

VINEYARD NORTHEAST

CONSTRUCTION AND OPERATIONS PLAN VOLUME I APPENDIX

MARCH 2024

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VINEYARD



OFFSHORE

PUBLIC VERSION

Vineyard Northeast COP

Appendix I-B Geophysical Survey Equipment List

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Prepared for:
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Revision	Date	Description
0	July 2022	Initial submission.
0	March 2024	Resubmitted without revisions.

Appendix I-B Geophysical Survey Equipment List

Offshore and nearshore geophysical surveys for Vineyard Northeast are expected to be conducted just prior to construction, during construction, and post-construction for activities such as pre-lay surveys, verifying site conditions, ensuring proper installation of components, conducting as-built surveys, inspecting the depth of cable burial, and inspecting foundations. The offshore facilities will also be regularly inspected and surveyed using geophysical survey equipment throughout operational period.

Geophysical survey instruments may include side scan sonar (SSS), single beam echosounders (SBES), multibeam echosounders (MBES), magnetometers/gradiometers, shallow (chirp subbottom) and medium (sparker) penetration single or multi-channel subbottom/seismic profilers, and all support systems (e.g., positioning, motion sensor, compass, sound velocity profiler [SVP]) as well as high resolution visual imaging systems (e.g., underwater cameras) and passive acoustic monitoring (PAM) systems. Industry-standard survey grade systems to be utilized include, but are not limited to, the following systems (or equivalent):

- Applanix POS MV with Trimble Nav-Beacon/USCG differential receiver
- Atlas H10 Offshore Corrections DGPS
- SBG Ekinox 2-U Motion Sensor
- iXSea Blue Octans 3 motion and heading sensor
- Applanix POSMV M5 with C-NAV differential
- Hemisphere VS330 GPS Receiver with heading
- Voyager 5 integrated navigation with Fugro Starfix HP/XP corrections
- Applanix POS MV with Intuicom RTK Bridge-C
- Applanix POS MV Oceanmaster DGNSS with a Trimble Nav Beacon XL auxiliary GNSS antenna
- C-NAV 3050 DGPS antenna (redundant positioning system)
- C-NAV 2050 DGPS antenna
- Teledyne TSS Meridian gyrocompass
- Kongsberg Seatex MGC pole mounted motion reference unit
- POSPac software with Post Processed Kinematic (PPK) solution

- Veripos LD5A-2 Providing Apex DGPS Corrections
- QPS QINSy navigation and data logging software
- HYPACK navigation and digital logging software
- Sonardyne MiniRanger 2 ultra-short baseline (USBL)
- Sonardyne Scout USBL
- Applied Acoustics Easytrak Nexus 2 USBL System
- Applied Acoustics 1019 Mini Beacon USBL
- iXSea Blue GAPS USBL
- Kongsberg Seapath 380 heading, altitude, and positioning sensor
- Reson 7125 MBES
- Kongsberg EM2040C (dual head) MBES
- R2Sonic 2024 MBES
- Reson T50 Dual Head MBES
- Odom HydroTrac SBES
- Knudsen 3212 200 kHz SBES
- Reson Navisound 215 SBES
- Furuno 200 kHz digital depth finder, hull mounted
- UNIDEN or Simrad 200kHz digital depth finder
- EdgeTech 6205 MBES/SSS
- Klein 3900 side scan sonar
- Edgetech 4125/4200/4205 multi-frequency Side Scan Sonars
- Kraken AquaPix Synthetic Aperture Sonars
- Geometrics G-882 Cesium Marine Magnetometer
- Geometrics Transverse Gradiometer (TVG) with dual G882 magnetometers

- Eiva Katria Scanfish with four G882 magnetometers
- Teledyne-Benthos CHIRP III shallow subbottom profiler
- Knudsen 3260 2x2 SBP Array (3.5kHz) Pinger
- EdgeTech 216/512 Chirp Subbottom Profiler
- Innomar SES 2000 Medium/Standard Parametric Subbottom Profiler
- GeoMarine Geospark 1000J medium penetration subbottom profiler with 200/400 tip sparker source and 8 element single channel GeoEel streamer
- Applied Acoustic Dura-spark400 seismic system with AA CSP-N (2400J) power supply
- Applied Acoustics AAE-200/301 single plate boomer systems
- Applied Acoustics S-Boom triple plate boomer system
- Teledyne-Oceanscience RapidCAST sound velocity profiler
- Valeport Midas SVX2 CTD
- AML Base-X SVP sensor
- Valeport Mini SVP sensor
- Valeport SwiFT SVP sensor
- Ocean Instruments Towed Camera TLS-500 system
- Sea Rover survey class ROV with a SONY UMC S3CA 4K video camera
- DSSI Sea Max MK2 survey class ROV
- Go Pro Hero 9 Black 4K video and 20 MP stills
- Outland UWC-330/P HD Camera with UWL-400 light source
- Generation 3 NVG and Gardline PAMS system
- MSeis-NH3 (4 hydrophone array) PAM system
- Seiche-6-hydrophone-PAM Guard64 system