EXCELSIOR ENERGY CENTER
ELECTRIC AND MAGNETIC FIELD (EMF) CALCULATION

Revision A

PRELIMINARY – NOT FOR CONSTRUCTION

Project No.: 13666-053

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ISSUE SUMMARY AND APPROVAL PAGE

This is to certify that this Electric and Magnetic Field (EMF) Calculation has been prepared, reviewed and approved in accordance with Sargent & Lundy's Standard Operating Procedure SOP-0405, which is based on ANSI/ISO/ASSQC Q9001 Quality Management Systems.

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EXECUTIVE SUMMARY

NextEra Energy Resources (NEER) (Owner) has requested Sargent & Lundy, L.L.C. (S&L) to provide engineering services for a 345kV transmission line tap line associated with the proposed Excelsior Energy Center. The project is located in Genesee County, New York; the line is less than 500 ft. The 345kV transmission line has one (1) cross section, as shown in the report below. The 34.5 kV collection cable maximum fields will be generated near the proposed collection substation and will have one (1) cross section.

As part of the deliverables, S&L will determine the electric and magnetic fields (EMF) for the Winter Normal ratings per the New York Independent System Operator (NYISO) Tie-line Rating Report. The calculation will be used to determine the maximum electric field (kV/m) and magnetic field (mG) within and at the edge of the right-of-way (ROW) for the transmission line and underground collection cross sections.

1.0 PURPOSE AND SCOPE

1.1 DESCRIPTION

The purpose of this calculation is to determine the electric and magnetic fields (EMF) for the ratings listed below and calculated per the New York Independent System Operator (NYISO) Tie-line Rating Report.

1.2 ELECTRIC AND MAGNETIC FIELD GUIDELINES

New York State Public Service Commission (NYPSC) set forth in Opinion and Order Determining Health and Safety Issues, Imposing Operating Conditions, and Authorizing, in Case 26520, Operation Pursuant to those Conditions No. 78-13 and Statement of Interim Policy on Magnetic Fields of Major Electric Transmission Facilities, NYPSC Cases 26529 and 26559, sets the guidance for electric and magnetic fields, respectively.

These opinions and cases set forth the requirement of the minimum electric and magnetic fields at the edge of the ROW. The electric fields strength by the proposed transmission line will not be greater than 1.6 kV/m at the edge of the ROW and measured, one meter (3.28 ft) above ground level, with the line at the rated voltage. The magnetic field strength by the proposed transmission line will not be greater than 200 mG at the edge of the ROW, measured at one meter (3.28 ft) above grade. The limits for the electric and magnetic field strength will adhere to the requirements set forth by the NYPSC [1]. The determination of the phase currents will be based on the Winter Normal rating from the NYISO Tie-line Rating Report. Finally, the conductor height will be calculated under normal conductor temperature (95°C).

2.0 DESIGN INPUTS

2.1 UNVERIFIED INPUTS

Table 1 - PROPOSED LINE CONDUCTOR PROPERTIES

Properties	Conductor	Overhead Shield Wire (OHSW)
Type	ACSR	EHS STEEL
Size	795 kcmil	3/8”
Stranding	26/7	7-Strand
Diameter (in)	1.107	.36
Conductor Cross Sectional Area (in^2)	0.7263	N/A
Weight (lbs/ft)	1.093	0.273
Rated Tensile Strength (lbs)	31,500	15,400
Sub-conductor Horizontal Spacing (in)	N/A	N/A
Resistance, DC, 20°C (Ω/1000 ft)	.0214	N/A
Resistance, AC, 75°C (Ω/1000 ft)	.0263	N/A

*Properties from General Cable

Table 2 - PROPOSED LINE UNDERGROUND CABLE PROPERTIES

Properties	Conductor
Type	XLPE
Size	1250 KCMIL
Stranding	N/A
Diameter (in)	2.458
Conductor Cross Sectional Area (in^2)	0.98186
Weight (lbs/ft)	~2.7

*Properties from General Cable

Table 3 - PROPOSED LINE RATING OUTPUT SUMMARY

Case	Rating Condition	Thermal Rating (Amperes)
1	NYISO – Winter – Normal	1500 (estimated)
2	NYISO – Winter – STE	1500 (estimated)
3	NYISO – Summer – Normal	1500 (estimated)
4	NYISO – Summer – STE	1500 (estimated)
5	Underground Cable – 1250 kcmil	669.40

Soil Conditions:

The geotechnical resisivity provided by the geotechnical report was calculated to be 73 Ω·m. The calculation utilized a conservative value of 100 Ω·m. The noted ground resistivity was then converted into the required ground conductivity input value as follows:

The inputs to the Bonneville Power Authority (BPA) program (version 3.1) require the ground conductivity to be entered (mmhos/m = mS/m). Therefore, the reciprocal of the ground resistivity of 100 Ω·m = the ground conductivity of 10.0 mS/m

Electric Field Shielding

Shield from objects was not considered as part of this calculation.

Conductor Phasing

Conductor Phasing for the typical steel monopole tangent structure, conductors A, B, and C are assumed to be on the top arm, middle arm, and lower arm, respectively. It is assumed that phasing will produce the highest electric and magnetic fields.

Conductor Midspan Height

For proposed lines, the conductor midspand height was assumed to be at worst case sag with conductor at a temperature of 203°F (95°C). For existing lines, the conductor midspan height was assumed to be at a minimum NESC clearance to ground.

SW Midspan Height

Shield wire midspan height was assumed to be at 75% of the conductor sag at average ambient temperature (49°F).

Ground Elevation

The ground elevation is less than 1000 ft and will be inputted as 0 ft based on the recommendation of the BPA program.

Existing Conductor Configuration

There are no existing cross sections for the existing NYPA 345 kV transmission line. The minimum clearance to ground for the 345 kV transmission lines is 28 ft.

Figure 1 - EXISTING CONFIGURATION

Cross Section 1

The proposed cross section consists of the 345kV transmission lines. The ROW width is 250 ft.

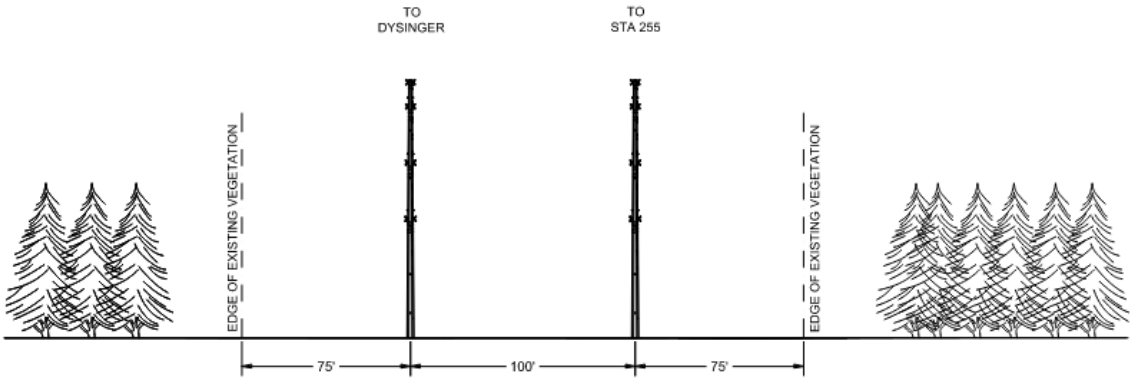


Figure 2 - PROPOSED CROSS SECTION 1

Cross Section 2

The proposed cross section consists of twelve (12) 34.5 kV underground cables for the collection system. The ROW width is 150 ft.

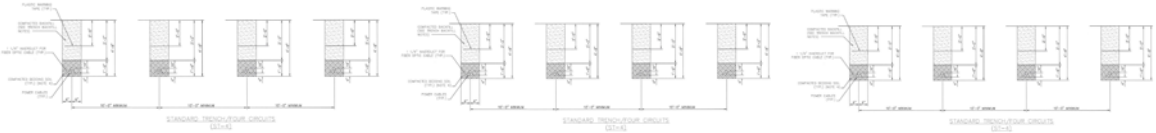


Figure 3 - PROPOSED CROSS SECTION 2 – UNDERGROUND CABLES

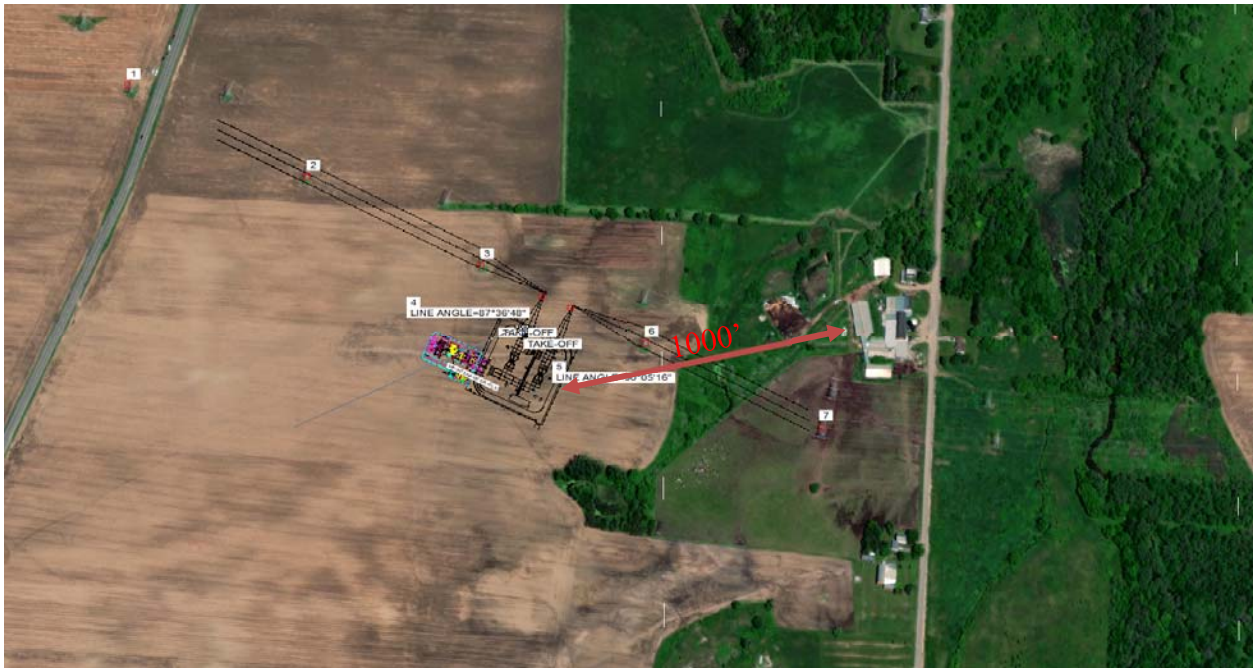


Figure 4 – PROPOSED SITE PLAN

3.0 RESULTS

4.1 EMF RESULTS TABLE

The EMF results shown are for the proposed 150' ROW by NextEra Energy Resources (NEER).

Table 4 - EMF RESULTS

Case Designation	EMF at Edge of ROW	NYPSC Criteria at Edge of ROW
Electric Field (kV/m)		
Existing ROW Cross Section 1	n/a	1.6 kV/m
Proposed ROW Cross Section 1 – Winter Normal	0.223	1.6 kV/m
Proposed ROW Cross Section 1 – Winter STE	0.223	1.6 kV/m
Proposed ROW Cross Section 1 – Summer Normal	0.223	1.6 kV/m
Proposed ROW Cross Section 1 – Summer STE	0.223	1.6 kV/m
Proposed Row Cross Section 2 -Maximum Load	N/A	N/A
Magnetic Field (mG)		
Existing ROW Cross Section 1	n/a	200 mG
Proposed ROW Cross Section 1 – Winter Normal	72.63	200 mG
Proposed ROW Cross Section 1 – Winter STE	72.63	200 mG
Proposed ROW Cross Section 1 – Summer Normal	72.63	200 mG
Proposed ROW Cross Section 1 – Summer STE	72.63	200 mG
Proposed ROW Cross Section 2 – Maximum Load	7.2	200 mG

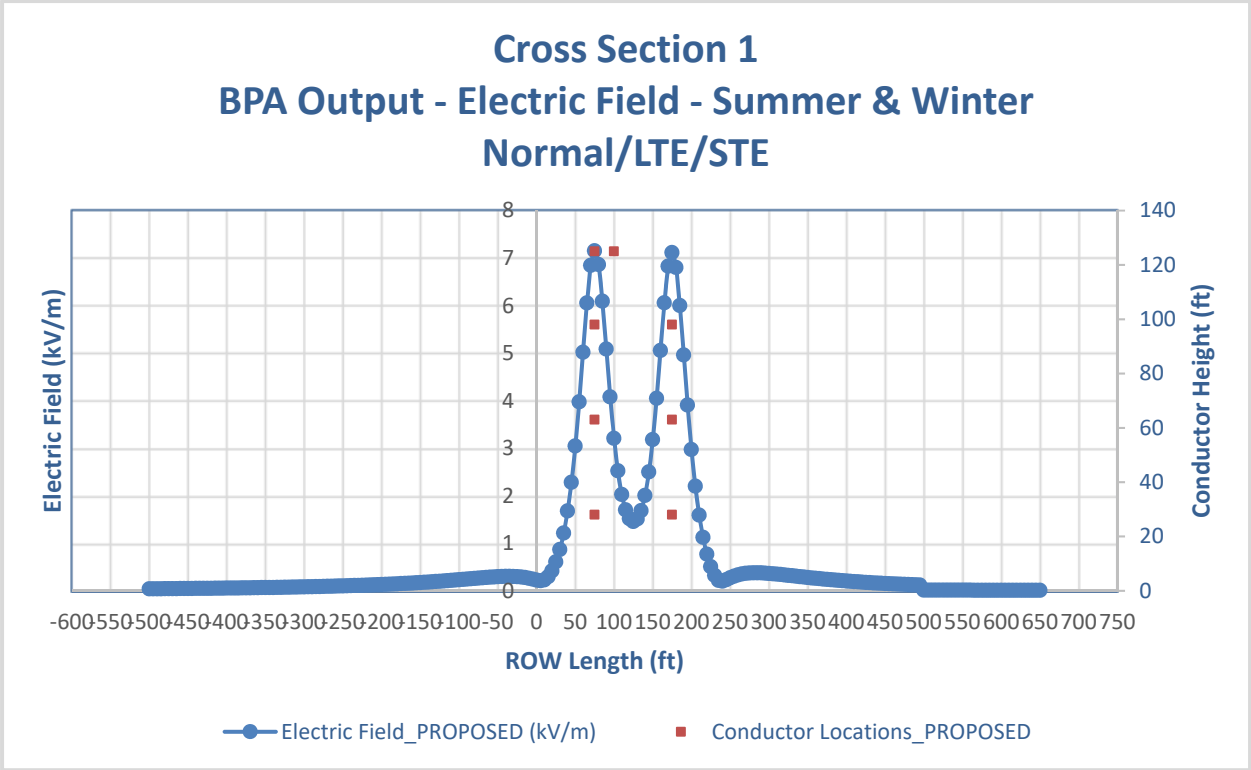
In conclusion, the results of the study show that the calculated electric and magnetic fields are acceptable when compared to the electric fields requirement of 1.6 kV/m, one meter (3.28 ft.) above ground level, and the magnetic field strength requirement is 200 mG, measured at one meter (3.28 ft.) above grade, at the existing NYPA and proposed Excelsior Energy Center transmission lines edge of ROW.

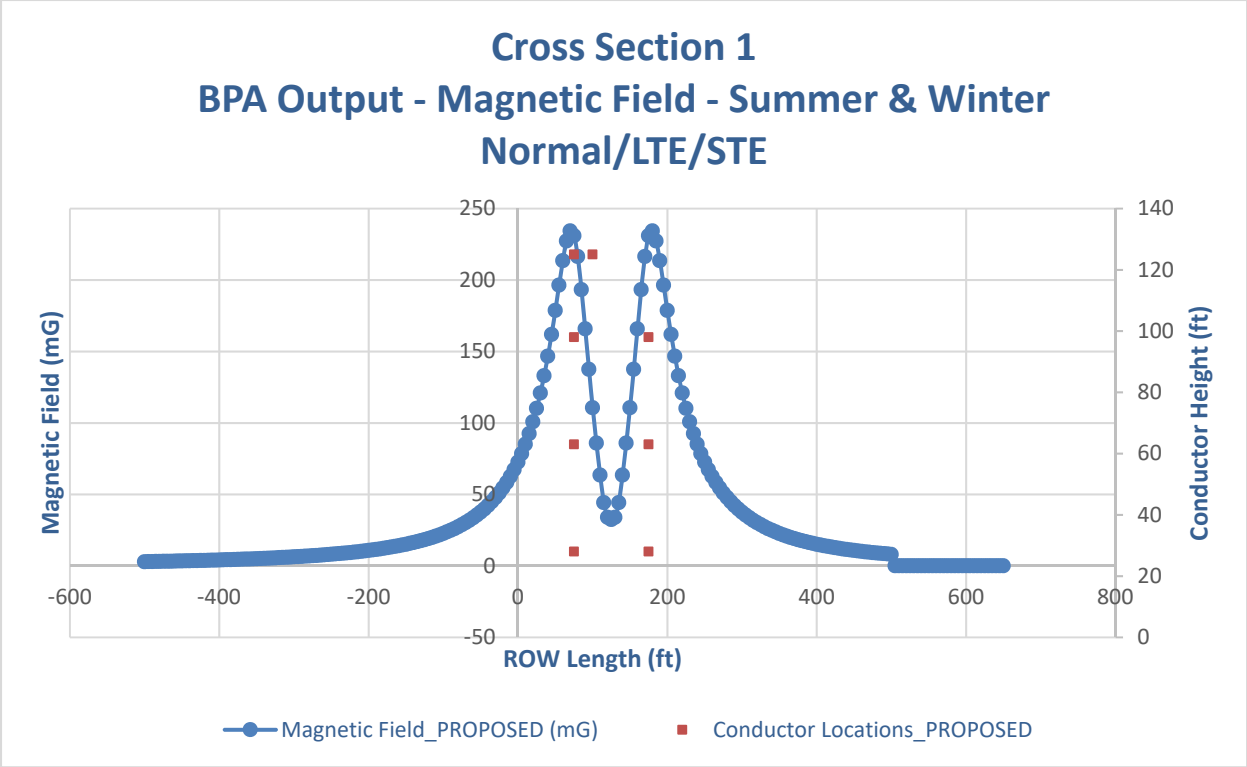
See Appendix A for the inputs and results of the (BPA) Corona and Field Effects computer programs.

Finally, Stipulation 35 – Section (d) – the study to evaluate potential induced voltages on Project Components located in proximity to high voltage electrical transmission facilities cannot be determined at this stage. The substation perimeter fence will be grounding in accordance to Institute of Electrical and Electronic Engineers (IEEE) standards and the design drawings. Adjacent fencing is not proposed at this time. Should fencing outside of the substation perimeter fence be required applicable codes and standards associated with the transmission line will be evaluated.

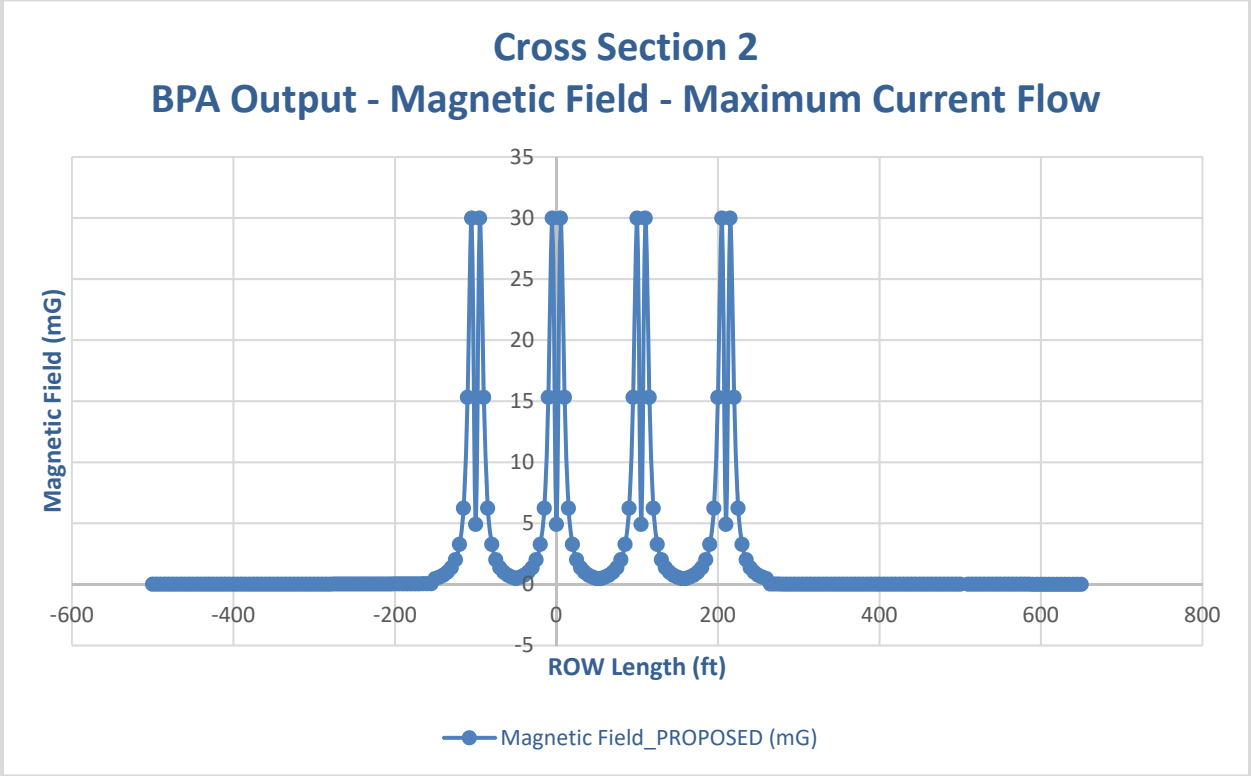
4.2 EMF PLOTS

Cross Section 1




Cross Section 1
BPA Output - Magnetic Field - Summer & Winter Normal/LTE/STE
Magnetic Field (mG)
Conductor Height (ft)
ROW Length (ft)
250
200
150
100
50
0
-50
140
120
100
80
60
40
20
0
-600
-400
-200
0
200
400
600
800
Magnetic Field_PROPOSED (mG)
Conductor Locations_PROPOSED

Cross Section 2



4.0 REFERENCES

1. STATE OF NEW YORK PUBLIC SERVICE COMMISSION CASES 26529 and 26559 - Proceeding on Motion of the Commission as to Regulations Regarding Electric and Magnetic Field Standards for Transmission Lines – Statement of Interim Policy on Magnetic Fields of Major Electric Transmission Facilities (Issued and Effective: September 11, 1990)

2. STATE OF NEW YORK PUBLIC SERVICE COMMISSION OPINION NO. 78-13 - Opinion and Order Determining Health and Safety Issues, Imposing Operating Conditions and Authorizing, in Case 26529, Operation Pursuant to those Conditions (Issued June 19, 1978)

3. New York Power Pool – Tie-Line Rating Task Force – Final Report on Tie-Line Rating (Approved November 1995)

4. EPRI AC Transmission Line Reference Book – 200 kV and Above, 2015 Edition (3002005659 Update November 2015)

5. NYISO 2016 Load & Capacity Data, “Gold Book” (Released April 2016)

6. National Electrical Safety Code (NESC) - 2017 Edition (C2-2017)

Appendix A: EMF Study (ROW Cross Sections 1 & 2)

MAGNETIC FLUX DENSITY [mG]
==========

Study Execution: : Excelsior Cable in Trench Energy (1250kcmil Center 11') Ampacity Study

X (feet)	Y=0.0 (feet) B(mG)	Y=1.0 (feet) B(mG)
-500	0.0046	0.0046
-495	0.0047	0.0047
-490	0.0048	0.0048
-485	0.0049	0.0049
-480	0.005	0.005
-475	0.0051	0.0051
-470	0.0052	0.0052
-465	0.0053	0.0053
-460	0.0055	0.0055
-455	0.0056	0.0056
-450	0.0057	0.0057
-445	0.0058	0.0058
-440	0.006	0.006
-435	0.0061	0.0061
-430	0.0062	0.0062
-425	0.0064	0.0064
-420	0.0066	0.0066
-415	0.0067	0.0067
-410	0.0069	0.0069
-405	0.007	0.007
-400	0.0072	0.0072
-395	0.0074	0.0074
-390	0.0076	0.0076
-385	0.0078	0.0078
-380	0.008	0.008
-375	0.0082	0.0082
-370	0.0084	0.0084
-365	0.0087	0.0087
-360	0.0089	0.0089
-355	0.0092	0.0092
-350	0.0094	0.0094
-345	0.0097	0.0097
-340	0.01	0.01

-335	0.0103	0.0103
-330	0.0106	0.0106
-325	0.0109	0.0109
-320	0.0113	0.0113
-315	0.0116	0.0116
-310	0.012	0.012
-305	0.0124	0.0124
-300	0.0128	0.0128
-295	0.0133	0.0133
-290	0.0137	0.0137
-285	0.0142	0.0142
-280	0.0147	0.0147
-275	0.0153	0.0153
-270	0.0159	0.0159
-265	0.0165	0.0165
-260	0.0171	0.0171
-255	0.0178	0.0178
-250	0.0185	0.0185
-245	0.0193	0.0193
-240	0.0201	0.0201
-235	0.0209	0.0209
-230	0.0219	0.0219
-225	0.0228	0.0228
-220	0.0239	0.0239
-215	0.025	0.025
-210	0.0262	0.0262
-205	0.0275	0.0275
-200	0.0289	0.0289
-195	0.0304	0.0304
-190	0.0321	0.032
-185	0.0338	0.0338
-180	0.0357	0.0357
-175	0.0378	0.0378
-170	0.0401	0.04
-165	0.0425	0.0425
-160	0.0452	0.0452
-155	0.0482	0.0482
-150	0.4726	0.0515
-145	0.5865	0.0551
-140	0.7475	0.0591
-135	0.9862	0.0636
-130	1.3628	0.0686
-125	2.0096	0.0742
-120	3.2676	0.0805
-115	6.2276	0.0877
-110	15.3098	0.0959
-105	29.9743	0.1052

-100	4.9127	0.1161
-95	29.9742	0.1287
-90	15.3098	0.1435
-85	6.2276	0.1609
-80	3.2676	0.1818
-75	2.0096	0.2071
-70	1.3628	0.238
-65	0.9862	0.2765
-60	0.7475	0.3251
-55	0.5865	0.3878
-50	0.4726	0.4707
-45	0.5865	0.5835
-40	0.7475	0.7426
-35	0.9862	0.9776
-30	1.3628	1.3458
-25	2.0096	1.9711
-20	3.2676	3.16
-15	6.2276	5.8076
-10	15.3098	12.6568
-5	29.9743	19.3417
0	4.9127	0.7854
5	29.9742	19.3417
10	15.3098	12.6568
15	6.2276	5.8077
20	3.2676	3.16
25	2.0096	1.9711
30	1.3628	1.3458
35	0.9862	0.9776
40	0.7475	0.7426
45	0.5865	0.5835
50	0.4726	0.4707
55	0.4726	0.3878
60	0.5865	0.3251
65	0.7475	0.2765
70	0.9862	0.238
75	1.3628	0.2071
80	2.0096	0.1818
85	3.2676	0.1609
90	6.2276	0.1435
95	15.3098	0.1287
100	29.9743	0.1161
105	4.9127	0.1052
110	29.9742	0.0959
115	15.3098	0.0877
120	6.2276	0.0805
125	3.2676	0.0742
130	2.0096	0.0686

135	1.3628	0.0636
140	0.9862	0.0591
145	0.7475	0.0551
150	0.5865	0.0515
155	0.4726	0.0482
160	0.4726	0.0452
165	0.5865	0.0425
170	0.7475	0.04
175	0.9862	0.0378
180	1.3628	0.0357
185	2.0096	0.0338
190	3.2676	0.032
195	6.2276	0.0304
200	15.3098	0.0289
205	29.9743	0.0275
210	4.9127	0.0262
215	29.9742	0.025
220	15.3098	0.0239
225	6.2276	0.0228
230	3.2676	0.0219
235	2.0096	0.0209
240	1.3628	0.0201
245	0.9862	0.0193
250	0.7475	0.0185
255	0.5865	0.0178
260	0.4726	0.0171
265	0.0165	0.0165
270	0.0159	0.0159
275	0.0153	0.0153
280	0.0147	0.0147
285	0.0142	0.0142
290	0.0137	0.0137
295	0.0133	0.0133
300	0.0128	0.0128
305	0.0124	0.0124
310	0.012	0.012
315	0.0116	0.0116
320	0.0113	0.0113
325	0.0109	0.0109
330	0.0106	0.0106
335	0.0103	0.0103
340	0.01	0.01
345	0.0097	0.0097
350	0.0094	0.0094
355	0.0092	0.0092
360	0.0089	0.0089
365	0.0087	0.0087

370	0.0084	0.0084
375	0.0082	0.0082
380	0.008	0.008
385	0.0078	0.0078
390	0.0076	0.0076
395	0.0074	0.0074
400	0.0072	0.0072
405	0.007	0.007
410	0.0069	0.0069
415	0.0067	0.0067
420	0.0066	0.0066
425	0.0064	0.0064
430	0.0062	0.0062
435	0.0061	0.0061
440	0.006	0.006
445	0.0058	0.0058
450	0.0057	0.0057
455	0.0056	0.0056
460	0.0055	0.0055
465	0.0053	0.0053
470	0.0052	0.0052
475	0.0051	0.0051
480	0.005	0.005
485	0.0049	0.0049
490	0.0048	0.0048
495	0.0047	0.0047
500	0.0046	0.0046

Peak value found at:

X (feet)	Y=0.0 (feet)	Y=1.0 (feet)
B(mG)	B(mG)	
-5	29.9743	19.3417

```
ÛßßßßßßßßßßßßßßßßßßßßßßßßßßßßßßßßßßßßßßßßßßßßßßÛ
Û      C O R O N A   A N D   F I E L D      Û
Û E F F E C T S   P R O G R A M   V E R. 3.1  Û
Û   Source: Bonneville Power Administration   Û
ÛÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÛ


                              INPUT DATA LIST


                 7/20/2020         09:49:35
 CROSS SECTION 1,,,,,,,,,,
 VERTICAL MONOPOLE SINGLE CIRCUIT WITH 2-115 kV NYSEG Lines,,,,,,,,,,
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 (ENGLISH UNITS OPTION)

 (GRADIENTS ARE COMPUTED BY PROGRAM)

 PHYSICAL SYSTEM CONSISTS OF  8 CONDUCTORS, OF WHICH  6 ARE ENERGIZED PHASES

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 0.000
 100 -500.0    5.0
1COMBINED OUTPUT OF AUDIBLE NOISE, RADIO NOISE, TVI, OZONE CONCENTRATION, GROUND
GRADIENT AND MAGNETIC FIELD
 CROSS SECTION 1,,,,,,,,,,
 VERTICAL MONOPOLE SINGLE CIRCUIT WITH 2-345 kV NYPA Lines,,,,,,,,,,



             DIST. FROM            MAXIMUM  SUBCON   NO. OF      SUBCON   VOLTAGE
```

PHASE	CURRENT	CORONA						
	CENTER OF TOWER	HEIGHT	GRADIENT	DIAM.	SUBCON	SPACING	L-N	
ANGLE	LOSSES							
	(FEET)	(FEET)	(KV/CM)	(IN)		(IN)	(KV)	
(DEGREES)	(kAmps)	(KW/MI)						
NYPA	75.00	98.00	14.49	1.11	2	18.00	199.19	
0.00	1.40	5.523						
NYPA	75.00	63.00	15.55	1.11	2	18.00	199.19	
-120.00	1.40	8.717						
NYPA	75.00	28.00	15.93	1.11	2	18.00	199.19	
120.00	1.40	10.227						
NYPA	175.00	98.00	13.92	1.11	2	18.00	199.19	
0.00	1.40	4.244						
NYPA	175.00	63.00	15.59	1.11	2	18.00	199.19	
-120.00	1.40	8.888						
NYPA	175.00	28.00	15.96	1.11	2	18.00	199.19	
120.00	1.40	10.363						
SW	75.00	125.00	10.94	0.39	1	0.00	0.00	
0.00	0.00	0.000						
SW	100.00	125.00	9.54	0.39	1	0.00	0.00	
0.00	0.00	0.000						

AN MICROPHONE HT.= 5.0 FT, RI ANT. HT.= 6.6 FT, TV ANT. HT.= 9.8 FT, ALTITUDE= 0.0 FT

RI FREQ= 1.000 MHZ, TV FREQ= 75.000 MHZ, WIND VEL.(OZ)= 0.500 MPH, GROUND CONDUCTIVITY = 10.0 MMHOS/M

E-FIELD TRANSDUCER HT.= 3.3FT, B-FIELD TRANSDUCER HT.= 3.3FT

LATERAL DIST	AUDIBLE NOISE		RADIO INTERFERENCE		TVI	OZONE
FROM	(RAIN)	(FAIR)	(RAIN)	(FAIR)	TOTAL	FOR RAIN RATE OF
ELECTRIC	MAGNETIC					
REFERENCE	L50	L50	L50	L50	RAIN	1.00 IN/HR AT 0. FT LEVEL
FIELD	FIELD					
(FEET)	DBA	DBA	DBUV/M	DBUV/M	DBUV/M	PPB
KV/M	GAUSS					
-500.0	33.7	8.7	31.1	14.1	-3.2	
0.000000	0.038	0.00287				
-495.0	33.7	8.7	31.2	14.2	-3.1	
0.000000	0.039	0.00292				
-490.0	33.8	8.8	31.3	14.3	-2.9	
0.000000	0.040	0.00296				
-485.0	33.8	8.8	31.4	14.4	-2.8	
0.000000	0.040	0.00301				
-480.0	33.8	8.8	31.4	14.4	-2.7	
0.000000	0.041	0.00306				
-475.0	33.9	8.9	31.5	14.5	-2.6	
0.000000	0.042	0.00312				

-470.0	33.9	8.9	31.6	14.6	-2.6	0.000000
0.042	0.00317					
-465.0	34.0	9.0	31.7	14.7	-2.5	0.000000
0.043	0.00322					
-460.0	34.0	9.0	31.8	14.8	-2.4	0.000000
0.044	0.00328					
-455.0	34.1	9.1	31.9	14.9	-2.3	0.000000
0.044	0.00334					
-450.0	34.1	9.1	31.9	14.9	-2.2	0.000000
0.045	0.00339					
-445.0	34.1	9.1	32.0	15.0	-2.2	0.000000
0.046	0.00345					
-440.0	34.2	9.2	32.1	15.1	-2.1	0.000000
0.047	0.00352					
-435.0	34.2	9.2	32.2	15.2	-2.0	0.000000
0.047	0.00358					
-430.0	34.3	9.3	32.3	15.3	-1.9	0.000000
0.048	0.00364					
-425.0	34.3	9.3	32.4	15.4	-1.8	0.000000
0.049	0.00371					
-420.0	34.4	9.4	32.5	15.5	-1.7	0.000000
0.050	0.00378					
-415.0	34.4	9.4	32.6	15.6	-1.7	0.000000
0.051	0.00385					
-410.0	34.5	9.5	32.7	15.7	-1.6	0.000000
0.052	0.00392					
-405.0	34.5	9.5	32.8	15.8	-1.5	0.000000
0.053	0.00400					
-400.0	34.6	9.6	32.9	15.9	-1.4	0.000000
0.054	0.00408					
-395.0	34.6	9.6	33.0	16.0	-1.3	0.000000
0.055	0.00416					
-390.0	34.7	9.7	33.1	16.1	-1.2	0.000000
0.056	0.00424					
-385.0	34.7	9.7	33.2	16.2	-1.1	0.000000
0.057	0.00432					
-380.0	34.7	9.7	33.3	16.3	-1.0	0.000000
0.058	0.00441					
-375.0	34.8	9.8	33.4	16.4	-0.9	0.000000
0.059	0.00450					
-370.0	34.8	9.8	33.5	16.5	-0.8	0.000000
0.060	0.00459					
-365.0	34.9	9.9	33.6	16.6	-0.7	0.000000
0.061	0.00469					
-360.0	35.0	10.0	33.7	16.7	-0.6	0.000000
0.062	0.00478					
-355.0	35.0	10.0	33.8	16.8	-0.5	0.000000
0.064	0.00488					

-350.0	35.1	10.1	33.9	16.9	-0.4	0.000000
0.065	0.00499					
-345.0	35.1	10.1	34.0	17.0	-0.3	0.000000
0.066	0.00510					
-340.0	35.2	10.2	34.1	17.1	-0.2	0.000000
0.067	0.00521					
-335.0	35.2	10.2	34.2	17.2	-0.1	0.000000
0.069	0.00532					
-330.0	35.3	10.3	34.3	17.3	-0.0	0.000000
0.070	0.00544					
-325.0	35.3	10.3	34.5	17.5	0.1	0.000000
0.072	0.00556					
-320.0	35.4	10.4	34.6	17.6	0.2	0.000000
0.073	0.00569					
-315.0	35.4	10.4	34.7	17.7	0.3	0.000000
0.075	0.00582					
-310.0	35.5	10.5	34.8	17.8	0.4	0.000000
0.076	0.00596					
-305.0	35.6	10.6	34.9	17.9	0.5	0.000000
0.078	0.00610					
-300.0	35.6	10.6	35.1	18.1	0.6	0.000000
0.080	0.00625					
-295.0	35.7	10.7	35.2	18.2	0.7	0.000000
0.081	0.00640					
-290.0	35.7	10.7	35.3	18.3	0.9	0.000000
0.083	0.00655					
-285.0	35.8	10.8	35.5	18.5	1.0	0.000000
0.085	0.00672					
-280.0	35.9	10.9	35.6	18.6	1.1	0.000000
0.087	0.00689					
-275.0	35.9	10.9	35.7	18.7	1.2	0.000000
0.089	0.00706					
-270.0	36.0	11.0	35.9	18.9	1.3	0.000000
0.091	0.00724					
-265.0	36.0	11.0	36.0	19.0	1.5	0.000000
0.093	0.00743					
-260.0	36.1	11.1	36.2	19.2	1.6	0.000000
0.095	0.00763					
-255.0	36.2	11.2	36.3	19.3	1.7	0.000000
0.098	0.00783					
-250.0	36.2	11.2	36.5	19.5	1.8	0.000000
0.100	0.00805					
-245.0	36.3	11.3	36.6	19.6	2.0	0.000000
0.103	0.00827					
-240.0	36.4	11.4	36.8	19.8	2.1	0.000000
0.105	0.00850					
-235.0	36.5	11.5	36.9	19.9	2.2	0.000000
0.108	0.00874					

-230.0	36.5	11.5	37.1	20.1	2.4	0.000000
0.110	0.00899					
-225.0	36.6	11.6	37.3	20.3	2.5	0.000000
0.113	0.00925					
-220.0	36.7	11.7	37.4	20.4	2.7	0.000000
0.116	0.00953					
-215.0	36.7	11.7	37.6	20.6	2.9	0.000000
0.119	0.00981					
-210.0	36.8	11.8	37.8	20.8	3.2	0.000000
0.122	0.01011					
-205.0	36.9	11.9	38.0	21.0	3.5	0.000000
0.126	0.01042					
-200.0	37.0	12.0	38.2	21.2	3.9	0.000000
0.129	0.01075					
-195.0	37.0	12.0	38.4	21.4	4.2	0.000000
0.132	0.01110					
-190.0	37.1	12.1	38.6	21.6	4.5	0.000000
0.136	0.01146					
-185.0	37.2	12.2	38.8	21.8	4.8	0.000000
0.140	0.01183					
-180.0	37.3	12.3	39.0	22.0	5.2	0.000000
0.144	0.01223					
-175.0	37.4	12.4	39.2	22.2	5.5	0.000000
0.148	0.01265					
-170.0	37.5	12.5	39.4	22.4	5.7	0.000000
0.152	0.01309					
-165.0	37.5	12.5	39.6	22.6	5.9	0.000000
0.156	0.01355					
-160.0	37.6	12.6	39.8	22.8	6.0	0.000000
0.161	0.01404					
-155.0	37.7	12.7	40.0	23.0	6.2	0.000000
0.166	0.01455					
-150.0	37.8	12.8	40.3	23.3	6.4	0.000000
0.171	0.01509					
-145.0	37.9	12.9	40.5	23.5	6.6	0.000000
0.176	0.01566					
-140.0	38.0	13.0	40.8	23.8	6.8	0.000000
0.181	0.01627					
-135.0	38.1	13.1	41.0	24.0	7.0	0.000000
0.186	0.01691					
-130.0	38.2	13.2	41.3	24.3	7.2	0.000000
0.192	0.01759					
-125.0	38.3	13.3	41.6	24.6	7.4	0.000000
0.198	0.01831					
-120.0	38.4	13.4	41.8	24.8	7.6	0.000000
0.204	0.01908					
-115.0	38.5	13.5	42.1	25.1	7.9	0.000000
0.210	0.01989					

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    -110.0          38.6     13.6      42.4     25.4             8.1
0.000000              0.216     0.02076
    -105.0          38.7     13.7      42.7     25.7             8.3
0.000000              0.223     0.02168
    -100.0          38.8     13.8      43.0     26.0             8.6
0.000000              0.229     0.02267
     -95.0          39.0     14.0      43.4     26.4             8.8
0.000000              0.236     0.02372
     -90.0          39.1     14.1      43.7     26.7             9.1
0.000000              0.243     0.02485
     -85.0          39.2     14.2      44.1     27.1             9.3
0.000000              0.250     0.02606
     -80.0          39.3     14.3      44.4     27.4             9.6
0.000000              0.257     0.02736
     -75.0          39.5     14.5      44.8     27.8             9.9
0.000000              0.264     0.02876
     -70.0          39.6     14.6      45.2     28.2            10.2
0.000000              0.271     0.03026
     -65.0          39.7     14.7      45.6     28.6            10.5
0.000000              0.277     0.03188
     -60.0          39.9     14.9      46.0     29.0            10.8
0.000000              0.283     0.03363
     -55.0          40.0     15.0      46.4     29.4            11.1
0.000000              0.289     0.03553
     -50.0          40.2     15.2      46.9     29.9            11.5
0.000000              0.294     0.03759
     -45.0          40.3     15.3      47.3     30.3            11.8
0.000000              0.297     0.03982
     -40.0          40.5     15.5      47.8     30.8            12.2
0.000000              0.300     0.04226
     -35.0          40.6     15.6      48.3     31.3            12.5
0.000000              0.301     0.04492
     -30.0          40.8     15.8      48.8     31.8            12.9
0.000000              0.299     0.04782
     -25.0          41.0     16.0      49.3     32.3            13.3
0.000000              0.295     0.05101
     -20.0          41.1     16.1      49.9     32.9            13.8
0.000000              0.288     0.05451
     -15.0          41.3     16.3      50.5     33.5            14.2
0.000000              0.277     0.05837
     -10.0          41.5     16.5      51.1     34.1            14.7
0.000000              0.262     0.06264
      -5.0          41.7     16.7      51.7     34.7            15.2
0.000000              0.243     0.06737
1
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Û      C O R O N A   A N D   F I E L D      Û
Û E F F E C T S   P R O G R A M   V E R. 3.1  Û
Û   Source: Bonneville Power Administration   Û
ÛÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÛ


                              INPUT DATA LIST


                 7/20/2020         09:50:58
 CROSS SECTION 1,,,,,,,,,,
 VERTICAL MONOPOLE SINGLE CIRCUIT WITH 2-345 kV NYPA Lines,,,,,,,,,,
 1,0, 6, 8,0.0,   0.50,   1.00,   0.00

 (ENGLISH UNITS OPTION)

 (GRADIENTS ARE COMPUTED BY PROGRAM)

 PHYSICAL SYSTEM CONSISTS OF  8 CONDUCTORS, OF WHICH  6 ARE ENERGIZED PHASES

 OPTIONS: 'COMB',,,,,,,,,,
   5.000,  6.600,  9.800,  0.000,  1.000, 75.000,  3.280, 10.000,  3.280
 'NYPA    ','A',   75.00,   98.00, 2,   1.107,  18.000, 199.186,   0.000,   1.400,
 0.000
 'NYPA    ','A',   75.00,   63.00, 2,   1.107,  18.000, 199.186,-120.000,   1.400,
 0.000
 'NYPA    ','A',   75.00,   28.00, 2,   1.107,  18.000, 199.186, 120.000,   1.400,
 0.000
 'NYPA    ','A',  175.00,   98.00, 2,   1.107,  18.000, 199.186,   0.000,   1.400,
 0.000
 'NYPA    ','A',  175.00,   63.00, 2,   1.107,  18.000, 199.186,-120.000,   1.400,
 0.000
 'NYPA    ','A',  175.00,   28.00, 2,   1.107,  18.000, 199.186, 120.000,   1.400,
 0.000
 'SW      ','A',   75.00,  125.00, 1,   0.390,   0.000,   0.000,   0.000,   0.000,
 0.000
 'SW      ','A',  100.00,  125.00, 1,   0.390,   0.000,   0.000,   0.000,   0.000,
 0.000
 100    0.0    5.0
1COMBINED OUTPUT OF AUDIBLE NOISE, RADIO NOISE, TVI, OZONE CONCENTRATION, GROUND
GRADIENT AND MAGNETIC FIELD
 CROSS SECTION 1,,,,,,,,,,
 VERTICAL MONOPOLE SINGLE CIRCUIT WITH 2-345 kV NYPA Lines,,,,,,,,,,



             DIST. FROM            MAXIMUM  SUBCON   NO. OF      SUBCON   VOLTAGE
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PHASE	CURRENT	CORONA						
	CENTER OF TOWER	HEIGHT	GRADIENT	DIAM.	SUBCON	SPACING	L-N	
ANGLE	LOSSES							
	(FEET)	(FEET)	(KV/CM)	(IN)		(IN)	(KV)	
(DEGREES)	(kAmps)	(KW/MI)						
NYPA	75.00	98.00	14.49	1.11	2	18.00	199.19	
0.00	1.40	5.523						
NYPA	75.00	63.00	15.55	1.11	2	18.00	199.19	
-120.00	1.40	8.717						
NYPA	75.00	28.00	15.93	1.11	2	18.00	199.19	
120.00	1.40	10.227						
NYPA	175.00	98.00	13.92	1.11	2	18.00	199.19	
0.00	1.40	4.244						
NYPA	175.00	63.00	15.59	1.11	2	18.00	199.19	
-120.00	1.40	8.888						
NYPA	175.00	28.00	15.96	1.11	2	18.00	199.19	
120.00	1.40	10.363						
SW	75.00	125.00	10.94	0.39	1	0.00	0.00	
0.00	0.00	0.000						
SW	100.00	125.00	9.54	0.39	1	0.00	0.00	
0.00	0.00	0.000						

AN MICROPHONE HT.= 5.0 FT, RI ANT. HT.= 6.6 FT, TV ANT. HT.= 9.8 FT, ALTITUDE= 0.0 FT

RI FREQ= 1.000 MHZ, TV FREQ= 75.000 MHZ, WIND VEL.(OZ)= 0.500 MPH, GROUND CONDUCTIVITY = 10.0 MMHOS/M

E-FIELD TRANSDUCER HT.= 3.3FT, B-FIELD TRANSDUCER HT.= 3.3FT

LATERAL DIST	AUDIBLE NOISE		RADIO INTERFERENCE		TVI	OZONE
FROM	(RAIN)	(FAIR)	(RAIN)	(FAIR)	TOTAL	FOR RAIN
RATE OF	ELECTRIC	MAGNETIC				
REFERENCE	L50	L50	L50	L50	RAIN	1.00 IN/HR AT
0. FT LEVEL	FIELD	FIELD				
(FEET)	DBA	DBA	DBUV/M	DBUV/M	DBUV/M	PPB
	KV/M	GAUSS				
0.0	41.9	16.9	52.3	35.3	15.7	
0.000000	0.223	0.07263				
5.0	42.2	17.2	53.0	36.0	16.3	
0.000000	0.211	0.07850				
10.0	42.4	17.4	53.6	36.6	16.9	
0.000000	0.227	0.08508				
15.0	42.6	17.6	54.3	37.3	17.5	
0.000000	0.294	0.09246				
20.0	42.9	17.9	55.0	38.0	18.2	
0.000000	0.419	0.10079				
25.0	43.2	18.2	55.7	38.7	19.0	
0.000000	0.606	0.11021				

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      30.0          43.4     18.4      56.6     39.6          19.8
0.000000            0.866     0.12089
      35.0          43.7     18.7      58.2     41.2          20.6
0.000000            1.215     0.13299
      40.0          44.1     19.1      59.9     42.9          21.6
0.000000            1.678     0.14666
      45.0          44.4     19.4      61.7     44.7          22.6
0.000000            2.280     0.16197
      50.0          44.7     19.7      63.6     46.6          23.7
0.000000            3.044     0.17875
      55.0          45.1     20.1      65.6     48.6          24.8
0.000000            3.973     0.19641
      60.0          45.5     20.5      67.5     50.5          26.0
0.000000            5.019     0.21348
      65.0          45.8     20.8      69.3     52.3          27.1
0.000000            6.053     0.22735
      70.0          46.0     21.0      70.5     53.5          28.0
0.000000            6.846     0.23431
      75.0          46.1     21.1      71.0     54.0          28.3
0.000000            7.153     0.23096
      80.0          46.1     21.1      70.5     53.5          28.0
0.406910            6.863     0.21643
      85.0          46.0     21.0      69.3     52.3          27.1
0.685876            6.091     0.19329
      90.0          45.7     20.7      67.5     50.5          26.0
0.724500            5.086     0.16579
      95.0          45.5     20.5      65.6     48.6          24.8
0.706298            4.079     0.13755
     100.0          45.3     20.3      63.6     46.6          23.7
0.667207            3.207     0.11067
     105.0          45.1     20.1      61.7     44.7          22.6
0.622424            2.522     0.08593
     110.0          45.0     20.0      59.9     42.9          21.6
0.578515            2.026     0.06355
     115.0          44.9     19.9      58.2     41.2          20.6
0.537961            1.700     0.04425
     120.0          44.8     19.8      56.6     39.6          19.8
0.501433            1.517     0.03397
     125.0          44.8     19.8      55.8     38.8          19.1
0.468856            1.457     0.03240
     130.0          44.8     19.8      56.7     39.7          19.9
0.439878            1.510     0.03397
     135.0          44.9     19.9      58.3     41.3          20.7
0.414076            1.686     0.04425
     140.0          45.0     20.0      60.0     43.0          21.7
0.391036            2.006     0.06355
     145.0          45.1     20.1      61.8     44.8          22.7
0.370386            2.498     0.08593
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150.0	45.3	20.3	63.7	46.7	23.8	0.351804	3.180	0.11067
155.0	45.6	20.6	65.7	48.7	24.9	0.335012	4.049	0.13755
160.0	45.8	20.8	67.6	50.6	26.1	0.319776	5.054	0.16579
165.0	46.0	21.0	69.4	52.4	27.2	0.305897	6.057	0.19329
170.0	46.1	21.1	70.6	53.6	28.1	0.293207	6.828	0.21643
175.0	46.2	21.2	71.1	54.1	28.4	0.281563	7.114	0.23096
180.0	46.1	21.1	70.6	53.6	28.1	0.684841	6.802	0.23431
185.0	45.8	20.8	69.4	52.4	27.2	0.958906	6.002	0.22735
190.0	45.5	20.5	67.6	50.6	26.1	0.984457	4.961	0.21348
195.0	45.1	20.1	65.7	48.7	24.9	0.950136	3.907	0.19641
200.0	44.8	19.8	63.7	46.7	23.8	0.896954	2.971	0.17875
205.0	44.4	19.4	61.8	44.8	22.7	0.840827	2.199	0.16197
210.0	44.1	19.1	60.0	43.0	21.7	0.787713	1.590	0.14666
215.0	43.8	18.8	58.3	41.3	20.7	0.739457	1.121	0.13299
220.0	43.4	18.4	56.7	39.7	19.9	0.696277	0.768	0.12089
225.0	43.2	18.2	55.8	38.8	19.1	0.657803	0.506	0.11021
230.0	42.9	17.9	55.1	38.1	18.3	0.623492	0.323	0.10079
235.0	42.6	17.6	54.5	37.5	17.6	0.592796	0.217	0.09246
240.0	42.4	17.4	53.8	36.8	17.0	0.565217	0.199	0.08508
245.0	42.2	17.2	53.1	36.1	16.4	0.540325	0.232	0.07850
250.0	41.9	16.9	52.5	35.5	15.8	0.517752	0.271	0.07263
255.0	41.7	16.7	51.8	34.8	15.3	0.497192	0.305	0.06737
260.0	41.5	16.5	51.2	34.2	14.8	0.478383	0.332	0.06264
265.0	41.3	16.3	50.6	33.6	14.3	0.461108	0.351	0.05837

270.0	41.1	16.1	50.0	33.0	13.9	0.445182
0.364	0.05451					
275.0	40.9	15.9	49.5	32.5	13.4	0.430449
0.372	0.05101					
280.0	40.8	15.8	49.0	32.0	13.0	0.416775
0.375	0.04782					
285.0	40.6	15.6	48.4	31.4	12.6	0.404046
0.376	0.04492					
290.0	40.4	15.4	47.9	30.9	12.3	0.392163
0.374	0.04226					
295.0	40.3	15.3	47.5	30.5	11.9	0.381042
0.369	0.03982					
300.0	40.1	15.1	47.0	30.0	11.6	0.370608
0.363	0.03759					
305.0	40.0	15.0	46.6	29.6	11.2	0.360798
0.356	0.03553					
310.0	39.8	14.8	46.1	29.1	10.9	0.351553
0.349	0.03363					
315.0	39.7	14.7	45.7	28.7	10.6	0.342826
0.340	0.03188					
320.0	39.6	14.6	45.3	28.3	10.3	0.334570
0.332	0.03026					
325.0	39.4	14.4	44.9	27.9	10.0	0.326749
0.323	0.02876					
330.0	39.3	14.3	44.6	27.6	9.7	0.319325
0.314	0.02736					
335.0	39.2	14.2	44.2	27.2	9.4	0.312270
0.304	0.02606					
340.0	39.1	14.1	43.9	26.9	9.2	0.305554
0.295	0.02485					
345.0	38.9	13.9	43.5	26.5	8.9	0.299152
0.286	0.02372					
350.0	38.8	13.8	43.2	26.2	8.7	0.293043
0.278	0.02267					
355.0	38.7	13.7	42.9	25.9	8.4	0.287205
0.269	0.02168					
360.0	38.6	13.6	42.6	25.6	8.2	0.281620
0.261	0.02076					
365.0	38.5	13.5	42.3	25.3	8.0	0.276272
0.253	0.01989					
370.0	38.4	13.4	42.0	25.0	7.7	0.271144
0.245	0.01908					
375.0	38.3	13.3	41.7	24.7	7.5	0.266224
0.237	0.01831					
380.0	38.2	13.2	41.4	24.4	7.3	0.261497
0.230	0.01759					
385.0	38.1	13.1	41.2	24.2	7.1	0.256953
0.223	0.01691					

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     390.0          38.0     13.0      40.9     23.9             6.9
0.252580             0.216     0.01627
     395.0          37.9     12.9      40.7     23.7             6.7
0.248369             0.209     0.01566
     400.0          37.8     12.8      40.4     23.4             6.5
0.244310             0.203     0.01509
     405.0          37.7     12.7      40.2     23.2             6.3
0.240395             0.197     0.01455
     410.0          37.6     12.6      40.0     23.0             6.1
0.236616             0.191     0.01404
     415.0          37.5     12.5      39.8     22.8             6.0
0.232966             0.185     0.01355
     420.0          37.4     12.4      39.5     22.5             5.8
0.229439             0.180     0.01309
     425.0          37.4     12.4      39.3     22.3             5.6
0.226026             0.174     0.01265
     430.0          37.3     12.3      39.1     22.1             5.3
0.222724             0.169     0.01223
     435.0          37.2     12.2      38.9     21.9             4.9
0.219527             0.164     0.01183
     440.0          37.1     12.1      38.7     21.7             4.6
0.216429             0.160     0.01146
     445.0          37.0     12.0      38.5     21.5             4.3
0.213425             0.155     0.01110
     450.0          36.9     11.9      38.3     21.3             4.0
0.210512             0.151     0.01075
     455.0          36.9     11.9      38.1     21.1             3.7
0.207685             0.147     0.01042
     460.0          36.8     11.8      38.0     21.0             3.3
0.204940             0.143     0.01011
     465.0          36.7     11.7      37.8     20.8             3.0
0.202274             0.139     0.00981
     470.0          36.6     11.6      37.6     20.6             2.8
0.199682             0.135     0.00953
     475.0          36.6     11.6      37.4     20.4             2.7
0.197163             0.132     0.00925
     480.0          36.5     11.5      37.3     20.3             2.5
0.194712             0.128     0.00899
     485.0          36.4     11.4      37.1     20.1             2.4
0.192327             0.125     0.00874
     490.0          36.4     11.4      36.9     19.9             2.3
0.190006             0.122     0.00850
     495.0          36.3     11.3      36.8     19.8             2.1
0.187745             0.118     0.00827
1
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Û      C O R O N A   A N D   F I E L D      Û
Û E F F E C T S   P R O G R A M   V E R. 3.1  Û
Û   Source: Bonneville Power Administration   Û
ÛÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÛ


                         INPUT DATA LIST


                 7/20/2020         09:51:46
 CROSS SECTION 1,,,,,,,,,,
 VERTICAL MONOPOLE SINGLE CIRCUIT WITH 2-345 kV NYPA Lines,,,,,,,,,,
 1,0, 6, 8,0.0,   0.50,   1.00,   0.00

 (ENGLISH UNITS OPTION)

 (GRADIENTS ARE COMPUTED BY PROGRAM)

 PHYSICAL SYSTEM CONSISTS OF  8 CONDUCTORS, OF WHICH  6 ARE ENERGIZED PHASES

 OPTIONS: 'COMB',,,,,,,,,,
   5.000,  6.600,  9.800,  0.000,  1.000, 75.000,  3.280, 10.000,  3.280
 'NYPA    ','A',   75.00,   98.00, 2,   1.107,  18.000, 199.186,   0.000,   1.400,
 0.000
 'NYPA    ','A',   75.00,   63.00, 2,   1.107,  18.000, 199.186,-120.000,   1.400,
 0.000
 'NYPA    ','A',   75.00,   28.00, 2,   1.107,  18.000, 199.186, 120.000,   1.400,
 0.000
 'NYPA    ','A',  175.00,   98.00, 2,   1.107,  18.000, 199.186,   0.000,   1.400,
 0.000
 'NYPA    ','A',  175.00,   63.00, 2,   1.107,  18.000, 199.186,-120.000,   1.400,
 0.000
 'NYPA    ','A',  175.00,   28.00, 2,   1.107,  18.000, 199.186, 120.000,   1.400,
 0.000
 'SW      ','A',   75.00,  125.00, 1,   0.390,   0.000,   0.000,   0.000,   0.000,
 0.000
 'SW      ','A',  100.00,  125.00, 1,   0.390,   0.000,   0.000,   0.000,   0.000,
 0.000
 100  500.0    5.0
1COMBINED OUTPUT OF AUDIBLE NOISE, RADIO NOISE, TVI, OZONE CONCENTRATION, GROUND
GRADIENT AND MAGNETIC FIELD
 CROSS SECTION 1,,,,,,,,,,
 VERTICAL MONOPOLE SINGLE CIRCUIT WITH 2-345 kV NYPA Lines,,,,,,,,,,


             DIST. FROM            MAXIMUM  SUBCON   NO. OF      SUBCON   VOLTAGE
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PHASE	CURRENT	CORONA						
	CENTER OF TOWER	HEIGHT	GRADIENT	DIAM.	SUBCON	SPACING	L-N	
ANGLE	LOSSES							
	(FEET)	(FEET)	(KV/CM)	(IN)		(IN)	(KV)	
(DEGREES)	(kAmps)	(KW/MI)						
NYPA	75.00	98.00	14.49	1.11	2	18.00	199.19	
0.00	1.40	5.523						
NYPA	75.00	63.00	15.55	1.11	2	18.00	199.19	
-120.00	1.40	8.717						
NYPA	75.00	28.00	15.93	1.11	2	18.00	199.19	
120.00	1.40	10.227						
NYPA	175.00	98.00	13.92	1.11	2	18.00	199.19	
0.00	1.40	4.244						
NYPA	175.00	63.00	15.59	1.11	2	18.00	199.19	
-120.00	1.40	8.888						
NYPA	175.00	28.00	15.96	1.11	2	18.00	199.19	
120.00	1.40	10.363						
SW	75.00	125.00	10.94	0.39	1	0.00	0.00	
0.00	0.00	0.000						
SW	100.00	125.00	9.54	0.39	1	0.00	0.00	
0.00	0.00	0.000						

AN MICROPHONE HT.= 5.0 FT, RI ANT. HT.= 6.6 FT, TV ANT. HT.= 9.8 FT, ALTITUDE= 0.0 FT

RI FREQ= 1.000 MHZ, TV FREQ= 75.000 MHZ, WIND VEL.(OZ)= 0.500 MPH, GROUND CONDUCTIVITY = 10.0 MMHOS/M

E-FIELD TRANSDUCER HT.= 3.3FT, B-FIELD TRANSDUCER HT.= 3.3FT

LATERAL DIST	AUDIBLE NOISE		RADIO INTERFERENCE		TVI	OZONE
FROM	(RAIN)	(FAIR)	(RAIN)	(FAIR)	TOTAL	FOR RAIN
RATE OF	ELECTRIC	MAGNETIC				
REFERENCE	L50	L50	L50	L50	RAIN	1.00 IN/HR AT
0. FT LEVEL	FIELD	FIELD				
(FEET)	DBA	DBA	DBUV/M	DBUV/M	DBUV/M	PPB
	KV/M	GAUSS				
500.0	36.2	11.2	36.6	19.6	2.0	
0.185542	0.115	0.00805				
505.0	36.2	11.2	36.5	19.5	1.9	
0.183395	0.113	0.00783				
510.0	36.1	11.1	36.3	19.3	1.7	
0.181301	0.110	0.00763				
515.0	36.0	11.0	36.2	19.2	1.6	
0.179260	0.107	0.00743				
520.0	36.0	11.0	36.0	19.0	1.5	
0.177268	0.105	0.00724				
525.0	35.9	10.9	35.9	18.9	1.4	
0.175323	0.102	0.00706				

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     530.0          35.8     10.8      35.8     18.8             1.3
0.173425             0.100     0.00689
     535.0          35.8     10.8      35.6     18.6             1.1
0.171571             0.097     0.00672
     540.0          35.7     10.7      35.5     18.5             1.0
0.169760             0.095     0.00655
     545.0          35.7     10.7      35.3     18.3             0.9
0.167991             0.093     0.00640
     550.0          35.6     10.6      35.2     18.2             0.8
0.166261             0.091     0.00625
     555.0          35.5     10.5      35.1     18.1             0.7
0.164570             0.089     0.00610
     560.0          35.5     10.5      35.0     18.0             0.6
0.162915             0.087     0.00596
     565.0          35.4     10.4      34.8     17.8             0.5
0.161297             0.085     0.00582
     570.0          35.4     10.4      34.7     17.7             0.3
0.159713             0.083     0.00569
     575.0          35.3     10.3      34.6     17.6             0.2
0.158163             0.081     0.00556
     580.0          35.3     10.3      34.5     17.5             0.1
0.156646             0.079     0.00544
     585.0          35.2     10.2      34.3     17.3             0.0
0.155160             0.078     0.00532
     590.0          35.1     10.1      34.2     17.2            -0.1
0.153704             0.076     0.00521
     595.0          35.1     10.1      34.1     17.1            -0.2
0.152278             0.075     0.00510
     600.0          35.0     10.0      34.0     17.0            -0.3
0.150880             0.073     0.00499
     605.0          35.0     10.0      33.9     16.9            -0.4
0.149510             0.072     0.00488
     610.0          34.9      9.9      33.8     16.8            -0.5
0.148167             0.070     0.00478
     615.0          34.9      9.9      33.7     16.7            -0.6
0.146850             0.069     0.00469
     620.0          34.8      9.8      33.6     16.6            -0.7
0.145558             0.067     0.00459
     625.0          34.8      9.8      33.5     16.5            -0.8
0.144291             0.066     0.00450
     630.0          34.7      9.7      33.4     16.4            -0.9
0.143047             0.065     0.00441
     635.0          34.7      9.7      33.3     16.3            -1.0
0.141827             0.063     0.00432
     640.0          34.6      9.6      33.1     16.1            -1.0
0.140629             0.062     0.00424
     645.0          34.6      9.6      33.0     16.0            -1.1
0.139453             0.061     0.00416
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650.0	34.5	9.5	32.9	15.9	-1.2
0.138298	0.060	0.00408			
655.0	34.5	9.5	32.9	15.9	-1.3
0.137163	0.059	0.00400			
660.0	34.4	9.4	32.8	15.8	-1.4
0.136049	0.058	0.00392			
665.0	34.4	9.4	32.7	15.7	-1.5
0.134955	0.057	0.00385			
670.0	34.4	9.4	32.6	15.6	-1.6
0.133879	0.056	0.00378			
675.0	34.3	9.3	32.5	15.5	-1.7
0.132822	0.055	0.00371			
680.0	34.3	9.3	32.4	15.4	-1.8
0.131782	0.054	0.00364			
685.0	34.2	9.2	32.3	15.3	-1.8
0.130761	0.053	0.00358			
690.0	34.2	9.2	32.2	15.2	-1.9
0.129756	0.052	0.00352			
695.0	34.1	9.1	32.1	15.1	-2.0
0.128768	0.051	0.00345			
700.0	34.1	9.1	32.0	15.0	-2.1
0.127797	0.050	0.00339			
705.0	34.0	9.0	31.9	14.9	-2.2
0.126841	0.049	0.00334			
710.0	34.0	9.0	31.8	14.8	-2.3
0.125900	0.048	0.00328			
715.0	34.0	9.0	31.7	14.7	-2.3
0.124975	0.047	0.00322			
720.0	33.9	8.9	31.7	14.7	-2.4
0.124064	0.047	0.00317			
725.0	33.9	8.9	31.6	14.6	-2.5
0.123167	0.046	0.00312			
730.0	33.8	8.8	31.5	14.5	-2.6
0.122285	0.045	0.00306			
735.0	33.8	8.8	31.4	14.4	-2.6
0.121416	0.044	0.00301			
740.0	33.8	8.8	31.3	14.3	-2.8
0.120560	0.044	0.00296			
745.0	33.7	8.7	31.2	14.2	-2.9
0.119718	0.043	0.00292			
750.0	33.7	8.7	31.2	14.2	-3.1
0.118888	0.042	0.00287			
755.0	33.6	8.6	31.1	14.1	-3.2
0.118071	0.042	0.00282			
760.0	33.6	8.6	31.0	14.0	-3.4
0.117265	0.041	0.00278			
765.0	33.6	8.6	30.9	13.9	-3.5
0.116472	0.040	0.00274			

770.0	33.5	8.5	30.9	13.9	-3.7
0.115690	0.040	0.00269			
775.0	33.5	8.5	30.8	13.8	-3.8
0.114919	0.039	0.00265			
780.0	33.4	8.4	30.7	13.7	-3.9
0.114160	0.039	0.00261			
785.0	33.4	8.4	30.6	13.6	-4.1
0.113411	0.038	0.00257			
790.0	33.4	8.4	30.5	13.5	-4.2
0.112673	0.037	0.00253			
795.0	33.3	8.3	30.5	13.5	-4.4
0.111945	0.037	0.00250			
800.0	33.3	8.3	30.4	13.4	-4.5
0.111227	0.036	0.00246			
805.0	33.3	8.3	30.3	13.3	-4.6
0.110520	0.036	0.00242			
810.0	33.2	8.2	30.3	13.3	-4.8
0.109822	0.035	0.00239			
815.0	33.2	8.2	30.2	13.2	-4.9
0.109133	0.035	0.00235			
820.0	33.1	8.1	30.1	13.1	-5.1
0.108454	0.034	0.00232			
825.0	33.1	8.1	30.0	13.0	-5.2
0.107784	0.034	0.00228			
830.0	33.1	8.1	30.0	13.0	-5.3
0.107123	0.033	0.00225			
835.0	33.0	8.0	29.9	12.9	-5.4
0.106470	0.033	0.00222			
840.0	33.0	8.0	29.8	12.8	-5.6
0.105826	0.032	0.00219			
845.0	33.0	8.0	29.8	12.8	-5.7
0.105191	0.032	0.00216			
850.0	32.9	7.9	29.7	12.7	-5.8
0.104564	0.031	0.00213			
855.0	32.9	7.9	29.6	12.6	-6.0
0.103945	0.031	0.00210			
860.0	32.9	7.9	29.6	12.6	-6.1
0.103333	0.031	0.00207			
865.0	32.8	7.8	29.5	12.5	-6.2
0.102730	0.030	0.00204			
870.0	32.8	7.8	29.4	12.4	-6.3
0.102134	0.030	0.00202			
875.0	32.8	7.8	29.4	12.4	-6.5
0.101545	0.029	0.00199			
880.0	32.7	7.7	29.3	12.3	-6.6
0.100964	0.029	0.00196			
885.0	32.7	7.7	29.2	12.2	-6.7
0.100390	0.029	0.00194			

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     890.0          32.7      7.7      29.2     12.2           -6.8
0.099823            0.028     0.00191
     895.0          32.6      7.6      29.1     12.1           -7.0
0.099263            0.028     0.00189
     900.0          32.6      7.6      29.1     12.1           -7.1
0.098710            0.027     0.00186
     905.0          32.6      7.6      29.0     12.0           -7.2
0.098163            0.027     0.00184
     910.0          32.5      7.5      28.9     11.9           -7.3
0.097623            0.027     0.00182
     915.0          32.5      7.5      28.9     11.9           -7.4
0.097090            0.026     0.00179
     920.0          32.5      7.5      28.8     11.8           -7.5
0.096562            0.026     0.00177
     925.0          32.4      7.4      28.7     11.7           -7.7
0.096041            0.026     0.00175
     930.0          32.4      7.4      28.7     11.7           -7.8
0.095526            0.025     0.00173
     935.0          32.4      7.4      28.6     11.6           -7.9
0.095017            0.025     0.00170
     940.0          32.4      7.4      28.6     11.6           -8.0
0.094513            0.025     0.00168
     945.0          32.3      7.3      28.5     11.5           -8.1
0.094016            0.025     0.00166
     950.0          32.3      7.3      28.4     11.4           -8.2
0.093524            0.024     0.00164
     955.0          32.3      7.3      28.4     11.4           -8.3
0.093037            0.024     0.00162
     960.0          32.2      7.2      28.3     11.3           -8.4
0.092556            0.024     0.00160
     965.0          32.2      7.2      28.3     11.3           -8.6
0.092081            0.023     0.00158
     970.0          32.2      7.2      28.2     11.2           -8.7
0.091610            0.023     0.00157
     975.0          32.1      7.1      28.2     11.2           -8.8
0.091145            0.023     0.00155
     980.0          32.1      7.1      28.1     11.1           -8.9
0.090685            0.023     0.00153
     985.0          32.1      7.1      28.0     11.0           -9.0
0.090230            0.022     0.00151
     990.0          32.1      7.1      28.0     11.0           -9.1
0.089780            0.022     0.00149
     995.0          32.0      7.0      27.9     10.9           -9.2
0.089335            0.022     0.00148
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