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Electrical Engineering and Computer Science Practice

Exponent®

Empire Wind 2 Project

Electric- and Magnetic-Field Assessment

Exponent
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Empire Wind 2 Project

Electric- and Magnetic-Field Assessment

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Acronyms and Abbreviations

A	Ampere
AC	Alternating current
EMF	Electric and magnetic fields
Empire	Empire Offshore Wind LLC and EW Offshore Wind Transport Corporation
Exponent	Exponent Engineering P.C.
EW 2	Empire Wind 2
ft	Feet
Hz	Hertz
IEEE	Institute of Electrical and Electronics Engineers
JTB	Joint Transition Bay
km	Kilometer
kV	Kilovolt
kV	Kilovolt
kV/m	Kilovolt per meter
Lease Area	Designated Renewable Energy Lease Area OCS-A 0512
m	Meter
mG	Milligauss
mi	Mile
mm	Millimeter
mV/m	millivolts per meter
MW	Megawatt
nm	Nautical mile
MHHW	Mean Higher High Water
NYPSC or Commission	New York Public Service Commission
OD	Outer diameter
POI	Point of interconnection at the Hampton Road Substation
NY Project	EW 2 Project transmission facilities in New York
NY Project Area	Area that includes components of the NY Project within the borders of New York State, including submarine export cable corridor, onshore

	export cable corridor, onshore substation facilities, interconnection cable corridors, Hampton Road substation facilities, and loop-in / loop-out line corridor within New York State jurisdiction
RMS	Root mean square
ROW	Right-of-way
WNC	Winter normal conductor
XLPE	Cross-linked polyethylene

Limitations

At the request of Empire Offshore Wind, LLC (Empire), Exponent Engineering P.C. (Exponent) assessed the electric- and magnetic-field levels associated with the operation of the submarine export cables, onshore export cables, and onshore interconnection cables that will transport electricity generated by the Empire Wind 2 (EW 2) Project. This assessment is being submitted to the New York Public Service Commission for the portions of the EW 2 Project transmission system located within the State of New York (the NY Project) pursuant to Article VII of the New York Public Service Law.

This report summarizes the analysis performed and presents the findings resulting from that work. In the analysis, we have relied on cable design geometry, usage, specifications, and various other types of information provided by Empire. We cannot verify the correctness of this input data and rely on Empire for the data's accuracy. Although Exponent has exercised usual and customary care in the conduct of this analysis, the responsibility for the design and operation of the NY Project remains fully with Empire. Empire has confirmed to Exponent that the data contained herein are not subject to Critical Energy Infrastructure Information restrictions.

The findings presented herein are made to a reasonable degree of engineering and scientific certainty. Exponent reserves the right to supplement this report and to expand or modify opinions based on review of additional material as it becomes available, through any additional work, or review of additional work performed by others.

The scope of services performed during this investigation may not adequately address the needs of other users of this report beyond the Article VII permitting of the NY Project for which it was prepared, and any re-use of this report or its findings, conclusions, or recommendations presented herein are at the sole risk of the user. The opinions and comments formulated during this assessment are based on observations and information available at the time of the investigation. No guarantee or warranty as to future life or performance of any reviewed condition is expressed or implied.

Benjamin R.T. Cotts, Ph.D., P.E. (Licensed Electrical Engineer, New York, #103209), employed by Exponent, performed calculations of the electric and magnetic fields associated with the operation of the proposed NY Project.

Reviewed By:

Benjamin Cotts, Ph.D., P.E.

Executive Summary

Empire Offshore Wind, LLC. and EW Offshore Wind Transport Corporation (collectively, Empire or the Applicant) propose to construct and operate the Empire Wind 2 (EW 2) Project to be located within the Bureau of Ocean Energy Management designated Renewable Energy Lease Area OCS-A 0512. The proposed transmission system for the EW 2 Project will connect the offshore wind farm to the point of interconnection (POI), located in Oceanside in the Town of Hempstead, New York. Electricity from the offshore wind farm will be connected to the New York State electric grid by 345-kilovolt (kV) submarine export cables, 345-kV onshore export cables, and 345-kV onshore interconnection cables traversing a total of approximately 12.2 miles (19.6 kilometers) within the State of New York. The NY Project's onshore facilities are located within Nassau County, New York. This assessment of electric and magnetic fields (EMF) for the portions of the EW 2 Project transmission system located within the State of New York (collectively the NY Project) has been prepared for the New York Public Service Commission pursuant to Article VII of the New York Public Service Law.

For the NY Project's Article VII filing, Exponent Engineering P.C. (Exponent) modeled the 60-Hertz magnetic-field levels anticipated to be produced during operation of the underground transmission cables onshore and the submarine export cables offshore that convey electricity generated by the NY Project at the maximum capacity limits of the cables that correspond to the loading of an overhead transmission line operating at its winter normal conductor rating. Calculations of AC magnetic fields were performed for operation at current flows consistent with the 1990 NYPSC EMF standard and using computer algorithms developed by the Bonneville Power Administration, an agency of the U.S. Department of Energy.

The calculated magnetic-field levels (both maximum and at the edge of the right-of-way) from the submarine export cables, onshore export cables, and the onshore interconnection cables all are below 200 milligauss and thus comply with the magnetic-field guidelines of the NYPSC.

The NY Project will not be a direct source of electric fields above ground or at the seabed due to shielding of the electric field by the cable's construction and the ground or seabed. Therefore, electric-field levels will be below the electric-field guidelines of the NYPSC.

Note that this Executive Summary does not contain all of Exponent's technical evaluations, analyses and conclusions. Hence, the main body of this report is always the controlling document.

1 Introduction

1.1 Project Description

Empire Offshore Wind, LLC. and EW Offshore Wind Transport Corporation (collectively, Empire or the Applicant) propose to construct and operate the Empire Wind 2 (EW 2) Project within the Bureau of Ocean Energy Management designated Renewable Energy Lease Area OCS-A 0512 (Lease Area).

The proposed EW 2 Project will connect the offshore wind farm to the point of interconnection (POI) with a sequence of transmission cables traversing a total of approximately 12.2 miles (mi) 19.6 kilometers [km]) within Nassau County, New York. Electric transmission lines with a design capacity of 125 kV or more extending a distance of one mile (1.6 km) or more are subject to review and approval by the New York Public Service Commission (NYPSC or Commission) as major electric transmission lines. This assessment of electric and magnetic fields (EMF) for the portions of the EW 2 Project transmission system located within the State of New York (collectively the NY Project) has been prepared for the New York Public Service Commission pursuant to Article VII of the New York Public Service Law.

Electricity from EW 2 wind farm turbines will be conveyed to the grid by two separate transmission circuits, each consisting of 345-kilovolt (kV) submarine export cables, 345-kV onshore export cables, and 345-kV onshore interconnection cables. EW 2 will interconnect with the New York State Transmission System operated by the New York Independent System Operator at the proposed Hampton Road substation, in Oceanside, New York. The NY Project's onshore facilities are located entirely within Nassau County, New York.

This report first evaluates the offshore transmission lines, followed by an evaluation of the onshore transmission lines. In this updated report the primary changes include updated voltage of the EW 2 export cables, a new 345-kV design of the submarine export and onshore export cables, and the reduction in the number of EW 2 export cable and interconnection cable circuits from three to two. This updated report also includes an evaluation of the magnetic field beneath the bridge crossing of Barnums Channel.

The EW2 Project and its route to shore is shown in Figure 1. The power generated by offshore wind turbines in the designated Lease Area (purple shading) is delivered to shore-based infrastructure over 345-kV export cables along the indicated route (purple line). The 345-kV onshore section of the export cables connects to the onshore substation in the Village of Island Park, New York, and the onshore interconnection cables will connect the onshore substation to the POI at the Hampton Road substation in Oceanside, New York. An overview of the onshore NY Project is shown in Figure 2.

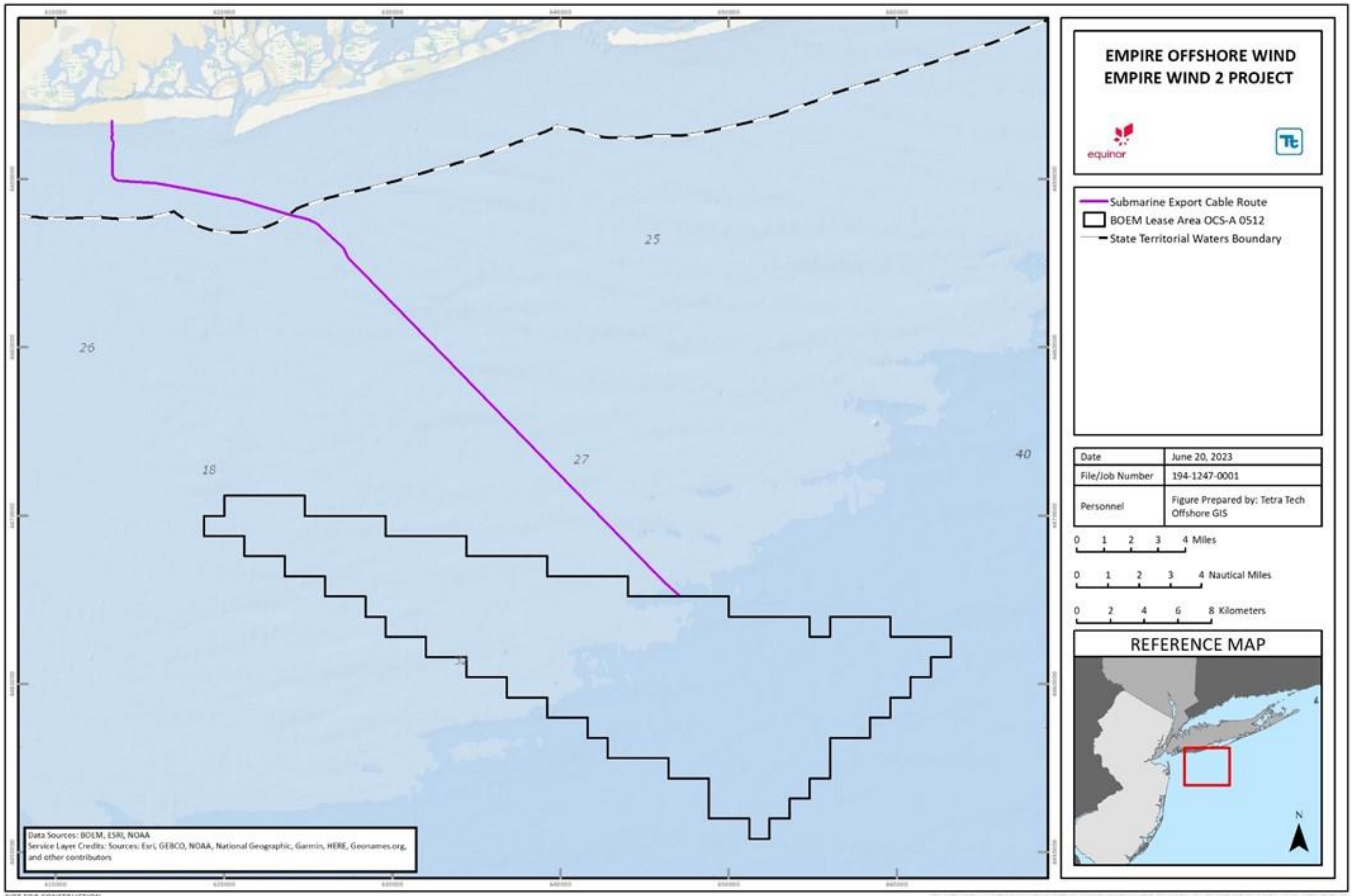

Figure 1. Overview of the offshore portion of the EW2 Project.

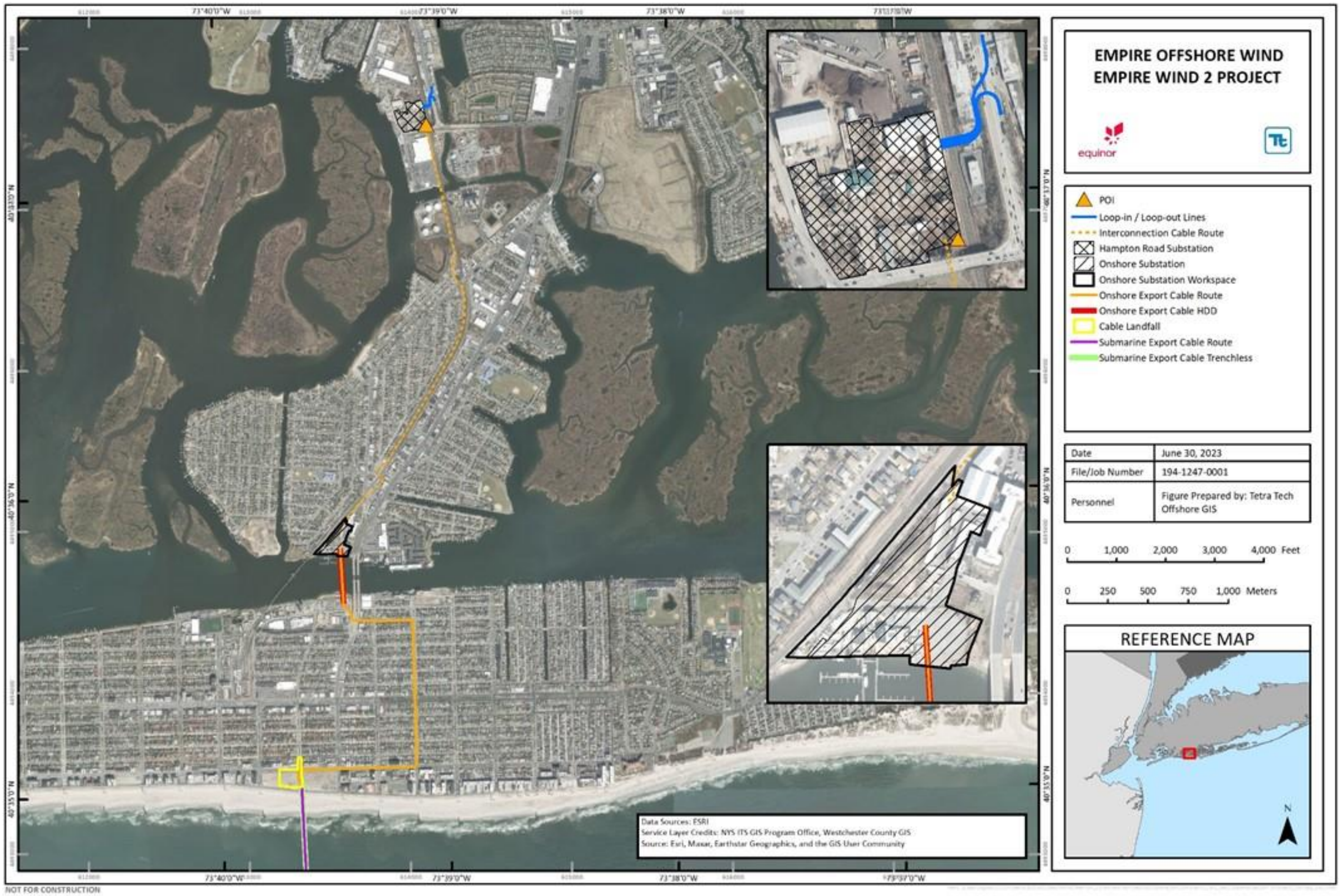

Figure 2. Overview of the of the proposed EW 2 onshore facilities.

The NY Project includes:

- Two 345-kV alternating-current (AC) submarine export cables, each with three conductor cores, located within an approximately 7.7-nautical mile (nm, 14.2-km)-long submarine export cable corridor from the boundary of New York State waters 3 nm (5.6 km) offshore to the cable landfall;
- A cable landfall in the City of Long Beach, New York;
- Two 345-kV onshore export cable circuits, each with three single-core AC onshore export cables within an approximately 1.6-mi (2.5-km)-long onshore export cable corridor from the cable landfall to the onshore substation;
- An onshore substation in the Village of Island Park, within the Town of Hempstead, New York;
- Two 345-kV interconnection cable circuits, each with three single-conductor AC interconnection cables within an approximately 1.7-mi (2.8-km)-long interconnection cable corridor from the onshore substation to the Hampton Road substation;
- The new Hampton Road substation in Oceanside in the Town of Hempstead, New York;
- Four 138-kV loop-in / loop-out line cable circuits,[1] located within an approximately 0.1-mi (0.2-km) long cable corridor from the Hampton Road substation to existing LIPA transmission lines located under Lawson Boulevard in Oceanside, New York; and
- An approximately 200-ft (64-m) segment of the interconnection cable route will be installed over Barnum's Channel via a cable bridge that will be inaccessible to members of the general public).

This report summarizes the calculated levels of AC magnetic fields for the offshore submarine export cables, the onshore export cables, and the onshore interconnection cables.

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[1] The 138-kV loop-in / loop-out lines are not assessed in this report. The EMF assessment of this portion of the project will be included in a future filing.

1.2 Electric and Magnetic Fields

The flow of electric currents on the NY Project's offshore submarine export cables and onshore export and interconnection cables will be sources of electric and magnetic fields (EMF). Like all wiring and equipment connected to the electrical system in North America, the EMF surrounding the cables will oscillate with a frequency of 60 Hertz (Hz).

The magnetic field results from the flow of electricity along the cable and the magnetic flux density is reported in units of milligauss (mG), where 1 Gauss = 1,000 mG. The magnetic field will be strongest at the surface of the cables and will decrease rapidly with distance from the cables.

While the voltages applied to conductors within these cables are a source of electric fields, the cable insulation, the outer grounded metallic sheathing, and the earth itself covering the cables will block the electric field from entering the environment around the cables. Therefore, electric-field values are not discussed further.

2 Assessment Criteria

While the federal government has not established standards for EMF produced by transmission infrastructure, New York State has established guidelines and limits for EMF that must be followed by utility companies seeking Certificates of Environmental Compatibility and Public Need under Article VII for lines operating at 125 kV or higher. The NYPSC established guidelines in 1978 for electric fields generated by new transmission lines in Opinion No. 78-13. In 1990, the NYPSC established guidelines for magnetic-field levels for new transmission lines in their Interim Policy Statement on Magnetic Fields.

Magnetic Fields

The NYPSC's Interim Policy guideline states that the AC magnetic fields created by Article VII transmission lines cannot exceed 200 mG at the edge of the right of way (ROW).[2] Pursuant to the Interim Policy, the AC magnetic-field level is to be measured or calculated at 3.3 feet (ft) (1 meter [m]) above ground, with the transmission line operating at a current flow equal to the winter normal conductor (WNC) rating. The NYPSC established these limits so that EMF from new transmission lines would not exceed levels from existing transmission lines throughout New York; in other words, the limits maintain the *status quo*.

Electric Fields

The NYPSC also limits AC electric-field levels from overhead transmission lines to 1.6 kilovolts per meter (kV/m) at the ROW edge since the voltage applied to overhead conductors is a direct source of electric fields in the surrounding environment. The NY Project

[2] The Interim Policy further states that where there is no edge of right-of-way defined (such as at the crossing of Barnum's Channel), that the AC magnetic-field level for 345-kV transmission circuits is to be evaluated at a distance of 75 feet from the centerline of the circuit.

will not be a direct source of any above ground electric fields since the electric fields will be blocked by the cable construction and ground.[3,4]

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3 Where an approximately 300-ft (91-m) segment of the onshore interconnection cable route at the crossing of Barnums Channel will be located aboveground via a cable bridge, the cable's construction and grounded cable sheath will likewise block the electric field outside the cable.

4 In the marine environment there are some fish species that have specialized sensors to detect very weak electric fields, which are induced by any AC magnetic field, so as part of a marine environmental assessment, induced electric fields in seawater may be calculated for comparison to reported thresholds for detection by these species. These induced electric-field levels would be approximately 1 million times below the NYPSC limit, so are not included in this assessment.

Cable Configuration and Magnetic-Field Calculation Methods

Exponent calculated the 60-Hz magnetic fields from the submarine export, onshore export, and onshore interconnection cables proposed to be installed as part of the NY Project. The proposed submarine export cable configurations, onshore export and interconnection cable configurations are described in Attachment A. The methods used to calculate magnetic fields and a description of the cable configurations are described below.

2.1 Submarine Export Cables

The specifications for the proposed submarine export cables are summarized in Attachment A, Table A-1. The two 345-kV submarine export cables will traverse the offshore export cable route installed approximately parallel to one another. Each submarine export cable contains three-phase conductors encased within cross linked polyethylene (XLPE) and will be placed at the center of a 30 ft (9.1 m) effective ROW width. A horizontal distance of 33 ft (10 m) is expected to be the minimum separation between parallel export cables.[5] A cross-sectional drawing illustrating the components of a representative three-conductor XLPE cable is shown in Attachment A, Figure A-1.

The minimum target burial depth for the portion of the submarine export cable in New York State waters is 6 ft (1.8 m)[6] beneath the seabed; however, a conservative depth of 4 ft (1.2 m) was used for the purposes of EMF calculations, which will result in higher calculated magnetic-field levels than if the cable were buried deeper. Where it is impossible to bury the cable, it will be laid on the surface of the seabed for short distances and covered with protective coverings. Protective coverings for surface-laid cable may include rock berms, rock bags, or concrete

[5] Deviations from this separation distance could occur due to site constraints and installation tolerances. The portion of the submarine export cables approaching landfall or onshore, or both, may be installed at a reduced separation distance if required due to site constraints. Additional information will be provided in Empire's Environmental Management and Construction Plan.

[6] Empire requested that Exponent use 4 ft (1.2 m) as a conservative minimum depth of submarine cable installation for the purposes of EMF calculations. The submarine export cables are anticipated to be installed to a target of 6 ft (1.8 m) depth or greater.

mattresses. The minimum coverage depth (seabed + covering) for any of these surface-laid portions of the route is 3.3 ft (1.0 m), and it is expected that no more than 10 percent of the route will be surface-laid. The ampacity rating of the 345-kV submarine export cables (equivalent to the WNC rating of an overhead transmission line) is 1,240 A.

2.2 Onshore Export Cables

Two submarine export cables will enter JTBs at landfall where each of the three conductors within each submarine cable will be spliced to six single-core, cross linked polyethylene (XLPE) onshore export cables. A cross-sectional drawing illustrating the components of a representative single-conductor XLPE cable is shown in Attachment A, Figure A-2. Along the majority of the route between the JTB and the onshore substation, the onshore export cables will be installed in a double-circuit underground Duct Bank configuration, as shown below in Figure 3, wherein the three conductors of each circuit are arranged in a trefoil configuration. A more detailed schematic of this configuration is provided in Attachment A, Figure A-3. The duct bank will be installed at a minimum target burial depth of 3 feet (ft) (0.9 meters [m]) and will be constructed at the center of a 25-ft (7.6-m) wide cable corridor (i.e., a ROW) during operation.

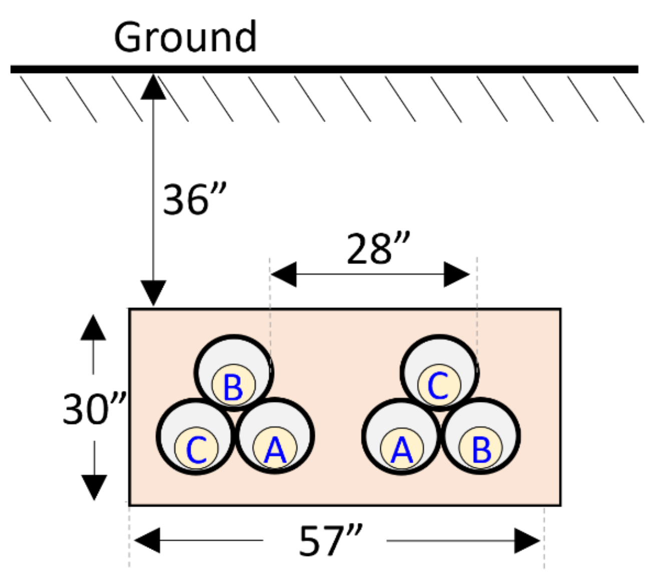

Figure 3. The double-circuit underground Duct Bank configuration for the 345-kV onshore export cables or 345-kV interconnection cables showing two circuits each in a trefoil configuration. Optimized arrangement of phase conductors indicated by letters ABC.

Where the onshore cable route may pass under roads or railway lines, short segments of the cables will be constructed in a double-circuit underground Road Crossing configuration, as shown below in Figure 4. A more detailed schematic of this configuration is provided in Attachment A, Figure A-4. The three conductors of each circuit in the Road Crossing configuration will be arranged in a trefoil configuration within a 30" steel pipe. The center-to-center spacing of the two circuits will be 17.5 ft (5.3 m). Each of the two circuits will operate at 345-kV and was modeled with a cable ampacity rating (equivalent to the WNC rating of an overhead transmission line) of 1190 A. Further details of the s and the respective duct bank configurations are discussed in Attachment A.

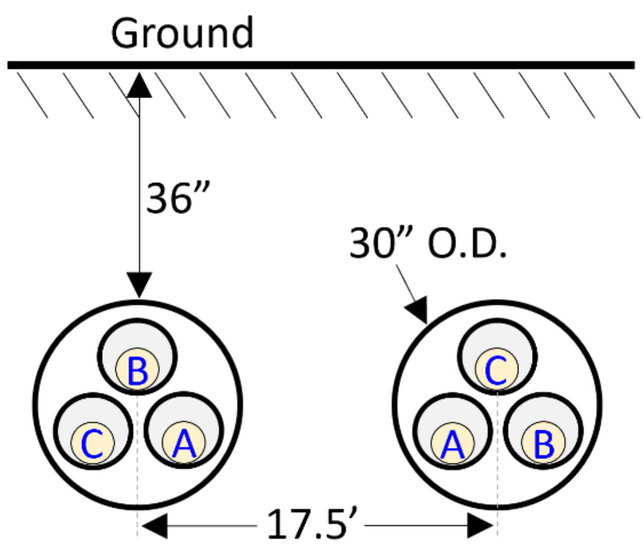

Figure 4. The double-circuit underground Road Crossing configuration for the 345-kV export cables or 345-kV interconnection cables showing two circuits each in a trefoil configuration contained in a 30" steel pipe. Optimized arrangement of phase conductors indicated by letters ABC.

The arrangement of the phase conductors among trefoil groups can significantly change the magnetic-field level above each double-circuit cable installation due to the mutual cancellation of magnetic fields from adjacent cables and circuits. Exponent performed a phase optimization analysis for all possible phase permutations of the cables in each configuration to determine which would minimize the calculated magnetic-field levels at a horizontal distance of 25 ft (7.6 m) from the center of the two circuits. The results of this phase optimization are indicated by the letters in Figure 3 and Figure 4, above.

2.3 Onshore Interconnection Cables

At the onshore substation, the Project circuits will transition from the 345 kV onshore export cables to the 345-kV onshore interconnection cables, which will carry power from the onshore substation to the Hampton Road substation on two 345-kV underground interconnection cable circuits. Along a majority of the route, the onshore interconnection cables will be constructed in the Duct Bank configuration, as shown above in Figure 3. For short segments of the route, the interconnection cables will be constructed in the Road Crossing configuration, as shown above in Figure 4. The geometrical configurations proposed for the 345-kV onshore export cables in the Duct Bank and Road Crossing configurations are nominally identical to those proposed for the discussed above.

An approximately 200-ft (64-m) segment of the will be installed over Barnums Channel via a cable bridge. The bridge will be inaccessible to members of the general public, and therefore an assessment of EMF levels on and above the bridge was not performed. However, AC magnetic fields of the proposed interconnection cables were calculated at a height of 3.3 ft (1 m) above the water beneath the bridge at the MHHW[7] (mean higher high water) level to evaluate the potential exposure to the general public traveling by boat beneath the bridge. The three conductors of each circuit in the Cable Bridge configuration will be arranged in a trefoil configuration with a 2.0 ft (0.61 m) center-to-center distance between the trefoils of the two adjacent circuits.

A summary of the voltage and WNC current of the submarine export cables, onshore export cables, and interconnection cables is shown in Table 1, below.

[7] The average of the higher high water height of each tidal day. As there are generally two high tides and two low tide in each day, the MHHW considers only the higher of the two high tides for any given day.

Table 1. Current flow in the NY Project cables at WNC rating

Project	Voltage (kV)	WNC Current (Amperes)
Submarine Export Cable	345	1,240
Onshore Export Cable	345	1,190
Onshore Interconnection Cable	345	1,190

2.4 Magnetic-Field Calculations

Exponent used the data provided by Empire—ampacity ratings, phasing, and cable configurations—to calculate magnetic-field levels for the proposed NY Project. The calculations were performed using algorithms developed by the Bonneville Power Administration (BPA), an agency of the U.S. Department of Energy, for modeling AC transmission lines. BPA's algorithms utilize simplifying assumptions about the conductors to yield conservative results. Chartier and Dickson (1990) and Perrin et al. (1991) have shown that BPA's algorithms accurately predict magnetic-field levels from AC transmission lines.

The calculations of the magnetic field for the submarine and onshore export and interconnection cables assumed that all conductors are parallel to one another and infinite in length, the load on the phase conductors is balanced, there is no attenuation of magnetic fields from any surrounding material, there are no unbalanced currents flowing along the outer sheaths of the cables, and that the cables are carrying electrical currents equal to their ampacity ratings (equivalent to the WNC rating of an overhead transmission line).

All calculations were performed along a transect perpendicular to the transmission line centerlines and reported at a height of 3.3 ft (1 m) above ground. This is consistent with Institute of Electrical and Electronics Engineers (IEEE) Standards—C95.3-2021 and 0644-2019 (IEEE, 2010, 2019). Magnetic-field values are reported as root-mean-square (rms) flux density in mG and were calculated as the magnitude of the field along the major axis of the ellipse as specified by the interim NYPSC EMF standard (1990).[8]

[8] This contrast to IEEE Standard 644-2019 and C95.3-2021, which specify that fields are calculated as the rms flux density of the resultant of three orthogonal field vectors and the magnetic-field levels calculated in the offshore report submitted to the Bureau of Ocean Energy Management. The resultant values are equal to or larger than the major axis of the ellipse in all locations.

Magnetic-Field Results

The calculated magnetic-field levels from cable configurations proposed for the various sections of the NY Project route are discussed below. Table B-1 and Table B-2, in Attachment B, summarize the calculated magnetic-field levels at various horizontal distances from the circuit configurations. Attachment C includes graphic profiles of the calculated magnetic-field levels (Figure C-1 through Figure C-5). Attachment D summarizes the transmission line data provided by Empire that were used to model magnetic-field levels for the proposed NY Project. The calculated post-construction magnetic-field levels at 1-ft (0.3-m) increments across each cross-section to ±500 ft (±152 m) from the ROW centerline were calculated. These results are provided in Attachment E, truncated to ±300 ft (±91 m) for brevity given that all calculated values for all cables and configurations are < 0.1 mG for horizontal distances beyond approximately ±250 ft (±76.2 m).

The maximum calculated post-construction magnetic-field level (as well as magnetic-field levels at greater distances from the transmission lines) were calculated to be below the NYPSC standard of 200 mG for all modeled configurations. As listed in Table B-1 and Table B-2, the maximum magnetic-field levels among all proposed cable configurations is calculated to be 101 mG or less. For example, the maximum magnetic-field level calculated over the s is 53 mG for surface-laid submarine export cables, evaluated 3.3 ft (1 m) above the rock berms or protective mattresses. At ±15 ft (±4.6 m) from the centerline of either submarine export cable, the magnetic-field level is 11 mG or less and further decreases to 1.7 mG at a distance of ±50 ft (±15 m). The maximum magnetic-field levels calculated at 3.3 ft (1 m) above ground over the onshore Duct Bank and Road Crossing (applicable to both onshore export cable and interconnection cable) configurations are 63 mG and 101 mG, respectively. The maximum magnetic-field levels calculated at 3.3 ft (1 m) above the water (at the MHHW level) directly beneath the Cable Bridge configuration is 22 mG. As with all proposed Project cable configurations, the magnetic-field levels generally decrease with increasing distance from the circuits.

Note that the horizontal distance is measured from the midpoint of the two trefoil circuits in the onshore models, and thus the magnetic field does not appear to decrease as significantly for shorter horizontal distances. This is attributable to spacing between the two circuit, which, for the Road Crossing configuration is 17.5 ft (5.3 m). Nonetheless, the magnetic-fields levels still decrease significantly as the horizontal distance increases further, falling to 3.1 mG or less at a distance of ±50 ft (±15 m) from the midpoint of the onshore export cable and interconnection cable configurations.

Conclusions

This report summarizes an evaluation of the EMF associated with representative configurations of the proposed submarine export, onshore export, and interconnection cables that will carry electricity from EW 2 to the POI as part of the NY Project.

Magnetic Fields

Magnetic-field calculations were performed using methods accepted within the scientific and engineering community and that have been found to match well with measured values. Calculations of the magnetic field at a height of 3.3 ft (1 m) above ground and at cable ampacity ratings (equivalent to WNC ratings of overhead lines) show that the maximum calculated magnetic-field levels above the NY Project's transmission cables both offshore and onshore configurations are below the NYPSC AC standard of 200 mG for all modeled configurations. Thus, calculations of the magnetic field performed in accordance with the NYPSC's interim AC magnetic-field standard demonstrate compliance of the NY Project with the NYPSC AC limit of 200 mG.

Electric Fields

The NYPSC also requires a not-to-exceed AC electric-field limit of 1.6 kV/m at the ROW edge of new transmission lines. Since the electric field from the proposed transmission cables is blocked by either the cable construction and ground, the NY Project will not be a direct source of any electric field, and any electric field induced by the magnetic field will be *de minimis* and below the NYPSC limit.

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Attachment A

Cable Configurations and Duct Bank Cross-Sections

Table A-1. Summary of assumed submarine export cable parameters

Installation Type	Buried[a,b]
Description	Submarine Export Cable, 345-kV double circuit
Cable Ampacity Rating[c] (i.e., WNC Rating)	1240 Amperes
Cable Type (See Figure A-1) Nominal Outer Diameter (OD)	Three-conductor XLPE, 290-millimeter (mm) OD
Conductor	3 × 2000 mm^2
Distance Between Conductor Centers Within Cable	123.4 mm (4.86 in)
Minimum Horizontal Distance Between Cables	33 ft (10 m)[d]
Modeled Burial Depth (to Top of Cable)	4 ft (1.2 m)

a Empire used 4 ft (1.2 m) as a conservative minimum depth of submarine cable installation for the purposes of EMF calculations. The submarine export cables are anticipated to be installed to a target 6-ft (1.8-m) depth or greater. The portion of the submarine export cable route proposed to be installed in federally maintained channels will be installed to a minimum target burial depth of 15 ft (4.6 m) below the authorized dredge depth. Calculated magnetic-field levels will be lower for burial depths greater than the 4-ft (1.2-m) burial depth reported herein.

b Surface-laid cables will be covered with rock berm or other protective covering to a minimum burial depth of 3.3 ft (1.0 m).

c The ampacity rating of a submarine cable is taken as equivalent to the WNC rating of an overhead conductor.

d For two adjacent cables at a distance of 10 m from one another, the maximum calculated magnetic field value may increase by ~10%. However, the incorporation of helically twisting conductors would reduce the effect of overlapping fields from this nearest cable to a negligible level and so the potential for additive effects of adjacent submarine cables were not considered.

Table A-2. Summary of assumed onshore export and interconnection cable parameters

Project Section	Onshore Export/Interconnection		Onshore Interconnection
Description	345-kV double circuit Duct Bank	345-kV double circuit Road Crossing	345-kV double circuit Cable Bridge
Cable Ampacity Rating[c] (i.e., WNC Rating)	1190 A		
Cable Type, Nominal OD	Single-core XLPE, 5.26-inch Outer Diameter (133.7 mm)		
Conductor	2000 mm^2 copper		
Number of circuits per configuration	2		
Distance between circuit centers	28 in (0.71 m)	17.5 ft (5.3 m)	24 in (0.61 m)
Number of cables per phase	1		
GCC cable type, OD	N/A		
Assumed Permanent Cable Corridor (i.e., ROW-width)	±12.5 ft (±3.8 m)		N/A
Minimum Target Burial Depth (to Top of Duct Bank or pipe)	3 ft (0.9 m)		N/A

a Edge-to-edge distance between duct banks.

b Center-to-center distance between circuit trefoil bundles.

c The ampacity rating of a submarine cable is taken as equivalent to the WNC rating of an overhead conductor.

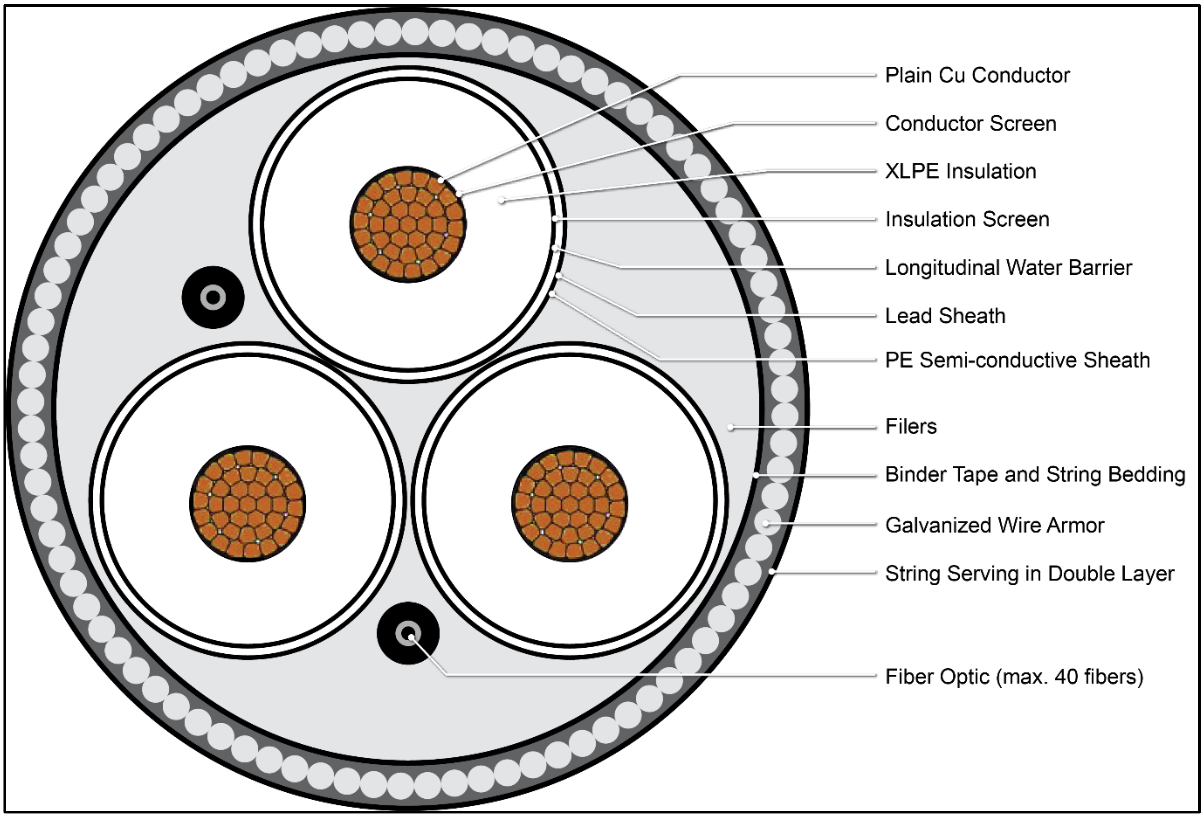

Figure A-1. Representative cross-section of the three-conductor submarine export cable.

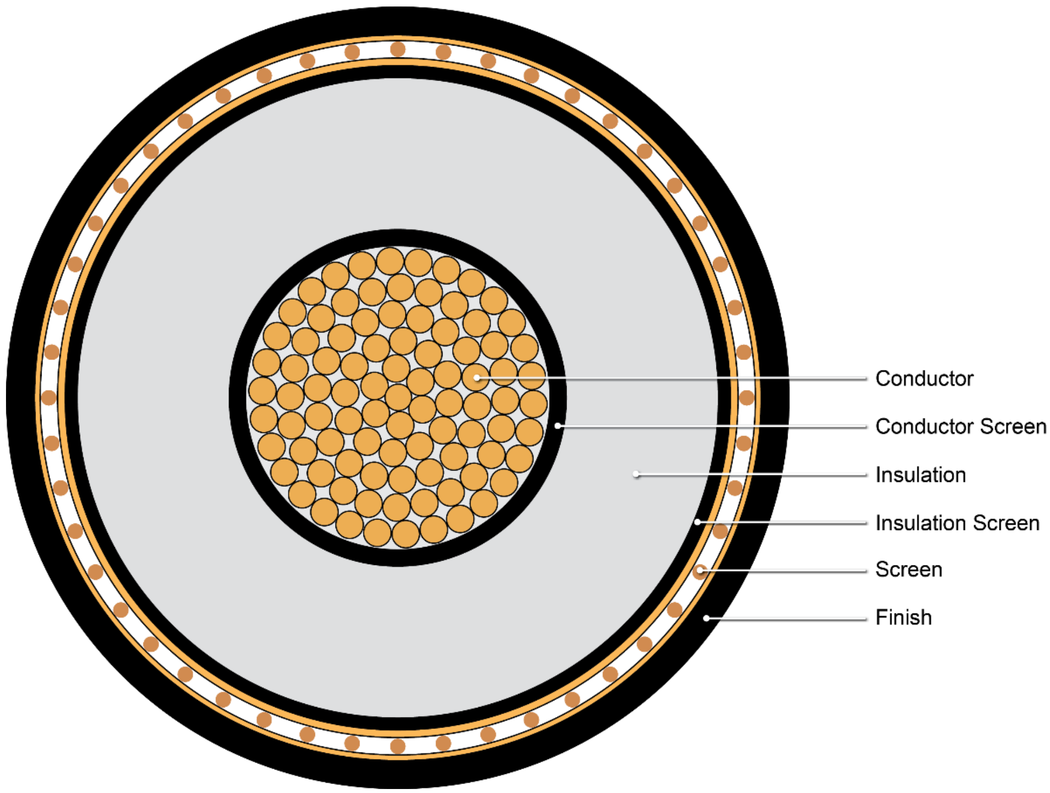

Figure A-2. Representative cross-section of onshore export cable.

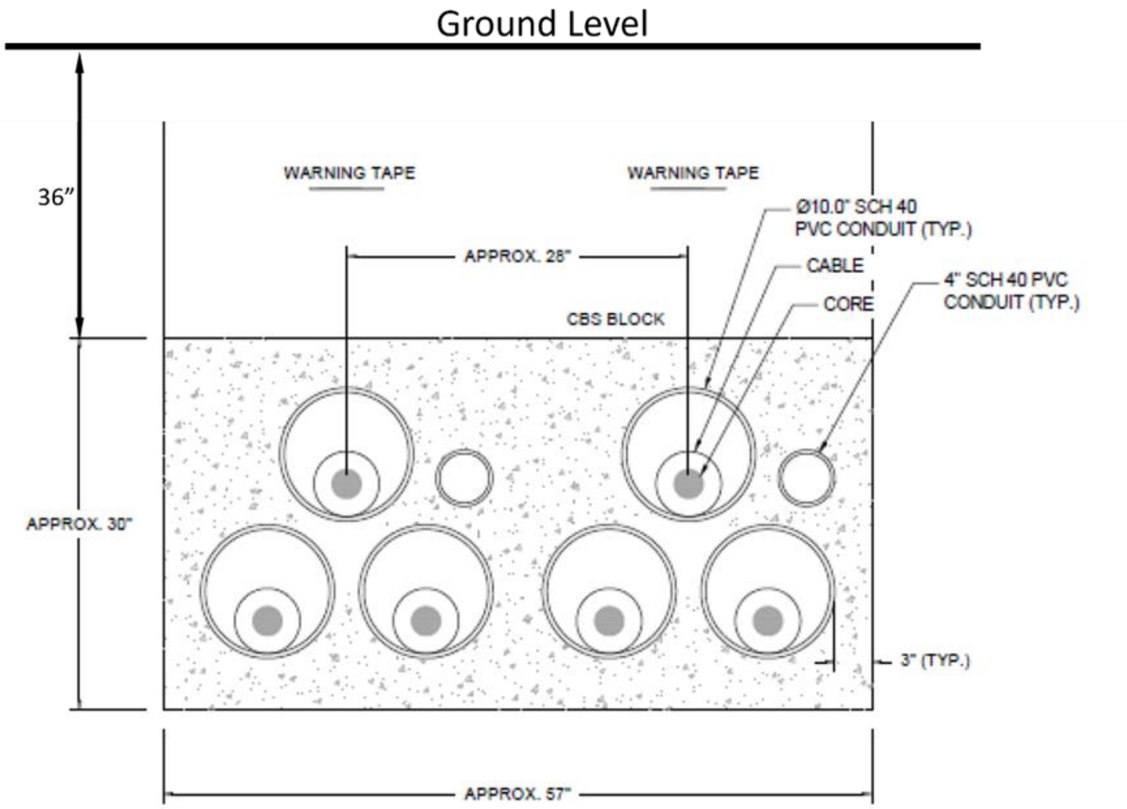

Figure A-3. Schematic of the double-circuit underground Duct Bank configuration for the 345-kV onshore export cables or 345-kV interconnection cables.

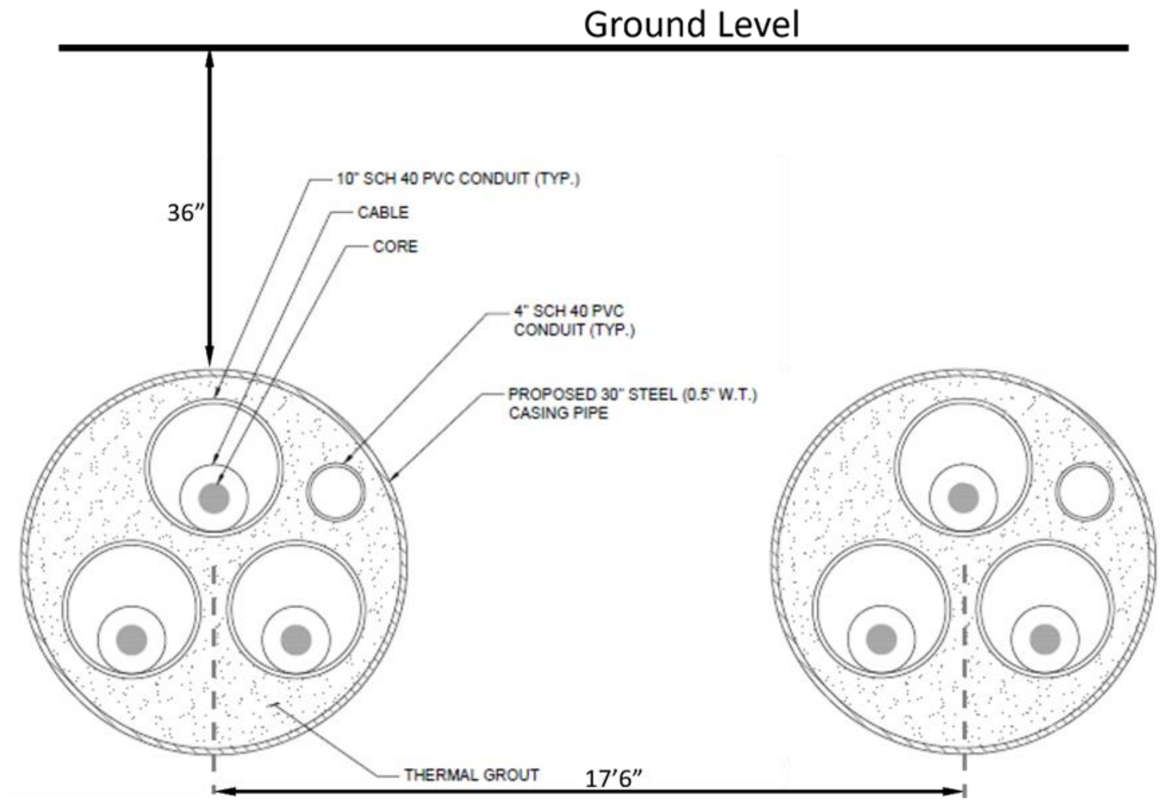

Figure A-4. Schematic of the double-circuit underground Road Crossing configuration for the 345-kV onshore export cables or 345-kV interconnection cables.

Attachment B

Calculated Magnetic Fields

Table B-1. Calculated magnetic-field levels (mG)†, at WNC rating, at 3.3 ft (1 m) above seabed for buried cables, and 3.3 ft (1 m) above protective covering for surface laid cables.

Cable Type	Submarine Cable Configuration	Distance from the Center of the Submarine Cables* Max	±12.5 ft (±3.8 m)	±15 ft (±4.6 m)	±25 ft (±7.6 m)	±30 ft (±9.1 m)	±50 ft (±15 m)	±75ft (±23 m)	±100 ft (±30 m)
345-kV Submarine Export Cable‡	Buried (4 ft [1.2m])	43	14	11	4.9	3.7	1.7	0.8	0.5
	Surface Covered (3.3 ft [1m])	53	13	10	4.8	3.6	1.6	0.8	0.5

† At each location along a transect perpendicular to the transmission centerline, magnetic-field levels were calculated as the rms flux density of the maximum field ellipse as specified by NYPSC policy (NYPSC, 1990).

‡ For two adjacent cables at a distance of 10 m from one another, the maximum calculated magnetic field value may increase by ~10%. However, the incorporation of helically twisting conductors would reduce the effect of overlapping fields from this nearest cable to a negligible level and so the potential for additive effects of adjacent submarine cables were not considered.

* Horizontal distance is measured from the centerline of the right-most or left-most cable, for distances > 0 ft and < 0 ft, respectively.

Table B-2. Calculated magnetic-field levels (mG) of onshore export cables and onshore interconnection cables at 3.3 ft (1 m) above ground at WNC rating.

Cable Type	Cable Configuration	Distance from the Midpoint of the Double-Circuit Configuration Max	±12.5 ft (±3.8 m)	±25 ft (±7.6 m)	±50 ft (±15 m)	±75 ft (±23 m)	±100 ft (±30 m)
345-kV Onshore Export/Interconnection Cable	Duct Bank	63	29	9.8	2.7	1.2	0.7
	Road Crossing	101	75	17	3.1	1.3	0.7
345-kV Onshore Interconnection Cable	Cable Bridge	22	10	4.0	1.1	0.5	0.3

Attachment C

Graphical Profiles of Calculated Magnetic Fields

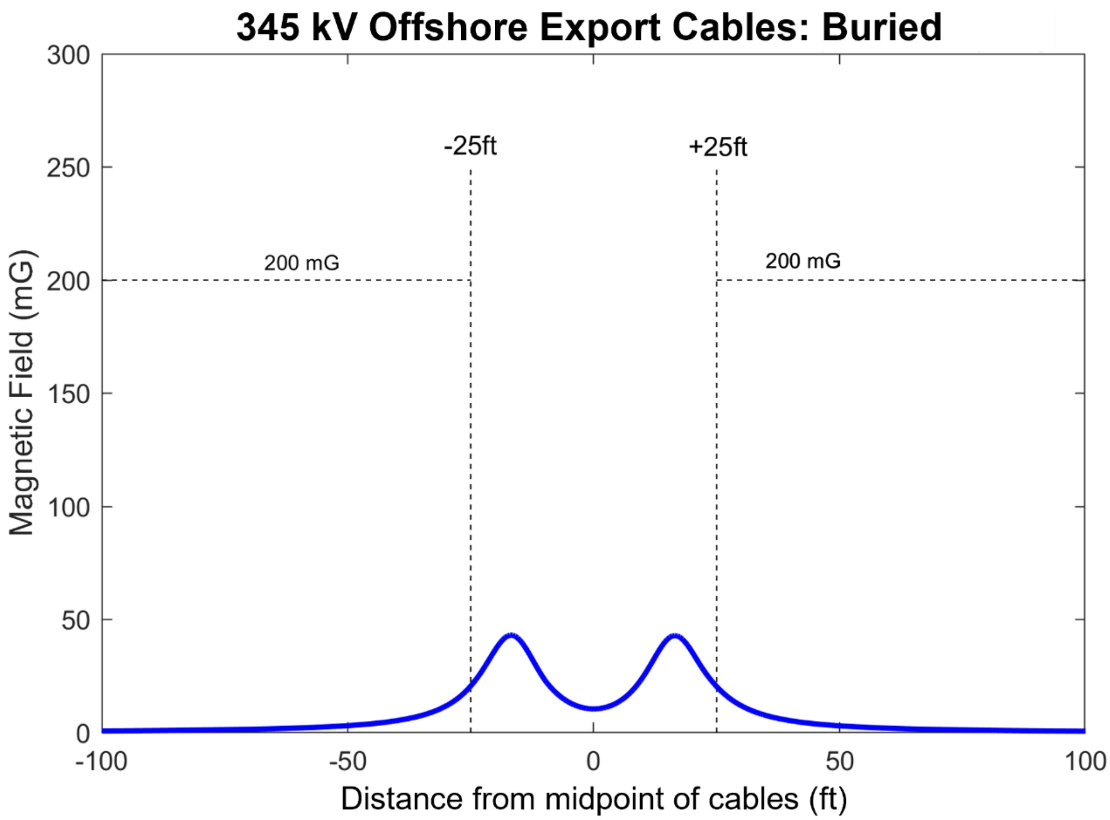

Figure C-1. Calculated magnetic-field levels in seawater 3.3 ft (1 m) above the seabed over the buried submarine export cable at WNC rating.

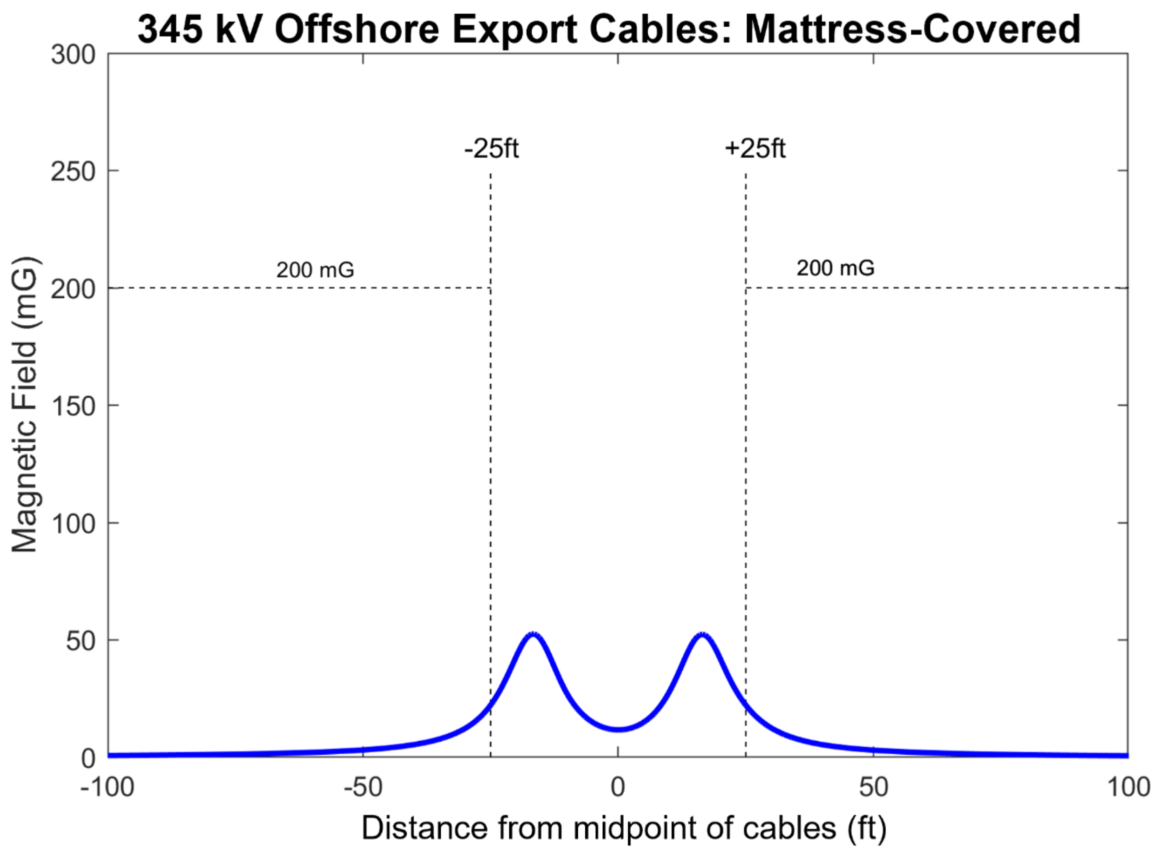

Figure C-2. Calculated magnetic-field levels in seawater 3.3 ft (1 m) above the surface-laid covering of the submarine export cable at WNC rating.

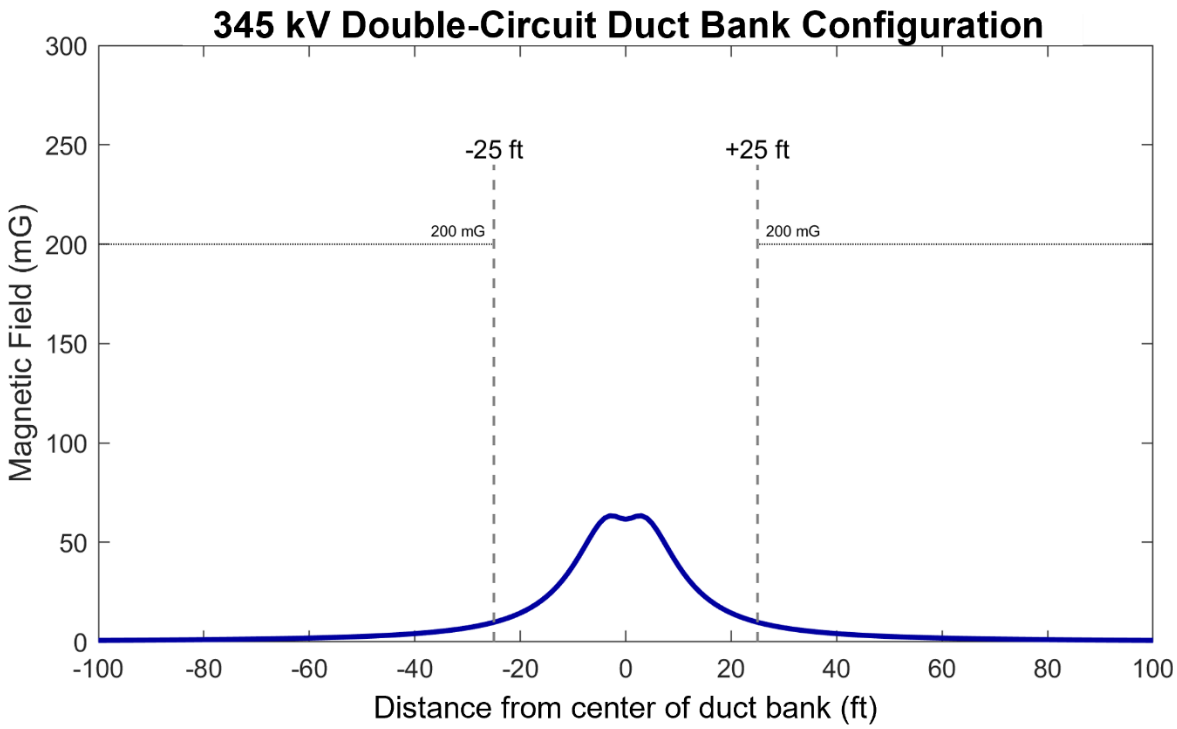

Figure C-3. Calculated magnetic-field levels at 3.3 ft (1 m) above ground for the onshore export cables and interconnection cables in the double-circuit Duct Bank configuration at WNC rating.

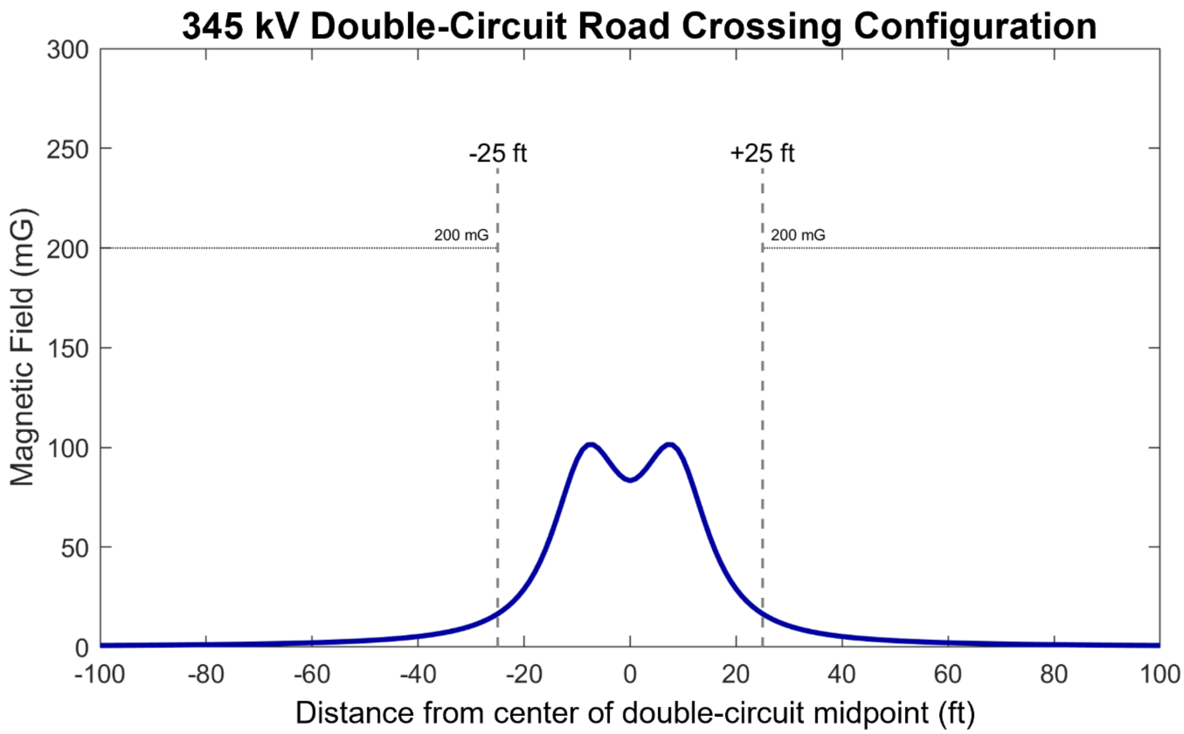

Figure C-4. Calculated magnetic-field levels at 3.3 ft (1 m) above ground over the inshore export cables and interconnection cables in the double-circuit Road Crossing configuration at WNC rating.

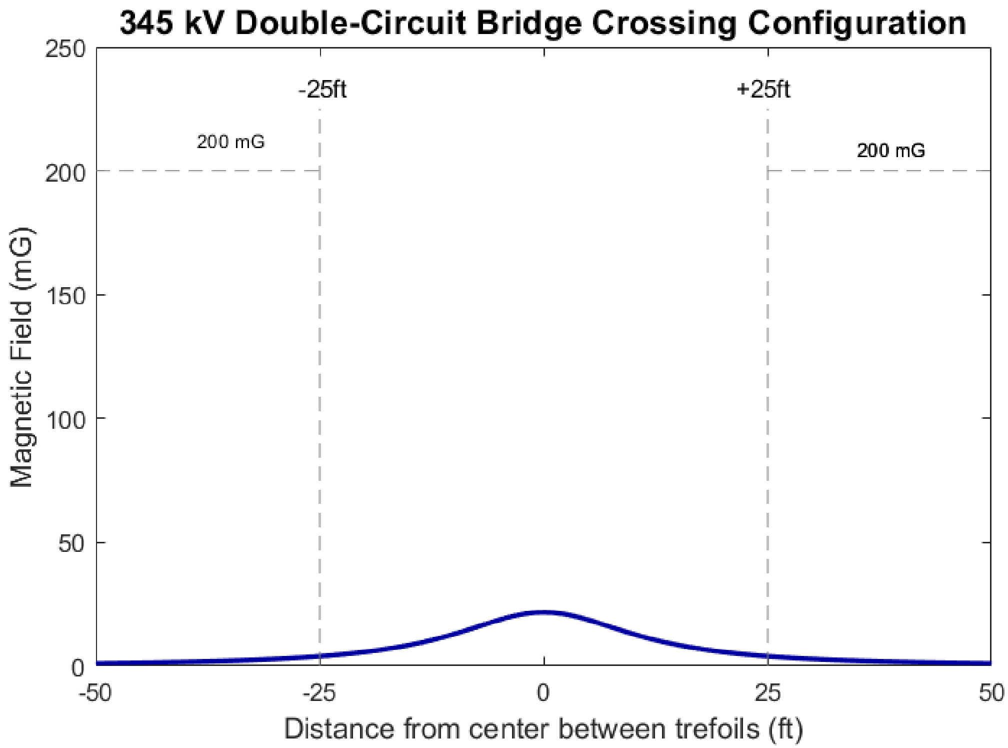

Figure C-5. Calculated magnetic-field levels at 3.3 ft (1 m) above MHHW under the Barnum's Channel bridge crossing, which supports the s in a double circuit trefoil Cable Bridge configuration at WNC rating.

Attachment D

Input Data for Magnetic-Field Calculations

Table D-1. Input data for existing EMF calculations, (Offshore Export Cable: Mattress-Covered [3.3ft Beneath Protective Covering])

Bundle	x-feet	y-feet	n cond	cond dia (inches)	Spacing (inches)	l-n voltage (kV)	V Phasing	Current (A)	Ph-Ph Voltage	I Phasing
1	-16.40	-3.50	1	2.250	0	199.186	0	1240	345	0
2	-16.61	-3.85	1	2.250	0	199.186	240	1240	345	240
3	-16.20	-3.85	1	2.250	0	199.186	120	1240	345	120
4	16.40	-3.50	1	2.250	0	199.186	0	1240	345	0
5	16.20	-3.85	1	2.250	0	199.186	240	1240	345	240
6	16.61	-3.85	1	2.250	0	199.186	120	1240	345	120

Table D-2. Input data for existing EMF calculations, (Offshore Export Cable: Buried [4ft Beneath Seabed])

Bundle	x-feet	y-feet	n cond	cond dia (inches)	Spacing (inches)	l-n voltage (kV)	V Phasing	Current (A)	Ph-Ph Voltage	I Phasing
1	-16.40	-4.20	1	2.250	0	199.186	0	1240	345	0
2	-16.61	-4.55	1	2.250	0	199.186	240	1240	345	240
3	-16.20	-4.55	1	2.250	0	199.186	120	1240	345	120
4	16.40	-4.20	1	2.250	0	199.186	0	1240	345	0
5	16.20	-4.55	1	2.250	0	199.186	240	1240	345	240
6	16.61	-4.55	1	2.250	0	199.186	120	1240	345	120

Table D-3. Input data for existing EMF calculations, (Onshore Export/Interconnection Cable: Duct Bank)

Bundle	x-feet	y-feet	n cond	cond dia (inches)	Spacing (inches)	l-n voltage (kV)	V Phasing	Current (A)	Ph-Ph Voltage	I Phasing
1	-0.67	-4.84	1	2.250	0	199.186	0	1190	345	0
2	-1.67	-4.84	1	2.250	0	199.186	240	1190	345	240
3	-1.17	-3.97	1	2.250	0	199.186	120	1190	345	120
4	0.67	-4.84	1	2.250	0	199.186	0	1190	345	0
5	1.17	-3.97	1	2.250	0	199.186	240	1190	345	240
6	1.67	-4.84	1	2.250	0	199.186	120	1190	345	120

Table D-4. Input data for existing EMF calculations, (Onshore Export/Interconnection Cable: Road Crossing)

Bundle	x-feet	y-feet	n cond	cond dia (inches)	Spacing (inches)	l-n voltage (kV)	V Phasing	Current (A)	Ph-Ph Voltage	I Phasing
1	-8.25	-5.33	1	2.250	0	199.186	0	1190	345	0
2	-9.25	-5.33	1	2.250	0	199.186	240	1190	345	240
3	-8.75	-4.46	1	2.250	0	199.186	120	1190	345	120
4	8.25	-5.33	1	2.250	0	199.186	0	1190	345	0
5	8.75	-4.46	1	2.250	0	199.186	240	1190	345	240
6	9.25	-5.33	1	2.250	0	199.186	120	1190	345	120

Table D-5. Input data for existing EMF calculations, (Onshore Interconnection Cable: Cable Bridge)

Bundle	x-feet	y-feet	n cond	cond dia (inches)	Spacing (inches)	l-n voltage (kV)	V Phasing	Current (A)	Ph-Ph Voltage	I Phasing
1	-1.22	16.24	1	2.250	0	199.186	0	1190	345	0
2	-1.00	16.62	1	2.250	0	199.186	240	1190	345	240
3	-0.78	16.24	1	2.250	0	199.186	120	1190	345	120
4	1.22	16.24	1	2.250	0	199.186	0	1190	345	0
5	0.78	16.24	1	2.250	0	199.186	240	1190	345	240
6	1.00	16.62	1	2.250	0	199.186	120	1190	345	120

Attachment E

Output Tables of Magnetic Field Calculations

Table E-1. Calculated magnetic field levels for Buried and Surface-Laid Submarine Export Cable

Dist (feet)	Submarine Export Cable: Buried Magnetic Field Maximum (mG)	Submarine Export Cable: Surface Laid Magnetic Field Maximum (mG)
-300	<0.1	<0.1
-299	<0.1	<0.1
-298	<0.1	<0.1
-297	<0.1	<0.1
-296	<0.1	<0.1
-295	<0.1	<0.1
-294	<0.1	<0.1
-293	<0.1	<0.1
-292	<0.1	<0.1
-291	<0.1	<0.1
-290	<0.1	<0.1
-289	<0.1	<0.1
-288	<0.1	<0.1
-287	<0.1	<0.1
-286	<0.1	<0.1
-285	<0.1	<0.1
-284	<0.1	<0.1
-283	<0.1	<0.1
-282	<0.1	<0.1
-281	<0.1	<0.1
-280	<0.1	<0.1
-279	<0.1	<0.1
-278	<0.1	<0.1
-277	<0.1	<0.1
-276	<0.1	<0.1
-275	<0.1	<0.1
-274	<0.1	<0.1
-273	<0.1	<0.1
-272	<0.1	<0.1
-271	<0.1	<0.1
-270	0.1	0.1
-269	0.1	0.1
-268	0.1	0.1
-267	0.1	0.1
-266	0.1	0.1
-265	0.1	0.1
-264	0.1	0.1
-263	0.1	0.1
-262	0.1	0.1
-261	0.1	0.1
-260	0.1	0.1
-259	0.1	0.1
-258	0.1	0.1
-257	0.1	0.1
-256	0.1	0.1

Continued on next page

Table E-1 – Continued from previous page

Dist (feet)	Submarine Export Cable: Buried Magnetic Field Maximum (mG)	Submarine Export Cable: Surface Laid Magnetic Field Maximum (mG)
-255	0.1	0.1
-254	0.1	0.1
-253	0.1	0.1
-252	0.1	0.1
-251	0.1	0.1
-250	0.1	0.1
-249	0.1	0.1
-248	0.1	0.1
-247	0.1	0.1
-246	0.1	0.1
-245	0.1	0.1
-244	0.1	0.1
-243	0.1	0.1
-242	0.1	0.1
-241	0.1	0.1
-240	0.1	0.1
-239	0.1	0.1
-238	0.1	0.1
-237	0.1	0.1
-236	0.1	0.1
-235	0.1	0.1
-234	0.1	0.1
-233	0.1	0.1
-232	0.1	0.1
-231	0.1	0.1
-230	0.1	0.1
-229	0.1	0.1
-228	0.2	0.2
-227	0.2	0.2
-226	0.2	0.2
-225	0.2	0.2
-224	0.2	0.2
-223	0.2	0.2
-222	0.2	0.2
-221	0.2	0.2
-220	0.2	0.2
-219	0.2	0.2
-218	0.2	0.2
-217	0.2	0.2
-216	0.2	0.2
-215	0.2	0.2
-214	0.2	0.2
-213	0.2	0.2
-212	0.2	0.2
-211	0.2	0.2

Continued on next page

Table E-1 – Continued from previous page

Dist (feet)	Submarine Export Cable: Buried Magnetic Field Maximum (mG)	Submarine Export Cable: Surface Laid Magnetic Field Maximum (mG)
-210	0.2	0.2
-209	0.2	0.2
-208	0.2	0.2
-207	0.2	0.2
-206	0.2	0.2
-205	0.2	0.2
-204	0.2	0.2
-203	0.2	0.2
-202	0.2	0.2
-201	0.2	0.2
-200	0.2	0.2
-199	0.2	0.2
-198	0.2	0.2
-197	0.2	0.2
-196	0.2	0.2
-195	0.2	0.2
-194	0.2	0.2
-193	0.2	0.2
-192	0.2	0.2
-191	0.2	0.2
-190	0.2	0.2
-189	0.2	0.2
-188	0.2	0.2
-187	0.2	0.2
-186	0.2	0.2
-185	0.2	0.2
-184	0.2	0.2
-183	0.2	0.2
-182	0.2	0.2
-181	0.2	0.2
-180	0.3	0.3
-179	0.3	0.3
-178	0.3	0.3
-177	0.3	0.3
-176	0.3	0.3
-175	0.3	0.3
-174	0.3	0.3
-173	0.3	0.3
-172	0.3	0.3
-171	0.3	0.3
-170	0.3	0.3
-169	0.3	0.3
-168	0.3	0.3
-167	0.3	0.3
-166	0.3	0.3

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Table E-1 – Continued from previous page

Dist (feet)	Submarine Export Cable: Buried Magnetic Field Maximum (mG)	Submarine Export Cable: Surface Laid Magnetic Field Maximum (mG)
-165	0.3	0.3
-164	0.3	0.3
-163	0.3	0.3
-162	0.3	0.3
-161	0.3	0.3
-160	0.3	0.3
-159	0.3	0.3
-158	0.3	0.3
-157	0.3	0.3
-156	0.3	0.3
-155	0.3	0.3
-154	0.3	0.3
-153	0.3	0.3
-152	0.4	0.4
-151	0.4	0.4
-150	0.4	0.4
-149	0.4	0.4
-148	0.4	0.4
-147	0.4	0.4
-146	0.4	0.4
-145	0.4	0.4
-144	0.4	0.4
-143	0.4	0.4
-142	0.4	0.4
-141	0.4	0.4
-140	0.4	0.4
-139	0.4	0.4
-138	0.4	0.4
-137	0.4	0.4
-136	0.4	0.4
-135	0.4	0.4
-134	0.4	0.4
-133	0.5	0.5
-132	0.5	0.5
-131	0.5	0.5
-130	0.5	0.5
-129	0.5	0.5
-128	0.5	0.5
-127	0.5	0.5
-126	0.5	0.5
-125	0.5	0.5
-124	0.5	0.5
-123	0.5	0.5
-122	0.5	0.5
-121	0.5	0.5

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Table E-1 – Continued from previous page

Dist (feet)	Submarine Export Cable: Buried Magnetic Field Maximum (mG)	Submarine Export Cable: Surface Laid Magnetic Field Maximum (mG)
-120	0.6	0.6
-119	0.6	0.6
-118	0.6	0.6
-117	0.6	0.6
-116	0.6	0.6
-115	0.6	0.6
-114	0.6	0.6
-113	0.6	0.6
-112	0.6	0.6
-111	0.6	0.6
-110	0.6	0.7
-109	0.7	0.7
-108	0.7	0.7
-107	0.7	0.7
-106	0.7	0.7
-105	0.7	0.7
-104	0.7	0.7
-103	0.7	0.7
-102	0.7	0.7
-101	0.8	0.8
-100	0.8	0.8
-99	0.8	0.8
-98	0.8	0.8
-97	0.8	0.8
-96	0.8	0.8
-95	0.9	0.9
-94	0.9	0.9
-93	0.9	0.9
-92	0.9	0.9
-91	0.9	0.9
-90	0.9	0.9
-89	1.0	1.0
-88	1.0	1.0
-87	1.0	1.0
-86	1.0	1.0
-85	1.0	1.1
-84	1.1	1.1
-83	1.1	1.1
-82	1.1	1.1
-81	1.1	1.2
-80	1.2	1.2
-79	1.2	1.2
-78	1.2	1.2
-77	1.3	1.3
-76	1.3	1.3

Continued on next page

Table E-1 – Continued from previous page

Dist (feet)	Submarine Export Cable: Buried Magnetic Field Maximum (mG)	Submarine Export Cable: Surface Laid Magnetic Field Maximum (mG)
-75	1.3	1.3
-74	1.4	1.4
-73	1.4	1.4
-72	1.4	1.5
-71	1.5	1.5
-70	1.5	1.5
-69	1.6	1.6
-68	1.6	1.6
-67	1.7	1.7
-66	1.7	1.7
-65	1.8	1.8
-64	1.8	1.8
-63	1.9	1.9
-62	2.0	2.0
-61	2.0	2.0
-60	2.1	2.1
-59	2.2	2.2
-58	2.2	2.3
-57	2.3	2.4
-56	2.4	2.4
-55	2.5	2.5
-54	2.6	2.6
-53	2.7	2.8
-52	2.9	2.9
-51	3.0	3.0
-50	3.1	3.1
-49	3.3	3.3
-48	3.4	3.5
-47	3.6	3.6
-46	3.8	3.8
-45	4.0	4.0
-44	4.2	4.3
-43	4.5	4.5
-42	4.7	4.8
-41	5.0	5.1
-40	5.3	5.4
-39	5.7	5.8
-38	6.1	6.2
-37	6.5	6.7
-36	7.0	7.2
-35	7.6	7.8
-34	8.2	8.5
-33	9.0	9.2
-32	9.8	10.1
-31	10.7	11.1

Continued on next page

Table E-1 – Continued from previous page

Dist (feet)	Submarine Export Cable: Buried Magnetic Field Maximum (mG)	Submarine Export Cable: Surface Laid Magnetic Field Maximum (mG)
-30	11.8	12.3
-29	13.1	13.7
-28	14.6	15.3
-27	16.3	17.3
-26	18.3	19.6
-25	20.6	22.3
-24	23.3	25.5
-23	26.3	29.2
-22	29.7	33.5
-21	33.2	38.1
-20	36.7	42.9
-19	39.8	47.4
-18	42.0	50.8
-17	43.1	52.6
-16	42.7	52.1
-15	40.9	49.7
-14	38.0	45.7
-13	34.4	40.9
-12	30.6	35.8
-11	26.9	31.1
-10	23.5	26.9
-9	20.7	23.5
-8	18.4	20.7
-7	16.4	18.3
-6	14.8	16.4
-5	13.4	14.9
-4	12.3	13.7
-3	11.5	12.8
-2	11.0	12.2
-1	10.6	11.8
0	10.5	11.7
1	10.6	11.8
2	11.0	12.2
3	11.6	12.8
4	12.4	13.7
5	13.5	15.0
6	15.0	16.6
7	16.8	18.6
8	18.9	21.2
9	21.5	24.2
10	24.5	27.9
11	27.9	32.2
12	31.6	36.9
13	35.3	41.9
14	38.7	46.5

Continued on next page

Table E-1 – Continued from previous page

Dist (feet)	Submarine Export Cable: Buried Magnetic Field Maximum (mG)	Submarine Export Cable: Surface Laid Magnetic Field Maximum (mG)
15	41.3	50.2
16	42.7	52.1
17	42.8	52.1
18	41.4	50.0
19	38.9	46.4
20	35.7	41.9
21	32.2	37.1
22	28.8	32.7
23	25.7	28.7
24	22.9	25.2
25	20.4	22.2
26	18.2	19.6
27	16.3	17.4
28	14.6	15.5
29	13.2	13.8
30	11.9	12.5
31	10.8	11.3
32	9.9	10.2
33	9.0	9.3
34	8.3	8.5
35	7.6	7.8
36	7.1	7.2
37	6.6	6.7
38	6.1	6.2
39	5.7	5.8
40	5.3	5.4
41	5.0	5.0
42	4.7	4.7
43	4.4	4.5
44	4.2	4.2
45	3.9	4.0
46	3.7	3.7
47	3.5	3.6
48	3.3	3.4
49	3.2	3.2
50	3.0	3.1
51	2.9	2.9
52	2.8	2.8
53	2.6	2.7
54	2.5	2.5
55	2.4	2.4
56	2.3	2.3
57	2.2	2.2
58	2.1	2.2
59	2.1	2.1

Continued on next page

Table E-1 – Continued from previous page

Dist (feet)	Submarine Export Cable: Buried Magnetic Field Maximum (mG)	Submarine Export Cable: Surface Laid Magnetic Field Maximum (mG)
60	2.0	2.0
61	1.9	1.9
62	1.9	1.9
63	1.8	1.8
64	1.7	1.7
65	1.7	1.7
66	1.6	1.6
67	1.6	1.6
68	1.5	1.5
69	1.5	1.5
70	1.4	1.4
71	1.4	1.4
72	1.3	1.3
73	1.3	1.3
74	1.3	1.3
75	1.2	1.2
76	1.2	1.2
77	1.2	1.2
78	1.1	1.1
79	1.1	1.1
80	1.1	1.1
81	1.0	1.0
82	1.0	1.0
83	1.0	1.0
84	1.0	1.0
85	0.9	0.9
86	0.9	0.9
87	0.9	0.9
88	0.9	0.9
89	0.9	0.9
90	0.8	0.8
91	0.8	0.8
92	0.8	0.8
93	0.8	0.8
94	0.8	0.8
95	0.8	0.8
96	0.7	0.7
97	0.7	0.7
98	0.7	0.7
99	0.7	0.7
100	0.7	0.7
101	0.7	0.7
102	0.6	0.6
103	0.6	0.6
104	0.6	0.6

Continued on next page

Table E-1 – Continued from previous page

Dist (feet)	Submarine Export Cable: Buried Magnetic Field Maximum (mG)	Submarine Export Cable: Surface Laid Magnetic Field Maximum (mG)
105	0.6	0.6
106	0.6	0.6
107	0.6	0.6
108	0.6	0.6
109	0.6	0.6
110	0.6	0.6
111	0.5	0.5
112	0.5	0.5
113	0.5	0.5
114	0.5	0.5
115	0.5	0.5
116	0.5	0.5
117	0.5	0.5
118	0.5	0.5
119	0.5	0.5
120	0.5	0.5
121	0.5	0.5
122	0.4	0.4
123	0.4	0.4
124	0.4	0.4
125	0.4	0.4
126	0.4	0.4
127	0.4	0.4
128	0.4	0.4
129	0.4	0.4
130	0.4	0.4
131	0.4	0.4
132	0.4	0.4
133	0.4	0.4
134	0.4	0.4
135	0.4	0.4
136	0.4	0.4
137	0.4	0.4
138	0.3	0.3
139	0.3	0.3
140	0.3	0.3
141	0.3	0.3
142	0.3	0.3
143	0.3	0.3
144	0.3	0.3
145	0.3	0.3
146	0.3	0.3
147	0.3	0.3
148	0.3	0.3
149	0.3	0.3

Continued on next page

Table E-1 – Continued from previous page

Dist (feet)	Submarine Export Cable: Buried Magnetic Field Maximum (mG)	Submarine Export Cable: Surface Laid Magnetic Field Maximum (mG)
150	0.3	0.3
151	0.3	0.3
152	0.3	0.3
153	0.3	0.3
154	0.3	0.3
155	0.3	0.3
156	0.3	0.3
157	0.3	0.3
158	0.3	0.3
159	0.3	0.3
160	0.3	0.3
161	0.3	0.2
162	0.2	0.2
163	0.2	0.2
164	0.2	0.2
165	0.2	0.2
166	0.2	0.2
167	0.2	0.2
168	0.2	0.2
169	0.2	0.2
170	0.2	0.2
171	0.2	0.2
172	0.2	0.2
173	0.2	0.2
174	0.2	0.2
175	0.2	0.2
176	0.2	0.2
177	0.2	0.2
178	0.2	0.2
179	0.2	0.2
180	0.2	0.2
181	0.2	0.2
182	0.2	0.2
183	0.2	0.2
184	0.2	0.2
185	0.2	0.2
186	0.2	0.2
187	0.2	0.2
188	0.2	0.2
189	0.2	0.2
190	0.2	0.2
191	0.2	0.2
192	0.2	0.2
193	0.2	0.2
194	0.2	0.2

Continued on next page

Table E-1 – Continued from previous page

Dist (feet)	Submarine Export Cable: Buried Magnetic Field Maximum (mG)	Submarine Export Cable: Surface Laid Magnetic Field Maximum (mG)
195	0.2	0.2
196	0.2	0.2
197	0.2	0.2
198	0.2	0.2
199	0.2	0.2
200	0.2	0.2
201	0.2	0.2
202	0.1	0.1
203	0.1	0.1
204	0.1	0.1
205	0.1	0.1
206	0.1	0.1
207	0.1	0.1
208	0.1	0.1
209	0.1	0.1
210	0.1	0.1
211	0.1	0.1
212	0.1	0.1
213	0.1	0.1
214	0.1	0.1
215	0.1	0.1
216	0.1	0.1
217	0.1	0.1
218	0.1	0.1
219	0.1	0.1
220	0.1	0.1
221	0.1	0.1
222	0.1	0.1
223	0.1	0.1
224	0.1	0.1
225	0.1	0.1
226	0.1	0.1
227	0.1	0.1
228	0.1	0.1
229	0.1	0.1
230	0.1	0.1
231	0.1	0.1
232	0.1	0.1
233	0.1	0.1
234	0.1	0.1
235	0.1	0.1
236	0.1	0.1
237	0.1	0.1
238	0.1	0.1
239	<0.1	<0.1

Continued on next page

Table E-1 – Continued from previous page

Dist (feet)	Submarine Export Cable: Buried Magnetic Field Maximum (mG)	Submarine Export Cable: Surface Laid Magnetic Field Maximum (mG)
240	<0.1	<0.1
241	<0.1	<0.1
242	<0.1	<0.1
243	<0.1	<0.1
244	<0.1	<0.1
245	<0.1	<0.1
246	<0.1	<0.1
247	<0.1	<0.1
248	<0.1	<0.1
249	<0.1	<0.1
250	<0.1	<0.1
251	<0.1	<0.1
252	<0.1	<0.1
253	<0.1	<0.1
254	<0.1	<0.1
255	<0.1	<0.1
256	<0.1	<0.1
257	<0.1	<0.1
258	<0.1	<0.1
259	<0.1	<0.1
260	<0.1	<0.1
261	<0.1	<0.1
262	<0.1	<0.1
263	<0.1	<0.1
264	<0.1	<0.1
265	<0.1	<0.1
266	<0.1	<0.1
267	<0.1	<0.1
268	<0.1	<0.1
269	<0.1	<0.1
270	<0.1	<0.1
271	<0.1	<0.1
272	<0.1	<0.1
273	<0.1	<0.1
274	<0.1	<0.1
275	<0.1	<0.1
276	<0.1	<0.1
277	<0.1	<0.1
278	<0.1	<0.1
279	<0.1	<0.1
280	<0.1	<0.1
281	<0.1	<0.1
282	<0.1	<0.1
283	<0.1	<0.1
284	<0.1	<0.1

Continued on next page

Table E-1 – Continued from previous page

Dist (feet)	Submarine Export Cable: Buried Magnetic Field Maximum (mG)	Submarine Export Cable: Surface Laid Magnetic Field Maximum (mG)
285	<0.1	<0.1
286	<0.1	<0.1
287	<0.1	<0.1
288	<0.1	<0.1
289	<0.1	<0.1
290	<0.1	<0.1
291	<0.1	<0.1
292	<0.1	<0.1
293	<0.1	<0.1
294	<0.1	<0.1
295	<0.1	<0.1
296	<0.1	<0.1
297	<0.1	<0.1
298	<0.1	<0.1
299	<0.1	<0.1
300	<0.1	<0.1

Table E-2. Calculated magnetic field levels for Onshore Cables in Double-Circuit Duct Bank, Road Crossing, and Cable Bridge Configurations

Dist (feet)	Duct Bank Magnetic Field Maximum (mG)	Road Crossing Magnetic Field Maximum (mG)	Cable Bridge Magnetic Field Maximum (mG)
-300	<0.1	<0.1	<0.1
-299	<0.1	<0.1	<0.1
-298	<0.1	<0.1	<0.1
-297	<0.1	<0.1	<0.1
-296	<0.1	<0.1	<0.1
-295	<0.1	<0.1	<0.1
-294	<0.1	<0.1	<0.1
-293	<0.1	<0.1	<0.1
-292	<0.1	<0.1	<0.1
-291	<0.1	<0.1	<0.1
-290	<0.1	<0.1	<0.1
-289	<0.1	<0.1	<0.1
-288	<0.1	<0.1	<0.1
-287	<0.1	<0.1	<0.1
-286	<0.1	<0.1	<0.1
-285	<0.1	<0.1	<0.1
-284	<0.1	<0.1	<0.1
-283	<0.1	<0.1	<0.1
-282	<0.1	<0.1	<0.1
-281	<0.1	<0.1	<0.1
-280	<0.1	<0.1	<0.1
-279	<0.1	<0.1	<0.1
-278	<0.1	<0.1	<0.1
-277	<0.1	<0.1	<0.1
-276	<0.1	<0.1	<0.1
-275	<0.1	<0.1	<0.1
-274	<0.1	<0.1	<0.1
-273	<0.1	<0.1	<0.1
-272	<0.1	<0.1	<0.1
-271	<0.1	<0.1	<0.1
-270	<0.1	<0.1	<0.1
-269	<0.1	<0.1	<0.1
-268	<0.1	<0.1	<0.1
-267	<0.1	<0.1	<0.1
-266	<0.1	<0.1	<0.1
-265	<0.1	<0.1	<0.1
-264	<0.1	<0.1	<0.1
-263	<0.1	<0.1	<0.1
-262	<0.1	<0.1	<0.1
-261	<0.1	0.1	<0.1
-260	0.1	0.1	<0.1
-259	0.1	0.1	<0.1
-258	0.1	0.1	<0.1

Continued on next page

Table E-2 – Continued from previous page

Dist (feet)	Duct Bank Magnetic Field Maximum (mG)	Road Crossing Magnetic Field Maximum (mG)	Cable Bridge Magnetic Field Maximum (mG)
-257	0.1	0.1	<0.1
-256	0.1	0.1	<0.1
-255	0.1	0.1	<0.1
-254	0.1	0.1	<0.1
-253	0.1	0.1	<0.1
-252	0.1	0.1	<0.1
-251	0.1	0.1	<0.1
-250	0.1	0.1	<0.1
-249	0.1	0.1	<0.1
-248	0.1	0.1	<0.1
-247	0.1	0.1	<0.1
-246	0.1	0.1	<0.1
-245	0.1	0.1	<0.1
-244	0.1	0.1	<0.1
-243	0.1	0.1	<0.1
-242	0.1	0.1	<0.1
-241	0.1	0.1	<0.1
-240	0.1	0.1	<0.1
-239	0.1	0.1	<0.1
-238	0.1	0.1	<0.1
-237	0.1	0.1	<0.1
-236	0.1	0.1	<0.1
-235	0.1	0.1	<0.1
-234	0.1	0.1	<0.1
-233	0.1	0.1	<0.1
-232	0.1	0.1	<0.1
-231	0.1	0.1	<0.1
-230	0.1	0.1	<0.1
-229	0.1	0.1	<0.1
-228	0.1	0.1	<0.1
-227	0.1	0.1	<0.1
-226	0.1	0.1	<0.1
-225	0.1	0.1	<0.1
-224	0.1	0.1	<0.1
-223	0.1	0.1	<0.1
-222	0.1	0.1	<0.1
-221	0.1	0.1	<0.1
-220	0.1	0.1	<0.1
-219	0.1	0.1	<0.1
-218	0.1	0.1	<0.1
-217	0.1	0.1	<0.1
-216	0.1	0.1	<0.1
-215	0.1	0.1	<0.1
-214	0.1	0.1	<0.1
-213	0.1	0.2	<0.1

Continued on next page

Table E-2 – Continued from previous page

Dist (feet)	Duct Bank Magnetic Field Maximum (mG)	Road Crossing Magnetic Field Maximum (mG)	Cable Bridge Magnetic Field Maximum (mG)
-212	0.2	0.2	<0.1
-211	0.2	0.2	<0.1
-210	0.2	0.2	<0.1
-209	0.2	0.2	<0.1
-208	0.2	0.2	<0.1
-207	0.2	0.2	<0.1
-206	0.2	0.2	<0.1
-205	0.2	0.2	<0.1
-204	0.2	0.2	<0.1
-203	0.2	0.2	<0.1
-202	0.2	0.2	<0.1
-201	0.2	0.2	<0.1
-200	0.2	0.2	<0.1
-199	0.2	0.2	<0.1
-198	0.2	0.2	<0.1
-197	0.2	0.2	<0.1
-196	0.2	0.2	<0.1
-195	0.2	0.2	<0.1
-194	0.2	0.2	<0.1
-193	0.2	0.2	<0.1
-192	0.2	0.2	<0.1
-191	0.2	0.2	<0.1
-190	0.2	0.2	<0.1
-189	0.2	0.2	<0.1
-188	0.2	0.2	<0.1
-187	0.2	0.2	<0.1
-186	0.2	0.2	<0.1
-185	0.2	0.2	<0.1
-184	0.2	0.2	<0.1
-183	0.2	0.2	<0.1
-182	0.2	0.2	<0.1
-181	0.2	0.2	<0.1
-180	0.2	0.2	<0.1
-179	0.2	0.2	<0.1
-178	0.2	0.2	<0.1
-177	0.2	0.2	<0.1
-176	0.2	0.2	<0.1
-175	0.2	0.2	<0.1
-174	0.2	0.2	<0.1
-173	0.2	0.2	<0.1
-172	0.2	0.2	0.1
-171	0.2	0.2	0.1
-170	0.2	0.2	0.1
-169	0.2	0.2	0.1
-168	0.2	0.2	0.1

Continued on next page

Table E-2 – Continued from previous page

Dist (feet)	Duct Bank Magnetic Field Maximum (mG)	Road Crossing Magnetic Field Maximum (mG)	Cable Bridge Magnetic Field Maximum (mG)
-167	0.2	0.2	0.1
-166	0.2	0.2	0.1
-165	0.2	0.3	0.1
-164	0.3	0.3	0.1
-163	0.3	0.3	0.1
-162	0.3	0.3	0.1
-161	0.3	0.3	0.1
-160	0.3	0.3	0.1
-159	0.3	0.3	0.1
-158	0.3	0.3	0.1
-157	0.3	0.3	0.1
-156	0.3	0.3	0.1
-155	0.3	0.3	0.1
-154	0.3	0.3	0.1
-153	0.3	0.3	0.1
-152	0.3	0.3	0.1
-151	0.3	0.3	0.1
-150	0.3	0.3	0.1
-149	0.3	0.3	0.1
-148	0.3	0.3	0.1
-147	0.3	0.3	0.1
-146	0.3	0.3	0.1
-145	0.3	0.3	0.1
-144	0.3	0.3	0.1
-143	0.3	0.3	0.1
-142	0.3	0.3	0.1
-141	0.3	0.3	0.1
-140	0.3	0.4	0.2
-139	0.3	0.4	0.2
-138	0.4	0.4	0.2
-137	0.4	0.4	0.2
-136	0.4	0.4	0.2
-135	0.4	0.4	0.2
-134	0.4	0.4	0.2
-133	0.4	0.4	0.2
-132	0.4	0.4	0.2
-131	0.4	0.4	0.2
-130	0.4	0.4	0.2
-129	0.4	0.4	0.2
-128	0.4	0.4	0.2
-127	0.4	0.4	0.2
-126	0.4	0.4	0.2
-125	0.4	0.4	0.2
-124	0.4	0.5	0.2
-123	0.4	0.5	0.2

Continued on next page

Table E-2 – Continued from previous page

Dist (feet)	Duct Bank Magnetic Field Maximum (mG)	Road Crossing Magnetic Field Maximum (mG)	Cable Bridge Magnetic Field Maximum (mG)
-122	0.5	0.5	0.2
-121	0.5	0.5	0.2
-120	0.5	0.5	0.2
-119	0.5	0.5	0.2
-118	0.5	0.5	0.2
-117	0.5	0.5	0.2
-116	0.5	0.5	0.2
-115	0.5	0.5	0.2
-114	0.5	0.5	0.2
-113	0.5	0.5	0.2
-112	0.5	0.6	0.2
-111	0.5	0.6	0.2
-110	0.6	0.6	0.2
-109	0.6	0.6	0.2
-108	0.6	0.6	0.3
-107	0.6	0.6	0.3
-106	0.6	0.6	0.3
-105	0.6	0.6	0.3
-104	0.6	0.7	0.3
-103	0.6	0.7	0.3
-102	0.6	0.7	0.3
-101	0.7	0.7	0.3
-100	0.7	0.7	0.3
-99	0.7	0.7	0.3
-98	0.7	0.7	0.3
-97	0.7	0.8	0.3
-96	0.7	0.8	0.3
-95	0.7	0.8	0.3
-94	0.8	0.8	0.3
-93	0.8	0.8	0.3
-92	0.8	0.8	0.3
-91	0.8	0.9	0.4
-90	0.8	0.9	0.4
-89	0.9	0.9	0.4
-88	0.9	0.9	0.4
-87	0.9	0.9	0.4
-86	0.9	1.0	0.4
-85	0.9	1.0	0.4
-84	1.0	1.0	0.4
-83	1.0	1.0	0.4
-82	1.0	1.1	0.4
-81	1.0	1.1	0.4
-80	1.1	1.1	0.5
-79	1.1	1.2	0.5
-78	1.1	1.2	0.5

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Table E-2 – Continued from previous page

Dist (feet)	Duct Bank Magnetic Field Maximum (mG)	Road Crossing Magnetic Field Maximum (mG)	Cable Bridge Magnetic Field Maximum (mG)
-77	1.1	1.2	0.5
-76	1.2	1.3	0.5
-75	1.2	1.3	0.5
-74	1.2	1.3	0.5
-73	1.3	1.4	0.5
-72	1.3	1.4	0.6
-71	1.3	1.5	0.6
-70	1.4	1.5	0.6
-69	1.4	1.5	0.6
-68	1.4	1.6	0.6
-67	1.5	1.6	0.6
-66	1.5	1.7	0.7
-65	1.6	1.8	0.7
-64	1.6	1.8	0.7
-63	1.7	1.9	0.7
-62	1.7	1.9	0.8
-61	1.8	2.0	0.8
-60	1.9	2.1	0.8
-59	1.9	2.2	0.8
-58	2.0	2.3	0.9
-57	2.1	2.3	0.9
-56	2.1	2.4	0.9
-55	2.2	2.5	0.9
-54	2.3	2.6	1.0
-53	2.4	2.7	1.0
-52	2.5	2.9	1.1
-51	2.6	3.0	1.1
-50	2.7	3.1	1.1
-49	2.8	3.3	1.2
-48	2.9	3.4	1.2
-47	3.0	3.6	1.3
-46	3.1	3.8	1.3
-45	3.3	4.0	1.4
-44	3.4	4.2	1.5
-43	3.6	4.4	1.5
-42	3.7	4.7	1.6
-41	3.9	4.9	1.7
-40	4.1	5.2	1.7
-39	4.3	5.6	1.8
-38	4.5	5.9	1.9
-37	4.7	6.3	2.0
-36	5.0	6.7	2.1
-35	5.3	7.2	2.2
-34	5.6	7.7	2.3
-33	5.9	8.3	2.5

Continued on next page

Table E-2 – Continued from previous page

Dist (feet)	Duct Bank Magnetic Field Maximum (mG)	Road Crossing Magnetic Field Maximum (mG)	Cable Bridge Magnetic Field Maximum (mG)
-32	6.2	9.0	2.6
-31	6.6	9.7	2.8
-30	7.0	10.5	2.9
-29	7.5	11.4	3.1
-28	8.0	12.5	3.3
-27	8.5	13.7	3.5
-26	9.1	15.0	3.7
-25	9.8	16.6	4.0
-24	10.5	18.4	4.3
-23	11.4	20.5	4.6
-22	12.3	22.9	4.9
-21	13.3	25.7	5.3
-20	14.4	29.0	5.7
-19	15.7	32.9	6.2
-18	17.2	37.4	6.7
-17	18.8	42.6	7.2
-16	20.7	48.7	7.8
-15	22.8	55.6	8.5
-14	25.2	63.2	9.2
-13	27.9	71.3	10.0
-12	30.9	79.6	10.9
-11	34.4	87.5	11.9
-10	38.2	94.1	12.9
-9	42.4	98.9	14.0
-8	46.9	101.3	15.2
-7	51.4	101.5	16.3
-6	55.8	99.6	17.5
-5	59.6	96.5	18.6
-4	62.2	92.9	19.6
-3	63.4	89.3	20.5
-2	63.1	86.3	21.2
-1	62.2	84.2	21.6
0	61.7	83.4	21.7
1	62.2	84.2	21.6
2	63.1	86.3	21.2
3	63.4	89.3	20.5
4	62.2	92.9	19.6
5	59.6	96.5	18.6
6	55.8	99.6	17.5
7	51.4	101.5	16.3
8	46.9	101.3	15.2
9	42.4	98.9	14.0
10	38.2	94.1	12.9
11	34.4	87.5	11.9
12	30.9	79.6	10.9

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Table E-2 – Continued from previous page

Dist (feet)	Duct Bank Magnetic Field Maximum (mG)	Road Crossing Magnetic Field Maximum (mG)	Cable Bridge Magnetic Field Maximum (mG)
13	27.9	71.3	10.0
14	25.2	63.2	9.2
15	22.8	55.6	8.5
16	20.7	48.7	7.8
17	18.8	42.6	7.2
18	17.2	37.4	6.7
19	15.7	32.9	6.2
20	14.4	29.0	5.7
21	13.3	25.7	5.3
22	12.3	22.9	4.9
23	11.4	20.5	4.6
24	10.5	18.4	4.3
25	9.8	16.6	4.0
26	9.1	15.0	3.7
27	8.5	13.7	3.5
28	8.0	12.5	3.3
29	7.5	11.4	3.1
30	7.0	10.5	2.9
31	6.6	9.7	2.8
32	6.2	9.0	2.6
33	5.9	8.3	2.5
34	5.6	7.7	2.3
35	5.3	7.2	2.2
36	5.0	6.7	2.1
37	4.7	6.3	2.0
38	4.5	5.9	1.9
39	4.3	5.6	1.8
40	4.1	5.2	1.7
41	3.9	4.9	1.7
42	3.7	4.7	1.6
43	3.6	4.4	1.5
44	3.4	4.2	1.5
45	3.3	4.0	1.4
46	3.1	3.8	1.3
47	3.0	3.6	1.3
48	2.9	3.4	1.2
49	2.8	3.3	1.2
50	2.7	3.1	1.1
51	2.6	3.0	1.1
52	2.5	2.9	1.1
53	2.4	2.7	1.0
54	2.3	2.6	1.0
55	2.2	2.5	0.9
56	2.1	2.4	0.9
57	2.1	2.3	0.9

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Table E-2 – Continued from previous page

Dist (feet)	Duct Bank Magnetic Field Maximum (mG)	Road Crossing Magnetic Field Maximum (mG)	Cable Bridge Magnetic Field Maximum (mG)
58	2.0	2.3	0.9
59	1.9	2.2	0.8
60	1.9	2.1	0.8
61	1.8	2.0	0.8
62	1.7	1.9	0.8
63	1.7	1.9	0.7
64	1.6	1.8	0.7
65	1.6	1.8	0.7
66	1.5	1.7	0.7
67	1.5	1.6	0.6
68	1.4	1.6	0.6
69	1.4	1.5	0.6
70	1.4	1.5	0.6
71	1.3	1.5	0.6
72	1.3	1.4	0.6
73	1.3	1.4	0.5
74	1.2	1.3	0.5
75	1.2	1.3	0.5
76	1.2	1.3	0.5
77	1.1	1.2	0.5
78	1.1	1.2	0.5
79	1.1	1.2	0.5
80	1.1	1.1	0.5
81	1.0	1.1	0.4
82	1.0	1.1	0.4
83	1.0	1.0	0.4
84	1.0	1.0	0.4
85	0.9	1.0	0.4
86	0.9	1.0	0.4
87	0.9	0.9	0.4
88	0.9	0.9	0.4
89	0.9	0.9	0.4
90	0.8	0.9	0.4
91	0.8	0.9	0.4
92	0.8	0.8	0.3
93	0.8	0.8	0.3
94	0.8	0.8	0.3
95	0.7	0.8	0.3
96	0.7	0.8	0.3
97	0.7	0.8	0.3
98	0.7	0.7	0.3
99	0.7	0.7	0.3
100	0.7	0.7	0.3
101	0.7	0.7	0.3
102	0.6	0.7	0.3

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Table E-2 – Continued from previous page

Dist (feet)	Duct Bank Magnetic Field Maximum (mG)	Road Crossing Magnetic Field Maximum (mG)	Cable Bridge Magnetic Field Maximum (mG)
103	0.6	0.7	0.3
104	0.6	0.7	0.3
105	0.6	0.6	0.3
106	0.6	0.6	0.3
107	0.6	0.6	0.3
108	0.6	0.6	0.3
109	0.6	0.6	0.2
110	0.6	0.6	0.2
111	0.5	0.6	0.2
112	0.5	0.6	0.2
113	0.5	0.5	0.2
114	0.5	0.5	0.2
115	0.5	0.5	0.2
116	0.5	0.5	0.2
117	0.5	0.5	0.2
118	0.5	0.5	0.2
119	0.5	0.5	0.2
120	0.5	0.5	0.2
121	0.5	0.5	0.2
122	0.5	0.5	0.2
123	0.4	0.5	0.2
124	0.4	0.5	0.2
125	0.4	0.4	0.2
126	0.4	0.4	0.2
127	0.4	0.4	0.2
128	0.4	0.4	0.2
129	0.4	0.4	0.2
130	0.4	0.4	0.2
131	0.4	0.4	0.2
132	0.4	0.4	0.2
133	0.4	0.4	0.2
134	0.4	0.4	0.2
135	0.4	0.4	0.2
136	0.4	0.4	0.2
137	0.4	0.4	0.2
138	0.4	0.4	0.2
139	0.3	0.4	0.2
140	0.3	0.4	0.2
141	0.3	0.3	0.1
142	0.3	0.3	0.1
143	0.3	0.3	0.1
144	0.3	0.3	0.1
145	0.3	0.3	0.1
146	0.3	0.3	0.1
147	0.3	0.3	0.1

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Table E-2 – Continued from previous page

Dist (feet)	Duct Bank Magnetic Field Maximum (mG)	Road Crossing Magnetic Field Maximum (mG)	Cable Bridge Magnetic Field Maximum (mG)
148	0.3	0.3	0.1
149	0.3	0.3	0.1
150	0.3	0.3	0.1
151	0.3	0.3	0.1
152	0.3	0.3	0.1
153	0.3	0.3	0.1
154	0.3	0.3	0.1
155	0.3	0.3	0.1
156	0.3	0.3	0.1
157	0.3	0.3	0.1
158	0.3	0.3	0.1
159	0.3	0.3	0.1
160	0.3	0.3	0.1
161	0.3	0.3	0.1
162	0.3	0.3	0.1
163	0.3	0.3	0.1
164	0.3	0.3	0.1
165	0.2	0.3	0.1
166	0.2	0.2	0.1
167	0.2	0.2	0.1
168	0.2	0.2	0.1
169	0.2	0.2	0.1
170	0.2	0.2	0.1
171	0.2	0.2	0.1
172	0.2	0.2	0.1
173	0.2	0.2	<0.1
174	0.2	0.2	<0.1
175	0.2	0.2	<0.1
176	0.2	0.2	<0.1
177	0.2	0.2	<0.1
178	0.2	0.2	<0.1
179	0.2	0.2	<0.1
180	0.2	0.2	<0.1
181	0.2	0.2	<0.1
182	0.2	0.2	<0.1
183	0.2	0.2	<0.1
184	0.2	0.2	<0.1
185	0.2	0.2	<0.1
186	0.2	0.2	<0.1
187	0.2	0.2	<0.1
188	0.2	0.2	<0.1
189	0.2	0.2	<0.1
190	0.2	0.2	<0.1
191	0.2	0.2	<0.1
192	0.2	0.2	<0.1

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Table E-2 – Continued from previous page

Dist (feet)	Duct Bank Magnetic Field Maximum (mG)	Road Crossing Magnetic Field Maximum (mG)	Cable Bridge Magnetic Field Maximum (mG)
193	0.2	0.2	<0.1
194	0.2	0.2	<0.1
195	0.2	0.2	<0.1
196	0.2	0.2	<0.1
197	0.2	0.2	<0.1
198	0.2	0.2	<0.1
199	0.2	0.2	<0.1
200	0.2	0.2	<0.1
201	0.2	0.2	<0.1
202	0.2	0.2	<0.1
203	0.2	0.2	<0.1
204	0.2	0.2	<0.1
205	0.2	0.2	<0.1
206	0.2	0.2	<0.1
207	0.2	0.2	<0.1
208	0.2	0.2	<0.1
209	0.2	0.2	<0.1
210	0.2	0.2	<0.1
211	0.2	0.2	<0.1
212	0.2	0.2	<0.1
213	0.1	0.2	<0.1
214	0.1	0.1	<0.1
215	0.1	0.1	<0.1
216	0.1	0.1	<0.1
217	0.1	0.1	<0.1
218	0.1	0.1	<0.1
219	0.1	0.1	<0.1
220	0.1	0.1	<0.1
221	0.1	0.1	<0.1
222	0.1	0.1	<0.1
223	0.1	0.1	<0.1
224	0.1	0.1	<0.1
225	0.1	0.1	<0.1
226	0.1	0.1	<0.1
227	0.1	0.1	<0.1
228	0.1	0.1	<0.1
229	0.1	0.1	<0.1
230	0.1	0.1	<0.1
231	0.1	0.1	<0.1
232	0.1	0.1	<0.1
233	0.1	0.1	<0.1
234	0.1	0.1	<0.1
235	0.1	0.1	<0.1
236	0.1	0.1	<0.1
237	0.1	0.1	<0.1

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Table E-2 – Continued from previous page

Dist (feet)	Duct Bank Magnetic Field Maximum (mG)	Road Crossing Magnetic Field Maximum (mG)	Cable Bridge Magnetic Field Maximum (mG)
238	0.1	0.1	<0.1
239	0.1	0.1	<0.1
240	0.1	0.1	<0.1
241	0.1	0.1	<0.1
242	0.1	0.1	<0.1
243	0.1	0.1	<0.1
244	0.1	0.1	<0.1
245	0.1	0.1	<0.1
246	0.1	0.1	<0.1
247	0.1	0.1	<0.1
248	0.1	0.1	<0.1
249	0.1	0.1	<0.1
250	0.1	0.1	<0.1
251	0.1	0.1	<0.1
252	0.1	0.1	<0.1
253	0.1	0.1	<0.1
254	0.1	0.1	<0.1
255	0.1	0.1	<0.1
256	0.1	0.1	<0.1
257	0.1	0.1	<0.1
258	0.1	0.1	<0.1
259	0.1	0.1	<0.1
260	0.1	0.1	<0.1
261	<0.1	0.1	<0.1
262	<0.1	<0.1	<0.1
263	<0.1	<0.1	<0.1
264	<0.1	<0.1	<0.1
265	<0.1	<0.1	<0.1
266	<0.1	<0.1	<0.1
267	<0.1	<0.1	<0.1
268	<0.1	<0.1	<0.1
269	<0.1	<0.1	<0.1
270	<0.1	<0.1	<0.1
271	<0.1	<0.1	<0.1
272	<0.1	<0.1	<0.1
273	<0.1	<0.1	<0.1
274	<0.1	<0.1	<0.1
275	<0.1	<0.1	<0.1
276	<0.1	<0.1	<0.1
277	<0.1	<0.1	<0.1
278	<0.1	<0.1	<0.1
279	<0.1	<0.1	<0.1
280	<0.1	<0.1	<0.1
281	<0.1	<0.1	<0.1
282	<0.1	<0.1	<0.1

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Table E-2 – Continued from previous page

Dist (feet)	Duct Bank Magnetic Field Maximum (mG)	Road Crossing Magnetic Field Maximum (mG)	Cable Bridge Magnetic Field Maximum (mG)
283	<0.1	<0.1	<0.1
284	<0.1	<0.1	<0.1
285	<0.1	<0.1	<0.1
286	<0.1	<0.1	<0.1
287	<0.1	<0.1	<0.1
288	<0.1	<0.1	<0.1
289	<0.1	<0.1	<0.1
290	<0.1	<0.1	<0.1
291	<0.1	<0.1	<0.1
292	<0.1	<0.1	<0.1
293	<0.1	<0.1	<0.1
294	<0.1	<0.1	<0.1
295	<0.1	<0.1	<0.1
296	<0.1	<0.1	<0.1
297	<0.1	<0.1	<0.1
298	<0.1	<0.1	<0.1
299	<0.1	<0.1	<0.1
300	<0.1	<0.1	<0.1