

ENGINEERING STUDY
PROPOSED CHANGE IN CANADIAN AM ALLOTMENT
AM STATION WAIT
WILLOW SPRINGS, ILLINOIS

In the course of a nighttime allocation study conducted on behalf of AM station WAIT, it was determined that WAIT could commence nighttime operations at 900 Watts without interfering with the allotment of 820 kHz for use at Nipigon, Ontario and that operation at 1500 Watts would be acceptable if the 820 kHz for use at Nipigon was deleted or changed. Previous experience with Canada indicated that the Canadian Government did not favor deletion of an allotment; however, there appears to be willingness to change the frequency of an allotment.

A study was conducted to locate a replacement frequency for the 820 kHz allotment. Eighteen frequencies were studied in detail. From this study, the frequency 770 kHz was selected as the replacement for the 820 kHz allotment. Comparison of the two frequencies follows:

	Existing Frequency <u>820 kHz</u>	Proposed Frequency <u>770 kHz</u>
Daytime power	1 KW	10 KW
Nighttime power	1 KW	1 KW
Nighttime Directional Antenna:		
Number of towers	2	2
Pattern orientation	25.8 deg.	315 deg.
Nighttime Interference-free Limit	9.3 (WBAP)	16.0 (WABC)

The directional antenna patterns for each frequency as shown on the attached Figures 1 and 2.

The frequency 770 kHz has a daytime power advantage, which should easily outweigh the higher nighttime interference-free limit. The two frequencies are therefore quite comparable.

Louis R. du Treil

Louis R. du Treil, Sr.
July 21, 2005

Figure 1

PATTERN CALCULATOR

Antenna Parameters							
Tower	Field	Phase	Spac.	Orien.	G/A	B	TRS
1	1.000	0.0	0.0	0.0	75.0	0.0	0
2	0.980	78.0	110.0	205.8	75.0	0.0	0
3	0.000	0.0	0.0	0.0	0.0	0.0	0
4	0.000	0.0	0.0	0.0	0.0	0.0	0
5	0.000	0.0	0.0	0.0	0.0	0.0	0
6	0.000	0.0	0.0	0.0	0.0	0.0	0
7	0.000	0.0	0.0	0.0	0.0	0.0	0
8	0.000	0.0	0.0	0.0	0.0	0.0	0
9	0.000	0.0	0.0	0.0	0.0	0.0	0
10	0.000	0.0	0.0	0.0	0.0	0.0	0
11	0.000	0.0	0.0	0.0	0.0	0.0	0
12	0.000	0.0	0.0	0.0	0.0	0.0	0

Power:	1.000	kW
Vertical:	0	deg
K:	208.1	mV/m
THEOrms:	299.5	mV/m
THEOrss:	291.4	mV/m
STDrms:	314.6	mV/m
MODrms:	314.6	mV/m
RSS/RMS:	0.97	
Qfactor:	10.0	mV/m
Rloss:	1.00	ohms

Transmitter			
Lat.	48	58	0
Long.	88	18	0
Receiver			
Lat.	0	0	0
Long.	0	0	0
Skywave(50%)	0.000	mV/m	
Skywave(10%)	0.001	mV/m	
Distance	9882.1	km	
Azimuth	91.3	deg	
Elevation:	-21.2	deg	
Region 2:	2		

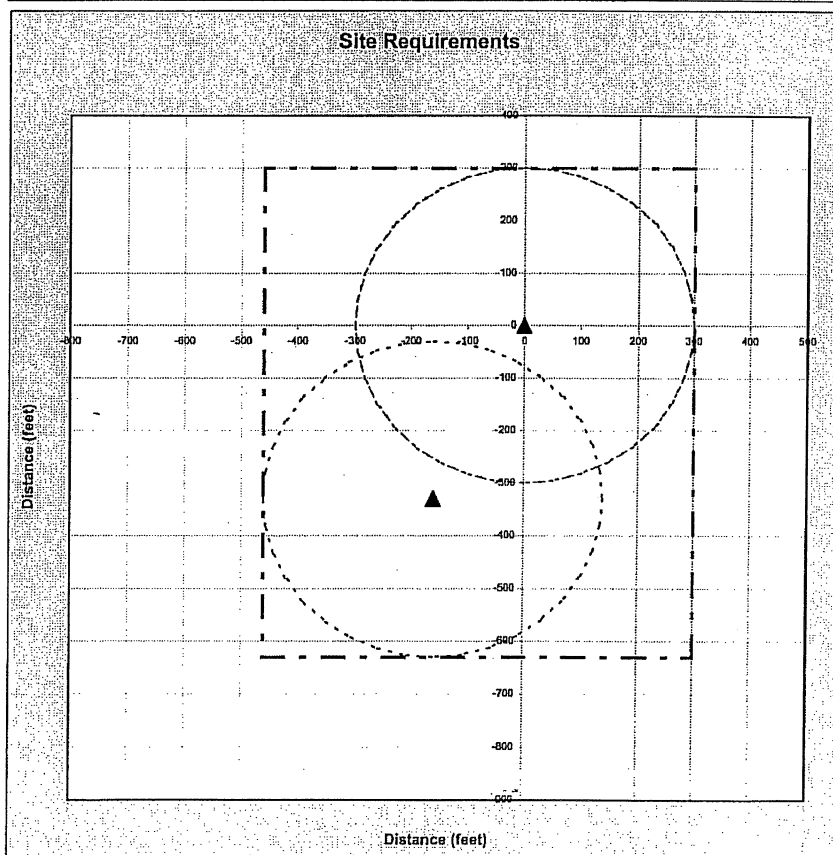
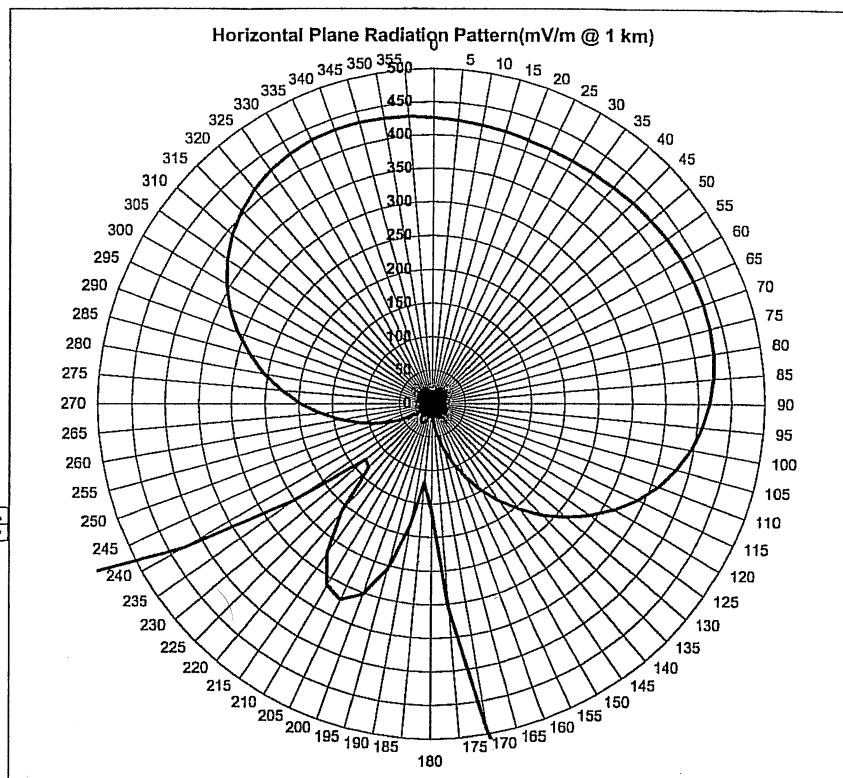
Single Point		Theo	Std	Mod
Azim	Elev	Field	Field	Field
205.8	0.0	29.0	32.3	32.1
Freq:	820	kHz		

Augmentations			
No.	Bear	Span	Field
1	0	0.0	0.0
2	0	0.0	0.0
3	0	0.0	0.0
4	0	0.0	0.0
5	0	0.0	0.0
6	0	0.0	0.0
7	0	0.0	0.0
8	0	0.0	0.0
9	0	0.0	0.0
10	0	0.0	0.0
11	0	0.0	0.0
12	0	0.0	0.0
13	0	0.0	0.0
14	0	0.0	0.0
15	0	0.0	0.0
16	0	0.0	0.0
17	0	0.0	0.0
18	0	0.0	0.0
19	0	0.0	0.0
20	0	0.0	0.0
21	0	0.0	0.0
22	0	0.0	0.0
23	0	0.0	0.0
24	0	0.0	0.0
25	0	0.0	0.0
26	0	0.0	0.0
27	0	0.0	0.0
28	0	0.0	0.0

Note: Must Run Solver for
Skywave(10%) Calculation

PROPOSED NIGHT
NIPIGON, ON
820 KHZ

Site: 16.2 acres



820 KHZ ALLOTMENT

Figure 2

PATTERN CALCULATOR

Antenna Parameters							
Tower	Field	Phase	Spac.	Orien.	G/A	B	TRS
1	1.000	0.0	0.0	0.0	75.0	0.0	0
2	0.850	-83.0	100.0	315.0	75.0	0.0	0
3	0.000	0.0	0.0	0.0	0.0	0.0	0
4	0.000	0.0	0.0	0.0	0.0	0.0	0
5	0.000	0.0	0.0	0.0	0.0	0.0	0
6	0.000	0.0	0.0	0.0	0.0	0.0	0
7	0.000	0.0	0.0	0.0	0.0	0.0	0
8	0.000	0.0	0.0	0.0	0.0	0.0	0
9	0.000	0.0	0.0	0.0	0.0	0.0	0
10	0.000	0.0	0.0	0.0	0.0	0.0	0
11	0.000	0.0	0.0	0.0	0.0	0.0	0
12	0.000	0.0	0.0	0.0	0.0	0.0	0

Power:	1.000	kW
Vertical:	0	deg
K:	224.3	mV/m
THEOrms:	301.0	mV/m
THEOrss:	294.4	mV/m
STDrms:	316.2	mV/m
MODrms:	316.2	mV/m
RSS/RMS:	1.00	
Qfactor:	10.0	mV/m
Rloss:	1.00	ohms

Transmitter			
Lat.	48	58	0
Long.	88	18	0
Receiver			
Lat.	0	0	0
Long.	0	0	0
Skywave(50%)	0.072	mV/m	
Skywave(10%)	0.251	mV/m	
Distance	456.5	km	
Azimuth	350.10	deg	
Elevation:	16.200	deg	
Region 2:	1		

Single Point		Theo	Std	Mod
Azim	Elev	Field	Field	Field
313.0	0.0	410.5	431.2	431.3
Freq:	770	kHz		

Augmentations

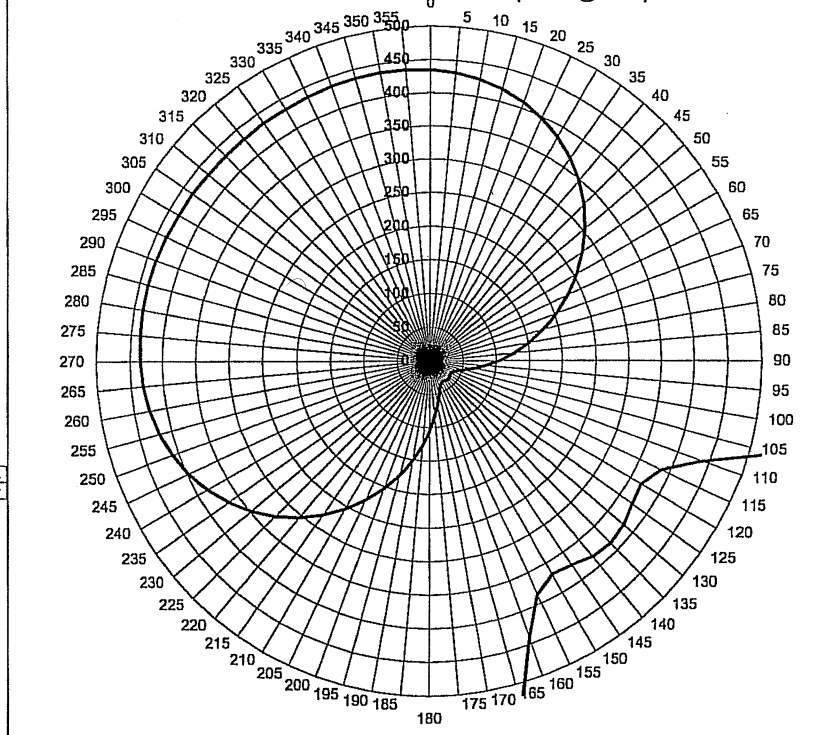
No.	Bear	Span	Field
1	0	0.0	0.0
2	0	0.0	0.0
3	0	0.0	0.0
4	0	0.0	0.0
5	0	0.0	0.0
6	0	0.0	0.0
7	0	0.0	0.0
8	0	0.0	0.0
9	0	0.0	0.0
10	0	0.0	0.0
11	0	0.0	0.0
12	0	0.0	0.0
13	0	0.0	0.0
14	0	0.0	0.0
15	0	0.0	0.0
16	0	0.0	0.0
17	0	0.0	0.0
18	0	0.0	0.0
19	0	0.0	0.0
20	0	0.0	0.0
21	0	0.0	0.0
22	0	0.0	0.0
23	0	0.0	0.0
24	0	0.0	0.0
25	0	0.0	0.0
26	0	0.0	0.0
27	0	0.0	0.0
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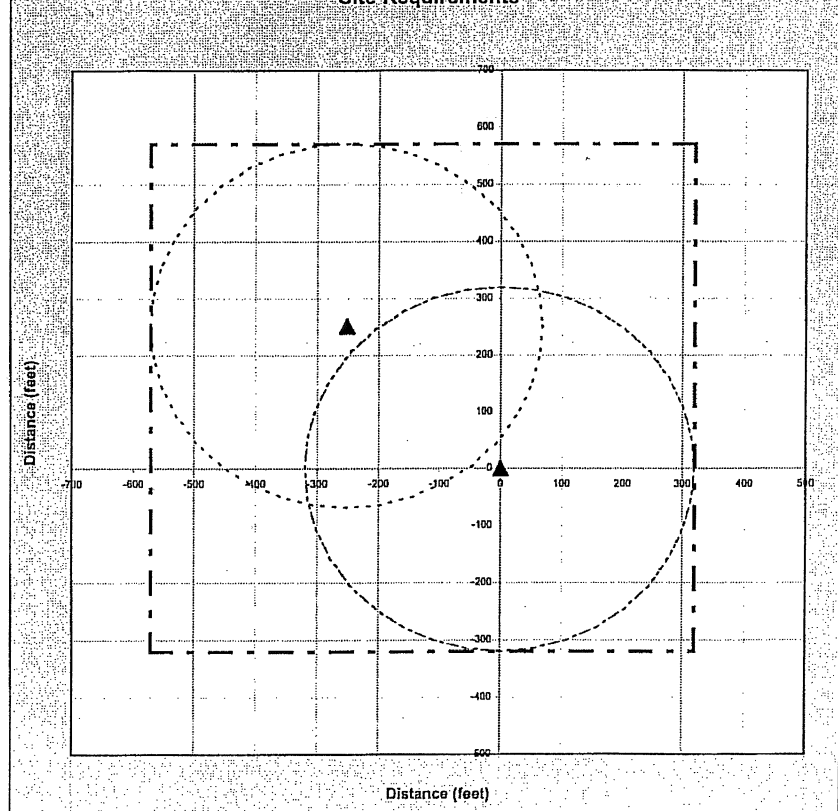
NEW NIGHT
NIPIGON, ON

Site: 18.2 acres

Horizontal Plane Radiation Pattern(mV/m @ 1 km)



Site Requirements



770 KHZ ALLOTMENT

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7	0.000	0.0	0.0	0.0	0.0	0.0	0
8	0.000	0.0	0.0	0.0	0.0	0.0	0
9	0.000	0.0	0.0	0.0	0.0	0.0	0
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MODrms:	314.6	mV/m
RSS/RMS:	0.97	
Qfactor:	10.0	mV/m
Rloss:	1.00	ohms

Transmitter			
Lat.	48	58	0
Long.	88	18	0
Receiver			
Lat.	0	0	0
Long.	0	0	0
Skywave(50%)	0.000	mV/m	
Skywave(10%)	0.001	mV/m	
Distance	9882.1	km	
Azimuth	91.3	deg	
Elevation:	-21.2	deg	
Region 2:	2		

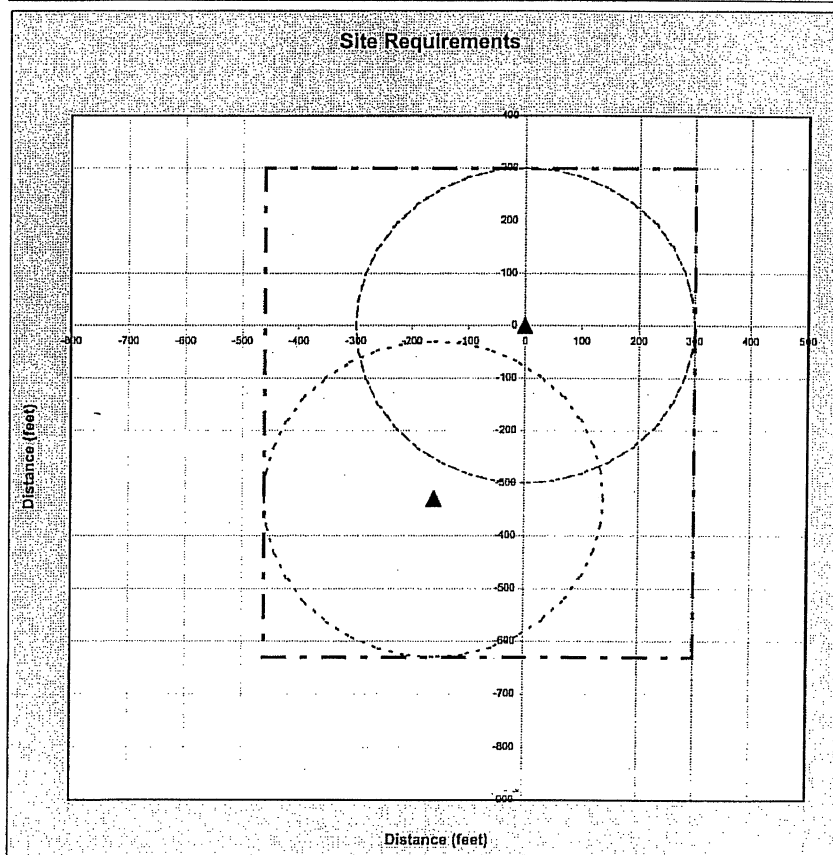
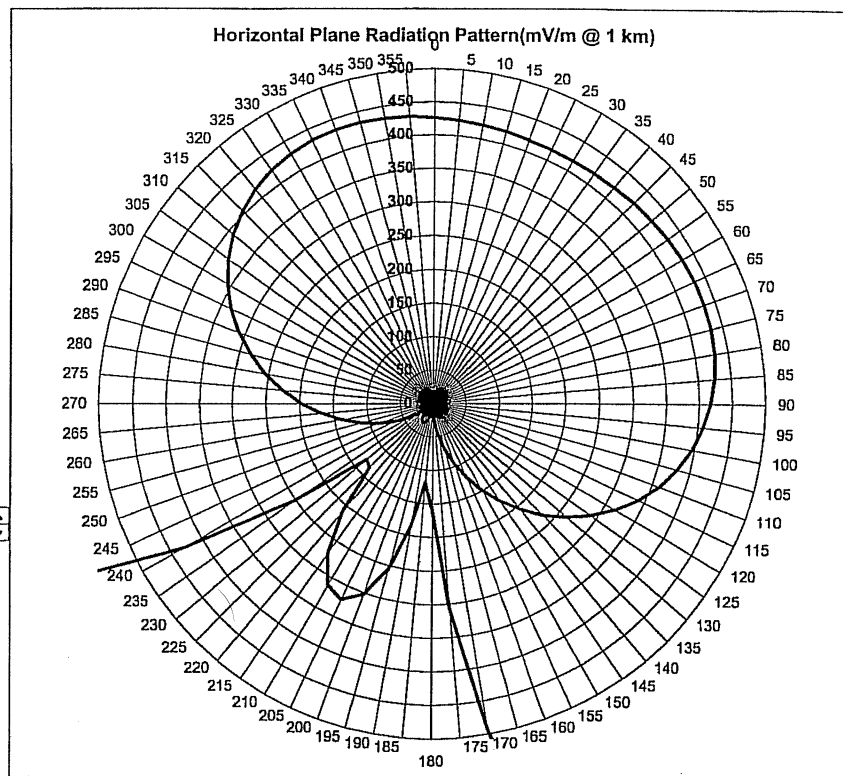
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13	0	0.0	0.0
14	0	0.0	0.0
15	0	0.0	0.0
16	0	0.0	0.0
17	0	0.0	0.0
18	0	0.0	0.0
19	0	0.0	0.0
20	0	0.0	0.0
21	0	0.0	0.0
22	0	0.0	0.0
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6	0.000	0.0	0.0	0.0	0.0	0.0	0
7	0.000	0.0	0.0	0.0	0.0	0.0	0
8	0.000	0.0	0.0	0.0	0.0	0.0	0
9	0.000	0.0	0.0	0.0	0.0	0.0	0
10	0.000	0.0	0.0	0.0	0.0	0.0	0
11	0.000	0.0	0.0	0.0	0.0	0.0	0
12	0.000	0.0	0.0	0.0	0.0	0.0	0

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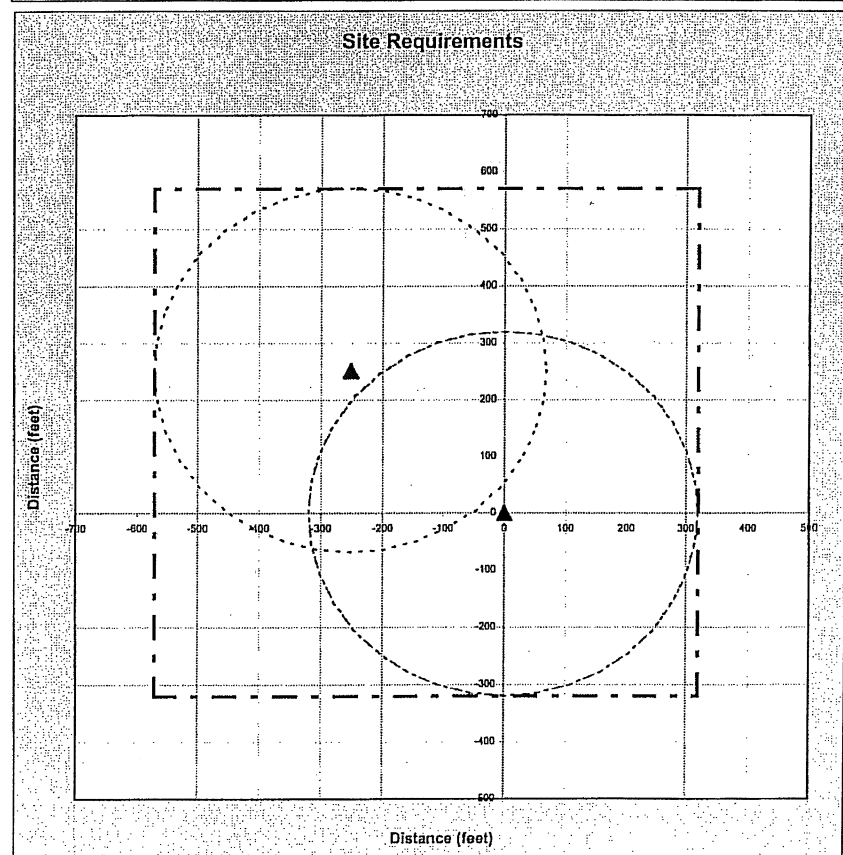
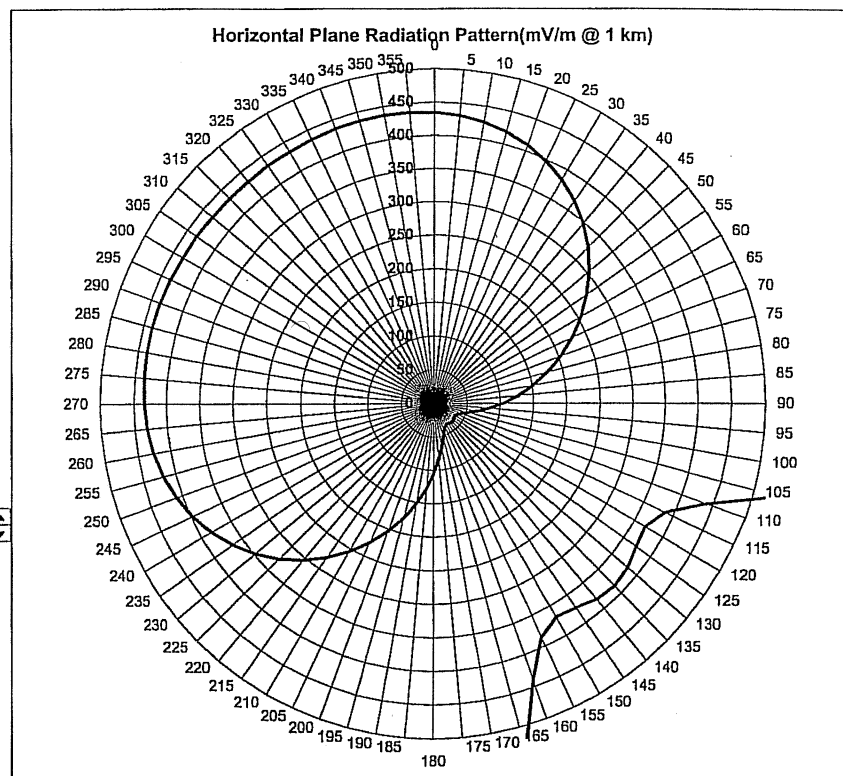
Augmentations

No.	Bear	Span	Field
1	0	0.0	0.0
2	0	0.0	0.0
3	0	0.0	0.0
4	0	0.0	0.0
5	0	0.0	0.0
6	0	0.0	0.0
7	0	0.0	0.0
8	0	0.0	0.0
9	0	0.0	0.0
10	0	0.0	0.0
11	0	0.0	0.0
12	0	0.0	0.0
13	0	0.0	0.0
14	0	0.0	0.0
15	0	0.0	0.0
16	0	0.0	0.0
17	0	0.0	0.0
18	0	0.0	0.0
19	0	0.0	0.0
20	0	0.0	0.0
21	0	0.0	0.0
22	0	0.0	0.0
23	0	0.0	0.0
24	0	0.0	0.0
25	0	0.0	0.0
26	0	0.0	0.0
27	0	0.0	0.0
28	0	0.0	0.0

Note: Must Run Solver for
Skywave(10%) Calculation

NEW NIGHT
NIPIGON, ON

Site: 18.2 acres



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