas of the seafloor that could be physically disturbed by any of the activities proposed, including anchor sweep radius.

- The location of soil borings, cone penetrometer (CPT), and vibracores.
 - All magnetic anomalies and seafloor side scan sonar contacts of unknown source (for magnetic anomalies use map symbol: ▲; for side scan sonar contacts use map symbol: ☒). The Lessee must identify these magnetic anomalies and side scan sonar contacts using only the aforementioned symbols and a unique number keyed to the listings in the unidentified magnetic anomaly and side scan sonar tables in the text. In congested areas with numerous unidentified magnetic anomalies, the Lessee may use a map(s) at a scale of 1:6,000 to depict the anomalies. If the Lessee does use a map(s) at a scale of 1:6,000, the Lessee must tie this congested area map(s) into the 1:12,000 survey area map. The Lessee must plot all recommended potential archaeological avoidance areas on the survey area map.
 - Bathymetry at contour intervals of 0.3 m to 15 m depending on seafloor morphology.
 - The horizontal and vertical extent of all relict geomorphic features having potential for associated pre-contact sites.
2. Magnetic Contour Map (processed and corrected for diurnal variation and ambient magnetic field).
 3. Shallow Isopach Map showing thickness of unconsolidated Holocene/late-Pleistocene sediments (in meters).
 4. Side Scan Sonar Mosaic

B. Magnetic Anomalies Data

The Lessee must submit with its report:

- A list of all magnetic anomalies in a tabular format.
- Latitude/longitude to six decimal places.
- Additional fields to the table as needed (see sample table above).
- A report of total percentage of survey area flown above 6 m.

C. Side Scan Sonar Contacts

The Lessee must submit with its report:

- A list of all side scan sonar contacts of unknown source in a DBF table.

- Latitude/longitude to six decimal places of all side scan sonar contacts.
- Additional fields to the table as needed (see sample table above).
- A georeferenced TIFF file of the side scan sonar mosaic.

D. Geotechnical Data/Analysis

The Lessee must provide with its report (in tabular format) latitude/longitude to six decimal places for all soil borings, cone penetrometers, and/or vibracores.

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ADDENDUM "D"

PROJECT EASEMENT

Lease Number OCS-A 0487

This section includes a description of the Project Easement(s), if any, associated with this lease, and the financial terms associated with it. This section will be updated as necessary.

I. Rent

The Lessee must begin submitting rent payments for any project easement associated with this lease commencing on the date that BOEM approves the Construction and Operations Plan (COP) or modification of the COP describing the project easement. Annual rent for a project easement 200 feet wide, centered on the transmission cable, is \$70.00 per statute mile. For any additional acreage required, the Lessee must also pay the greater of \$5.00 per acre per year or \$450.00 per year.

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ADDENDUM "E"

RENT SCHEDULE

Lease Number OCS-A 0487

This section includes a description of the schedule for rent payments that will be determined after the Construction and Operations Plan (COP) has been approved or approved with modifications. This section will be updated as necessary.

Unless otherwise authorized by the Lessor in accordance with the applicable regulations in 30 CFR Part 585, the Lessee must make rent payments as described below.