TECHNICAL EXHIBIT
APPLICATION FOR MODIFICATION OF
CONSTRUCTION PERMIT
RADIO STATION WYNA(FM)
CALABASH, NORTH CAROLINA

July 15, 2004

CH 285C3 15 KW 103 M

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RADIO STATION WYNA(FM)
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Technical Statement

This Technical Exhibit was prepared on behalf of radio station WYNA(FM), Calabash, North Carolina. Station WYNA is licensed for operation on channel 285C3 (BMLH-19990826KZ) and holds a construction permit for channel 285C2 (BPH-20030220AAL). Both the licensed and authorized WYNA facilities are authorized pursuant to 47 CFR 73.215 with respect to WPDT, channel 286A, Johnsonville, South Carolina. Station WPDT has filed a license application to cover its construction permit (BPH-20021121AAP), which specifies a site further removed from WYNA than the former WPDT site. This move by WPDT permits WYNA, at its licensed site, to increase power on channel 285C3 toward WPDT. By means of this application, WYNA requests modification of its construction permit to specify a channel 285C3 facility at its licensed site with non-directional, effective radiated power of 15 kW, slightly reduced from the class C3 maximum to provide protection to the new WPDT facility. Since the proposed WYNA facility is short-spaced to the new WPDT site under 47 CFR 73.207, it requests authorization pursuant to 47 CFR 73.215 with respect to WPDT.

Proposed Facilities

The proposed facility will operate on Channel 285C3 with an effective radiated power (ERP) of 15 kW (circular polarization) and an antenna height above average terrain (HAAT) of 103 m. The existing directional antenna will be removed and the new non-directional antenna will be mounted on the existing WYNA tower (FCC

Antenna Structure Registration Number 1046197) at the same height as the licensed antenna. No change in overall height of the existing tower structure is proposed, and therefore notification of the FAA is not required. Specifications for the proposed operation are provided in Figure 1.

Environmental Considerations

With respect to human exposure to radiofrequency radiation, the proposed facility is categorically excluded from environmental processing. The proposed 4-bay antenna vertical radiation pattern (attached as Appendix 1) shows relative field values of 0.31 or less at all angles 11° or greater below the horizontal. Based on a combined effective radiated power of 30 kW (15 kW horizontal/15 kW vertical) and an assumed downward radiation relative field factor of 0.31, the calculated RFR power density from Equation 8 on page 22 of OET Bulletin 65 (Edition 97-01, August 1997) at 2 meters above ground level is 0.0116 mW/cm2 or 5.8% of the FCC limit for uncontrolled environments. The only other nearby transmitter is that of FM translator station W240AQ, which is co-located with WYNA. Based on its licensed antenna height of 115 m AMSL and ERP of 19 Watts, the predicted RFR power density at ground level from W240AQ is less than 0.1% (1/10 of one percent) of the FCC limit for uncontrolled environments. The combined power density from the two stations is predicted to be no more than 5.9% of the FCC limit for uncontrolled environments. Therefore, the proposal complies with the FCC limits for human exposure to RF radiation and it is categorically excluded from environmental processing. The applicant certifies that access to the tower is restricted by means of a fence, and that it will reduce power or cease operation, as necessary, to protect persons having access to the tower from RFR exposure in excess of the FCC guidelines. Use of an existing tower is proposed; certifications of environmental compliance with respect to issues other than RFR are on file with the commission.

Predicted Coverage Contours

The predicted coverage contours were calculated in accordance with Section 73.313 of the FCC Rules. The average terrain elevations from 3 to 16 km from the proposed site were computed using the U.S.G.S 30-second terrain database. The distances to the predicted coverage contours were determined using the average elevations of 3-16 km portions of radials spaced every 10-degrees of azimuth. The antenna radiation center HAAT in each radial direction and the ERP were used in conjunction with the propagation prediction curves of Section 73.333 to determine the distances to contours. Figure 2 is a map showing the predicted coverage contours.

As indicated in Figure 2, the normally predicted 70 dBu contour does not encompass the entire community of Calabash. An area analysis indicates that the predicted 70 dBu contour encompasses approximately 58% of the area within the Calabash city limits, based on 2000 U.S. Census boundaries.

Due to flat terrain between the WYNA transmitter site and the city of Calabash and pursuant to Section 73.313(e) of the FCC Rules, a supplemental method for contour prediction has been employed to predict the extent of the 70 dBu contour over Calabash. Use of a supplemental prediction method is justified in this instance since the terrain roughness in the direction of Calabash "departs widely" from the average 50-meter terrain roughness (Δh) employed in the normal FCC prediction method.[*] The terrain roughness (Δh) was determined to be between 6 and 8 meters along three radials through Calabash.[†] The following table shows the Δh values for the three radials.

[*] The FCC considers terrain to "depart widely" from the 50-meter Δh standard where the Δh value is 20 meters or less or 100 meters or greater.

[†] Δh was determined along each radial for the terrain segment from 10 km to the furthest point of Calabash from the proposed WYNA transmitter site. Three radials were used, one through the city and one on each edge of the city. Terrain data were derived from the USGS 3-second database at 0.1-km intervals along each radial.

Radial	Terrain Interval	Δh (meters)
63°T	10-20.8 km	7
67°T	10-21.2 km	8
70°T	10-21.3 km	6

The supplemental prediction method used was the well-known and widely accepted Longley-Rice propagation model.[‡] This analysis indicates that the predicted 70 dBu contour for WYNA(FM) will encompass the entire city of Calabash. Figure 3 shows the extent of the 70 dBu contour by the normal FCC method and by the supplemental Longley-Rice method. Figure 4 includes a series of graphs showing the predicted Longley-Rice field strength and the terrain elevation versus distance from WYNA(FM) along the three radials used in the analysis. This analysis includes a conservative clutter factor of 5 dB; the appropriate clutter factor may be less than this. Figure 5 includes terrain profiles demonstrating the basis for the Δh values along the three radials. Appendix 2 contains sample Longley-Rice point data on which the graphs were based.

The following table compares the extent of the predicted 70 dBu contour for the proposed WYNA(FM) based on the conventional FCC contour method and based on the supplemental Longley-Rice method. Analysis shows that based on the Longley-Rice method, the predicted distances to the 70 dBu contour increase between 17.9 and 33.2 percent.

City Coverage Comparison				
Radial	Distance to 70 dBu Contour (km)		Difference	
	FCC F(50,50)	Longley-Rice	km	Percent
63°T	20.1	23.7	3.6	+17.9
67°T	20.1	23.7	3.6	+17.9
70°T	20.5	27.3	6.8	+33.2

[‡] See, for example, FCC Office of Engineering and Technology Bulletin No. 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, July 2, 1997.

The following sample calculations are provided concerning the supplemental Longley-Rice prediction method:

Parameter	Value
Transmitter site coordinates (NAD27)	33-49-19 / 78-46-18
Calculation point coordinates (NAD27)	33-54-18 / 78-32-09
Distance to calculation point (km)	23.7
Bearing to calculation point (degrees true)	67.0
Effective radiated power (kW)	15
Calculated free-space field at point (dBu)	91.1
Additional estimated transmission loss (dB)	16.1
Clutter loss factor (dB)	5.0
Net received field (dBu)	70.0
Mode of variability	11 (individual mode)
Confidence	50%
Time / Location variability	50%
Polarization	H
Frequency (MHz)	104.9
Relative permittivity	15
Conductivity (S/m)	0.005
Climate code	5
Surface refractivity	300
Effective earth curvature	1.33
Profile	237 points; 0.1 km interval
Transmitting antenna height (m, AGL)	93
Site elevation (m AMSL)	14

Based on the foregoing, it is concluded that the WYNA(FM) proposal is compliant with the FCC supplemental contour analysis showing requirements, and that the proposed WYNA(FM) facility will, in fact, provide 70 dBu coverage over the entire principal community of license of Calabash, NC.

Allocation Considerations

As outlined in Sheet 1 of Figure 6, the proposed facility meets the separation requirements of Section 73.207 of the FCC Rules with respect to all pertinent

allotments and assignments with the exception of WPDT, CH 286A, Johnsonville, South Carolina. Processing according to Section 73.215 of the FCC Rules is requested with respect to the WPDT. Attached, as Sheet 2 of Figure 6, is a map demonstrating compliance with the contour protection requirements of Section 73.215 of the FCC Rules with respect to WPDT. Distances to the contours shown on Sheet 2 of Figure 6 were determined at 2-degree azimuthal intervals (180 radials) using the USGS 3-second linearly interpolated terrain database. The contours for WPDT are based on an assumed, maximum Class A, non-directional facility with 6 kW ERP at 100 m HAAT in accordance with Section 73.215.

David E. Dickmann

July 15, 2004

Figure 1

ENGINEERING EXHIBIT
APPLICATION FOR MODIFICATION OF
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RADIO STATION WYNA(FM)
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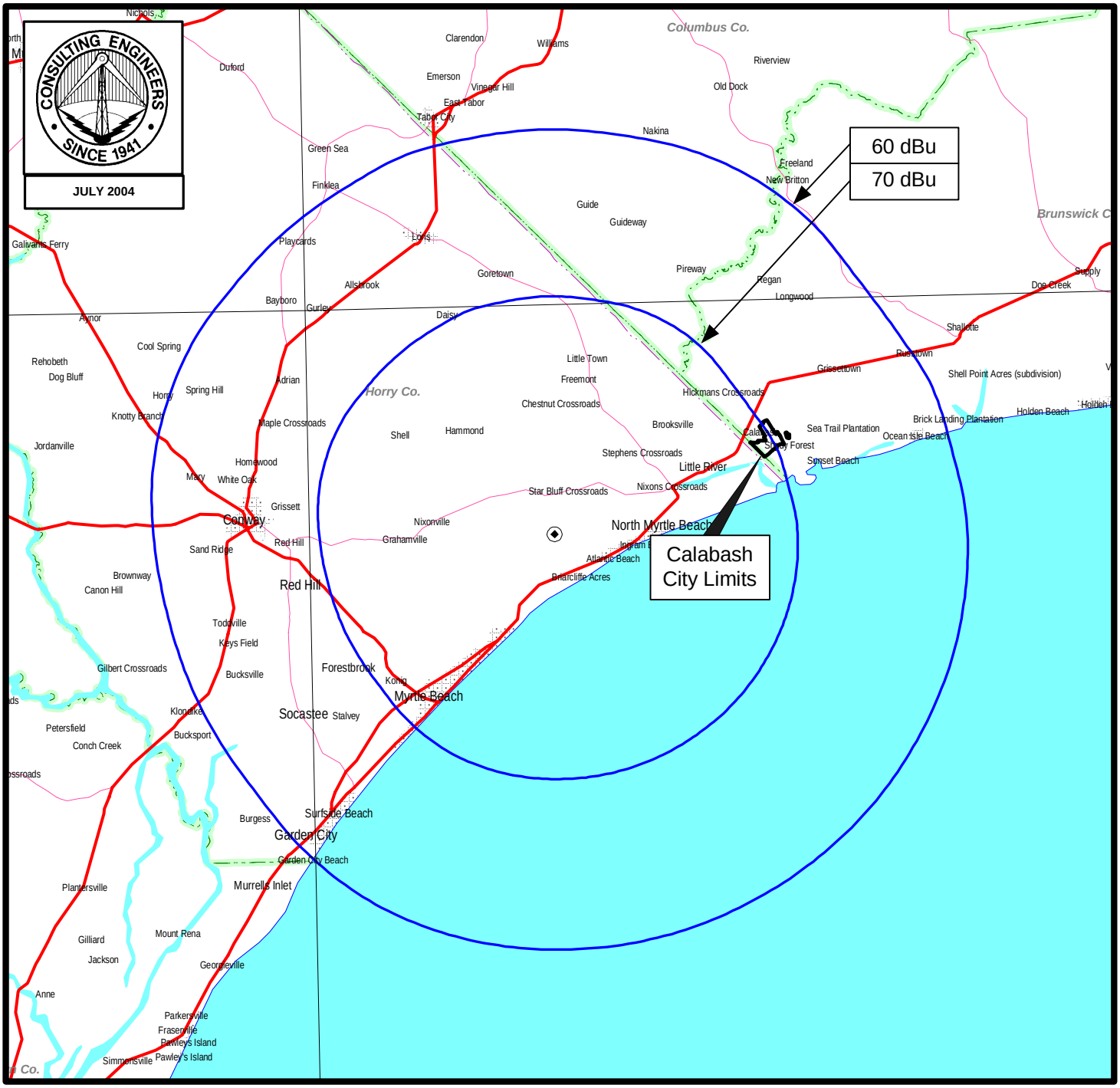
Technical Specifications

Channel / Frequency	285C3 / 104.9 MHz
Site Coordinates (NAD'27)	33°49'19"North Latitude 78°46'18"West Longitude
Site elevation	14 m AMSL
Overall height of existing structure (ASR #1046197)	102 m AGL / 116 m AMSL
Height of antenna radiation center	93 m AGL / 107 m AMSL
Antenna radiation center HAAT	103 m
Transmitter	as required
Transmitter power output	8.81 kW
Transmission line	Andrew, HJ7-50A*
Transmission line length	101 m
Transmission line efficiency	85.1%
Antenna	Armstrong FMA-727, 4-bay
Polarization	Circular
Power gain	2.0
Antenna input power	7.50 kW
Effective radiated power (H & V)	15.0 kW

*or equivalent

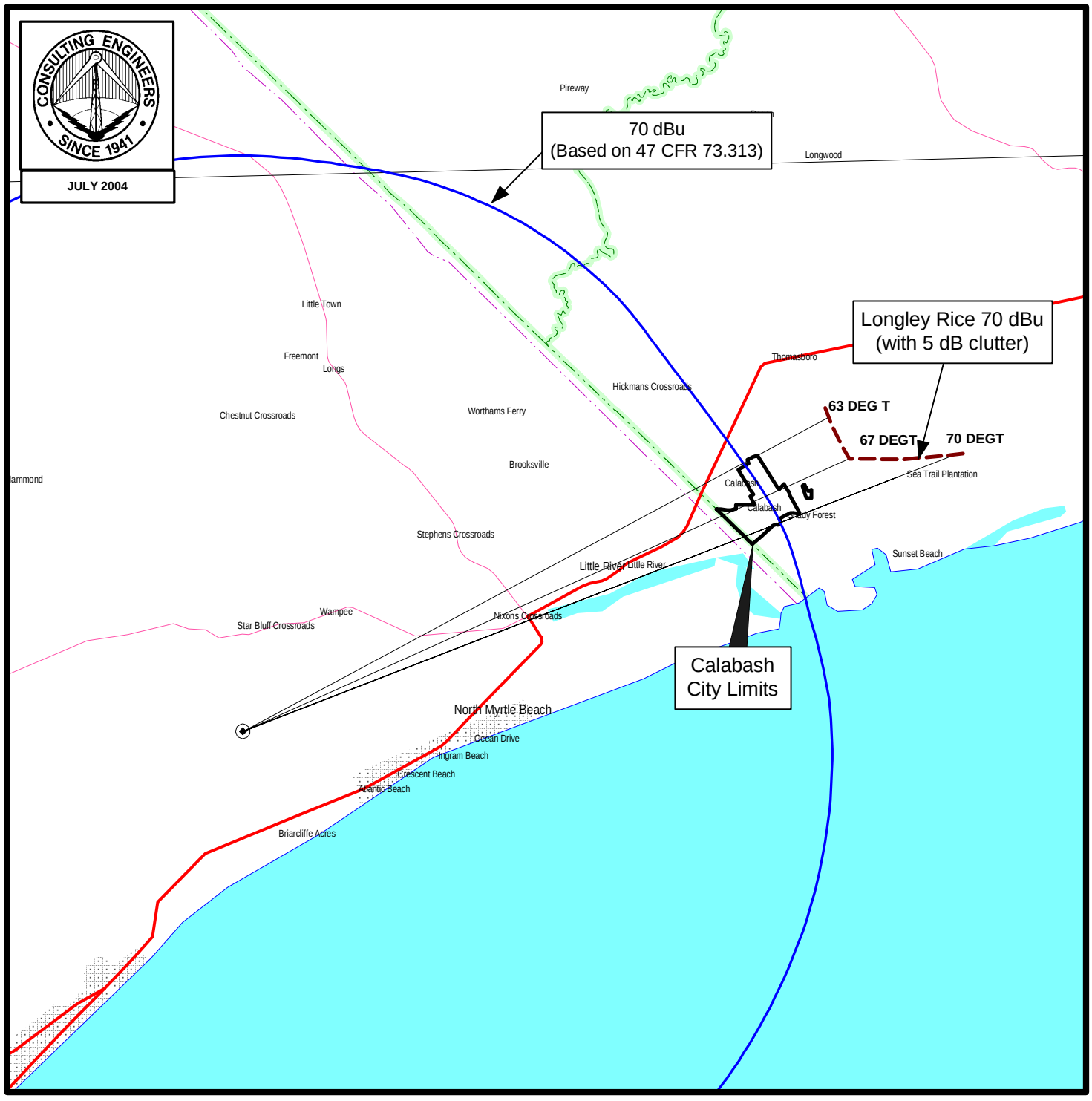
Figure 2



PREDICTED COVERAGE CONTOURS

RADIO STATION WYNA(FM)
CALABASH, NORTH CAROLINA
CH 285C3 15 KW 103 M

du Treil, Lundin & Rackley, Inc. Sarasota, Florida



PREDICTED 70 dBu COVERAGE
BASED ON SUPPLEMENTAL METHOD

RADIO STATION WYNA(FM)
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du Treil, Lundin & Rackley, Inc. Sarasota, Florida

Longley-Rice Field Strength (dBu) and Elevation (meters)
vs. Distance (kilometers)
From WYNA LICENSED SITE
AT 63° True
ERP of 15.0 kW at Rad Center of 107 M AMSL
(33-49-19 / 78-46-18)

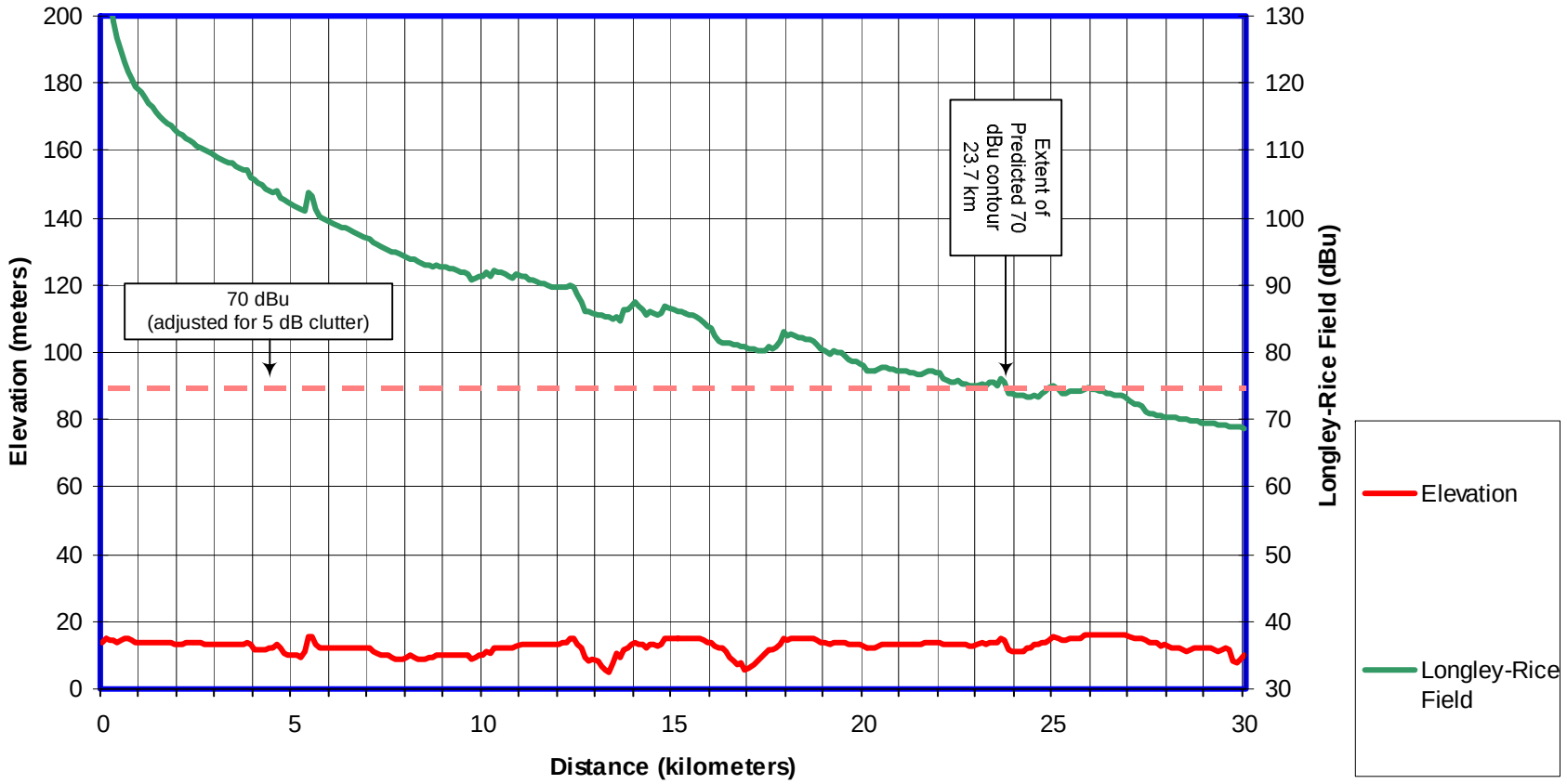


Figure 4
Sheet 1 of 3

Longley-Rice Field Strength (dBu) and Elevation (meters)
vs. Distance (kilometers)
From WYNA LICENSED SITE
AT 67° True
ERP of 15.0 kW at Rad Center of 107 M AMSL
(33-49-19 / 78-46-18)

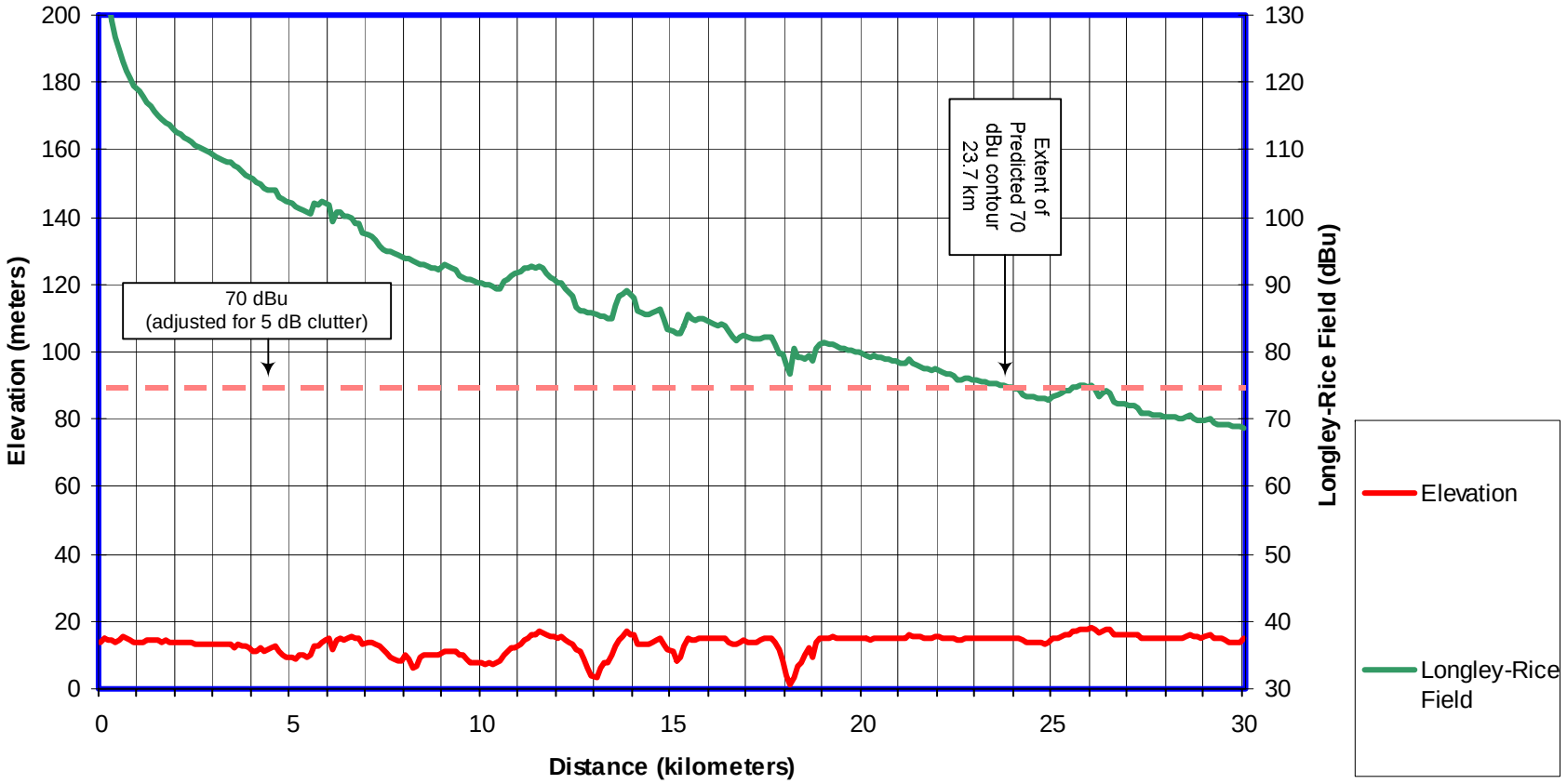


Figure 4
Sheet 2 of 3

Longley-Rice Field Strength (dBu) and Elevation (meters)
vs. Distance (kilometers)
From WYNA LICENSED SITE
AT 70° True
ERP of 15.0 kW at Rad Center of 107 M AMSL
(33-49-19 / 78-46-18)

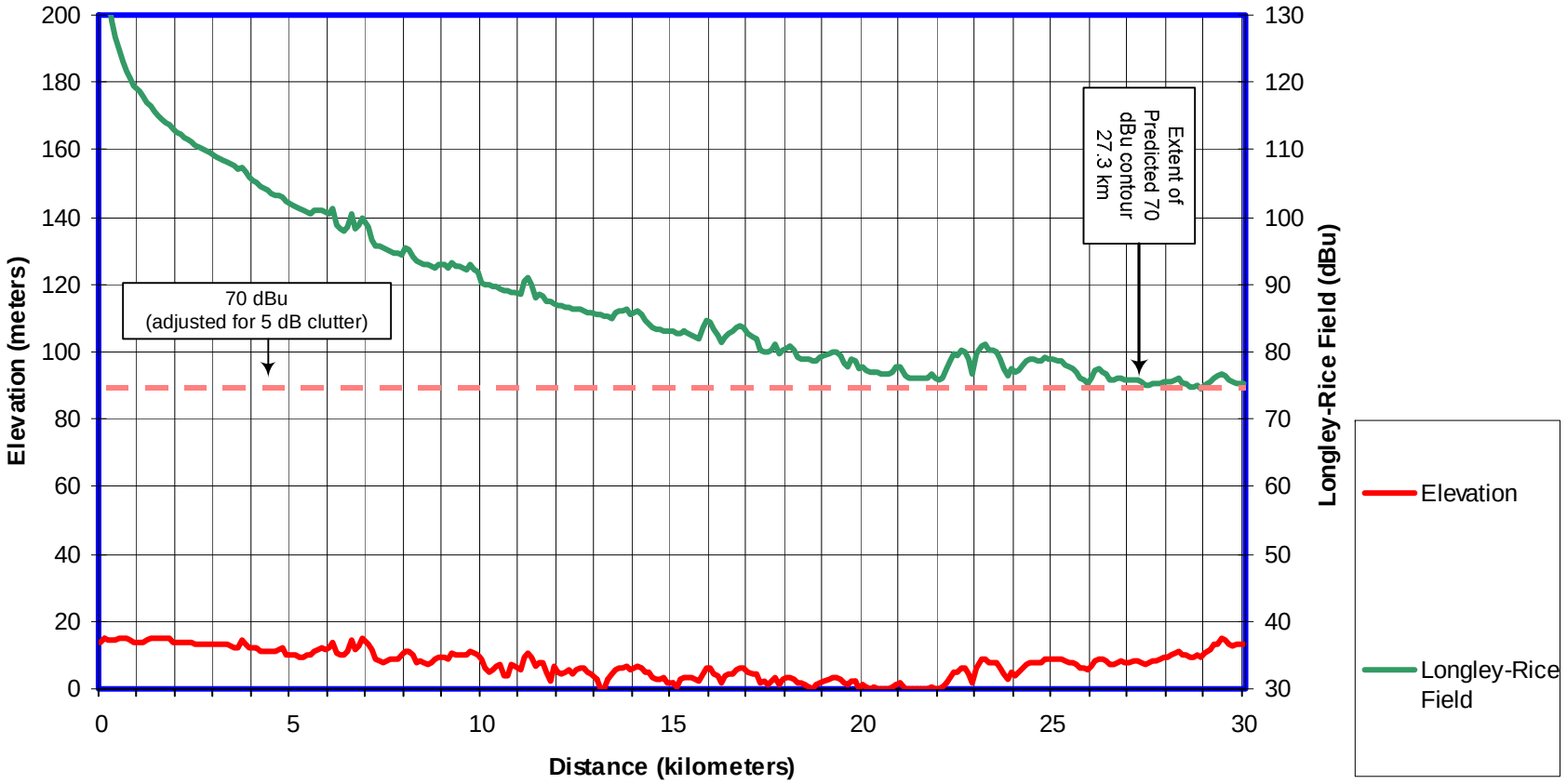


Figure 4
Sheet 3 of 3

TERRAIN PROFILE
Elevation (meters) vs. Distance (kilometers)
From WYNA LICENSED SITE AT 63° True
(33-49-19 / 78-46-18)

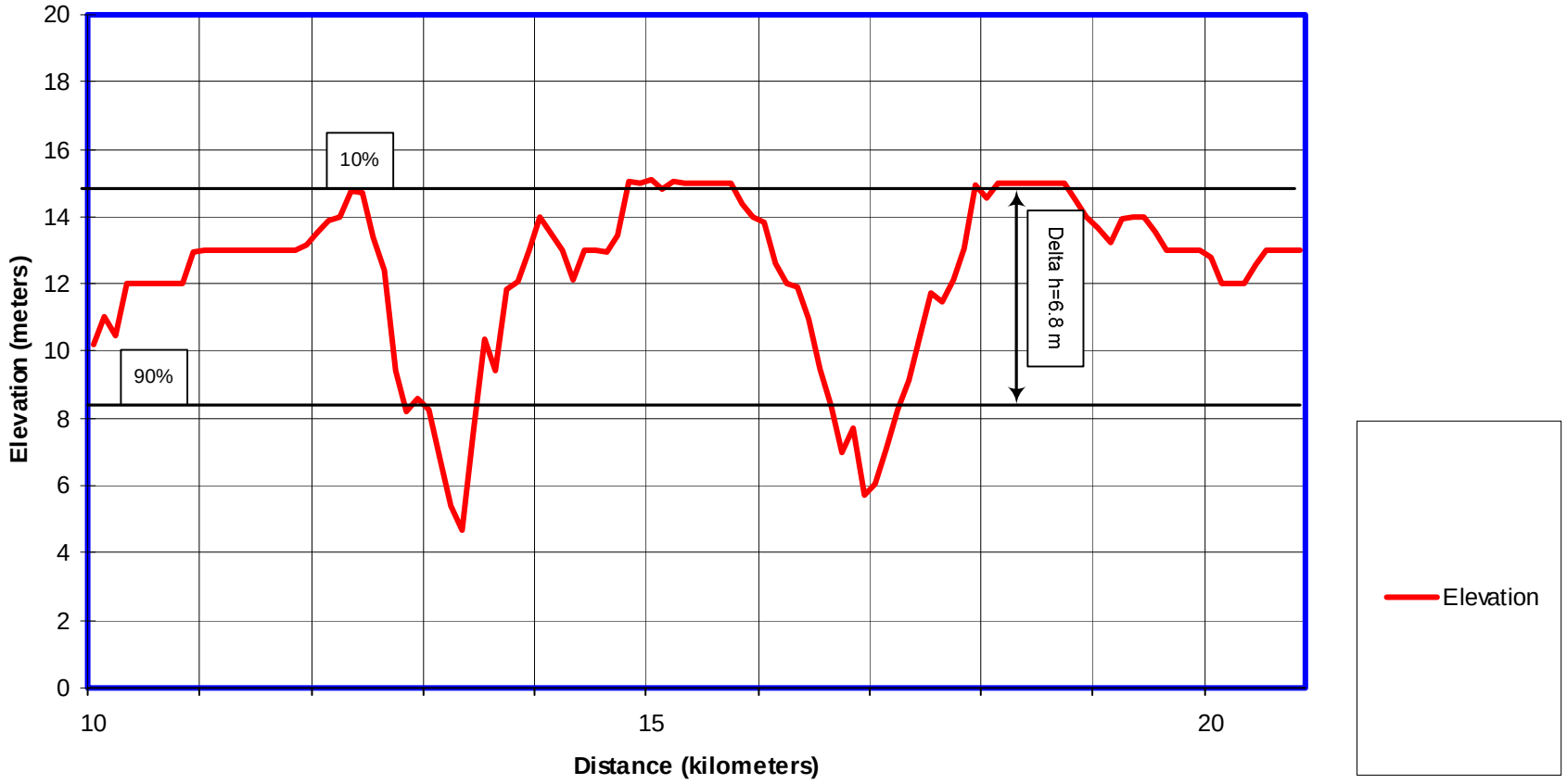


Figure 5
Sheet 1 of 3

TERRAIN PROFILE
Elevation (meters) vs. Distance (kilometers)
From WYNA LICENSED SITE AT 67° True
(33-49-19 / 78-46-18)

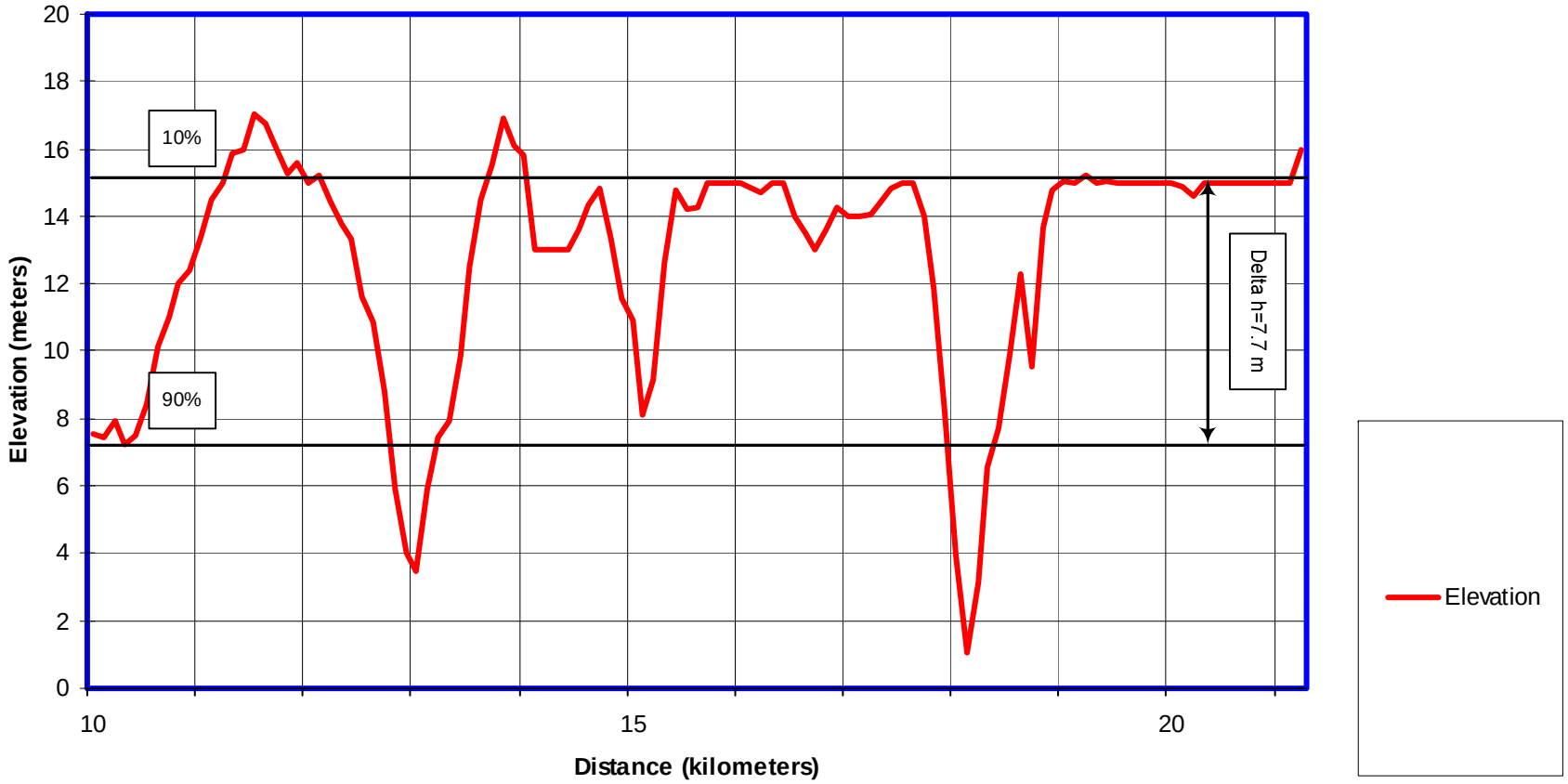


Figure 5
Sheet 2 of 3

TERRAIN PROFILE
Elevation (meters) vs. Distance (kilometers)
From WYNA LICENSED SITE AT 70° True
(33-49-19 / 78-46-18)

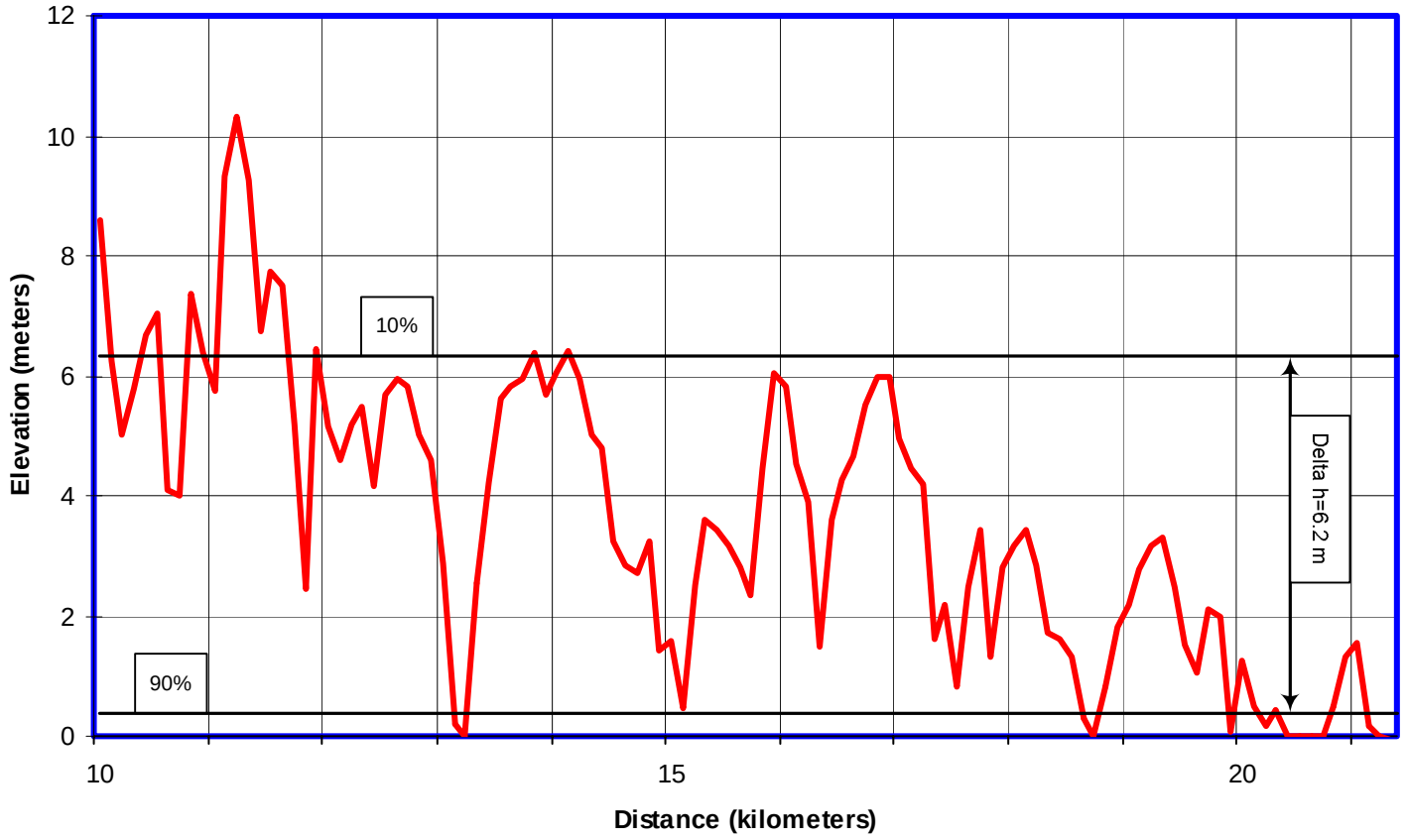


Figure 5
Sheet 3 of 3

ALLOCATION STUDY

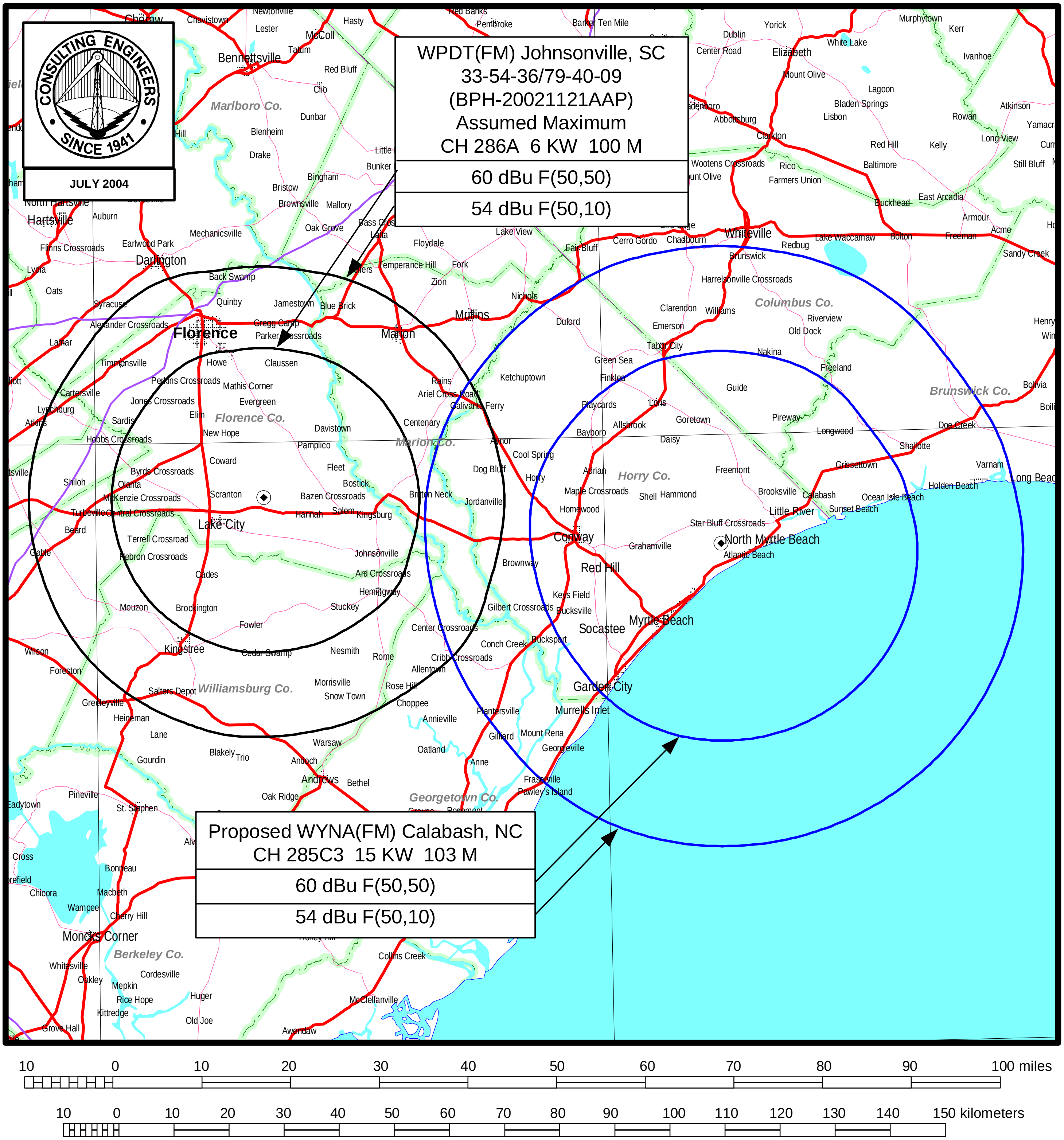
RADIO STATION WYNA(FM)
CALABASH, NORTH CAROLINA
CH 285C3 15 KW 103 M

Separation Buffer: 65 km
Channel: 285 C3 Coordinates: 33-49-19 078-46-18

Call Id	City St	Status	File Num	Channel Freq	ERP HAAT	DA Id	Latitude Longitude	73 215	Bear	Dist. (km)	Req. (km)
WKXS-F 25998	LELAND NC	LIC C	BMLH 20011012ABC	231 A 94.1	5.000 41	N	34-09-03 078-04-48	N	60.0	73.59	12.0
WRQR 74159	WILMINGTON NC	LIC C	BLH 19990629KC	283 A 104.5	3.100 137	29853	34-10-00 077-56-40	N	63.1	85.46	42.0
WZUP 17618	ROSE HILL NC	LIC C	BLH 19930128KB	284 A 104.7	2.800 78	N	34-51-48 078-02-16	Y	30.0	133.81	89.0
WNOK 19472	COLUMBIA SC	LIC C	BLH 20031030AAR	284 C1 104.7	90.000 315	Y 46139	34-09-03 080-54-36	N	281.1	200.92	144.0
WKQC 20338	CHARLOTTE NC	LIC C	BLH 19920416KB	284 C 104.7	100.000 369	Y 14301	35-15-06 080-41-12	N	312.7	236.77	176.0
WPDT 66643	JOHNSONVILL SC	LIC C	BLH 19950620KA	286 A 105.1	4.400 114	N	33-49-00 079-34-35	N	269.8	74.50	89.0[1]
WPDT 66643	JOHNSONVILL SC	BPH CP C	20021121AAP	286 A 105.1	2.950 144	N	33-54-36 079-40-09	N	277.0	83.62	89.0[1]
0	OLANTA SC	RM ADD C	10001	286 A 105.1	0.000		33-55-38 079-52-41		276.8	103.03	89.0
0	LITCHFIELD SC	RM ADD C	10001	287 C3 105.3	0.000		33-27-47 079-06-05		217.5	50.20	43.0
0	FAIR BLUFF NC	RM DEL C	10001	287 C3 105.3	0.000		34-16-50 078-47-47		357.4	50.92	43.0
WPPG 78329	FAIR BLUFF NC	BMPH CP C	20020821AAP	287 C3 105.3	11.000 150	N	34-17-01 078-48-09	Y	356.8	51.29	43.0

[1] WPDT is operating under construction permit BPH-20021121AAP and has filed an application for license to cover this new operation. Therefore, protection of the former facility, BLH-19950620KA is no longer required. Protection to BPH-20021121AAP is provided in accordance with 47 CFR 73.215, see Sheet 2 of Figure 6.

Figure 6
Sheet 2 of 2



ALLOCATION STUDY

RADIO STATION WYNA(FM)
CALABASH, NORTH CAROLINA
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du Treil, Lundin & Rackley, Inc. Sarasota, Florida

Appendix 1

ENGINEERING EXHIBIT
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Vertical Plane Radiation Pattern for Proposed Transmitting Antenna

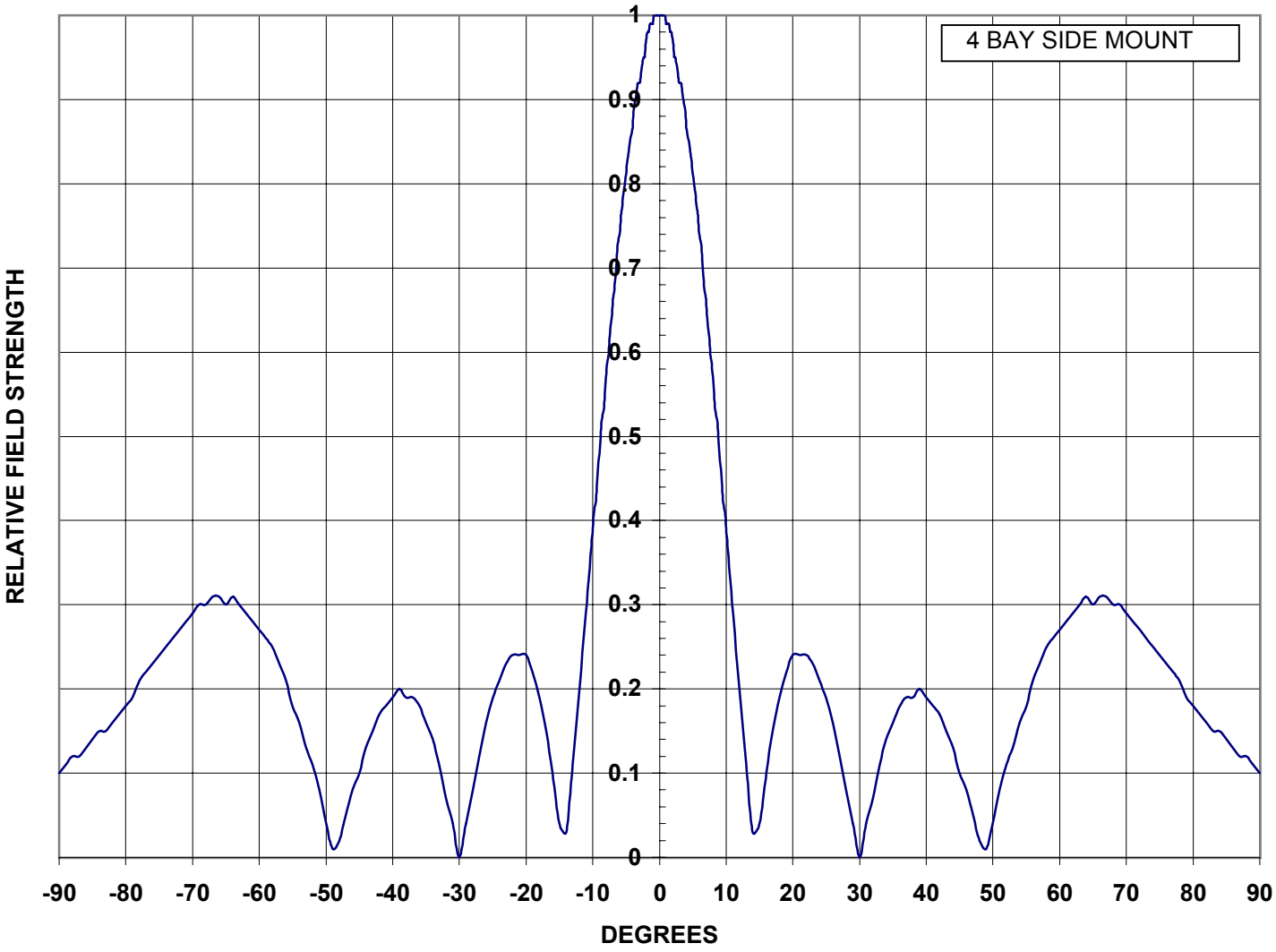
(*see following sheets*)

ARMSTRONG FMA-707/727/737 4 BAY FM ANTENNA VERTICAL PATTERN

< ANGLE IN DEGREES FS RELATIVE FIELD STRENGTH

<	FS	<	FS	<	FS	<	FS	<	FS	<	FS	<	FS	<	FS	<	FS	<	FS
90	0.1	58	0.25	26	0.16	6.8	0.67	0.4	1	-0.6	1	-7	0.66	-27	0.12	-59	0.26
89	0.11	57	0.23	25	0.19	6.6	0.69	0.2	1	-0.8	1	-7.2	0.64	-28	0.08	-60	0.27
88	0.12	56	0.21	24	0.21	6.4	0.71	0	1	-1	0.99	-7.4	0.62	-29	0.04	-61	0.28
87	0.12	55	0.18	23	0.23	6.2	0.73	-0.2	1	-1.2	0.99	-7.6	0.6	-30	0	-62	0.29
86	0.13	54	0.16	22	0.24	6	0.74	-0.4	1	-1.4	0.99	-7.8	0.59	-31	0.04	-63	0.3
85	0.14	53	0.13	21	0.24	5.8	0.76			-1.6	0.98	-8	0.57	-32	0.07	-64	0.31
84	0.15	52	0.11	20	0.24	5.6	0.77			-1.8	0.98	-8.2	0.55	-33	0.11	-65	0.3
83	0.15	51	0.08	19	0.22	5.4	0.79			-2	0.97	-8.4	0.53	-34	0.14	-66	0.31
82	0.16	50	0.04	18	0.19	5.2	0.8			-2.2	0.95	-8.6	0.52	-35	0.16	-67	0.31
81	0.17	49	0.01	17	0.15	5	0.81			-2.4	0.95	-8.8	0.5	-36	0.18	-68	0.3
80	0.18	48	0.02	16	0.1	4.8	0.83			-2.6	0.94	-9	0.48	-37	0.19	-69	0.3
79	0.19	47	0.05	15	0.04	4.6	0.84			-2.8	0.93	-9.2	0.46	-38	0.19	-70	0.29
78	0.21	46	0.08	14	0.03	4.4	0.85			-3	0.92	-9.4	0.44	-39	0.2	-71	0.28
77	0.22	45	0.1	13	0.11	4.2	0.86			-3.2	0.92	-9.6	0.42	-40	0.19	-72	0.27
76	0.23	44	0.13	12	0.2	4	0.87			-3.4	0.91	-9.8	0.41	-41	0.18	-73	0.26
75	0.24	43	0.15	11	0.29	3.8	0.89			-3.6	0.9	-10	0.39	-42	0.17	-74	0.25
74	0.25	42	0.17	10	0.39	3.6	0.9			-3.8	0.89	-11	0.29	-43	0.15	-75	0.24
73	0.26	41	0.18	9.8	0.41	3.4	0.91			-4	0.87	-12	0.2	-44	0.13	-76	0.23
72	0.27	40	0.19	9.6	0.42	3.2	0.92			-4.2	0.86	-13	0.11	-45	0.1	-77	0.22
71	0.28	39	0.2	9.4	0.44	3	0.92			-4.4	0.85	-14	0.03	-46	0.08	-78	0.21
70	0.29	38	0.19	9.2	0.46	2.8	0.93			-4.6	0.84	-15	0.04	-47	0.05	-79	0.19
69	0.3	37	0.19	9	0.48	2.6	0.94			-4.8	0.83	-16	0.1	-48	0.02	-80	0.18
68	0.3	36	0.18	8.8	0.5	2.4	0.95			-5	0.81	-17	0.15	-49	0.01	-81	0.17
67	0.31	35	0.16	8.6	0.52	2.2	0.95			-5.2	0.8	-18	0.19	-50	0.04	-82	0.16
66	0.31	34	0.14	8.4	0.53	2	0.97			-5.4	0.79	-19	0.22	-51	0.08	-83	0.15
65	0.3	33	0.11	8.2	0.55	1.8	0.98			-5.6	0.77	-20	0.24	-52	0.11	-84	0.15
64	0.31	32	0.07	8	0.57	1.6	0.98			-5.8	0.76	-21	0.24	-53	0.13	-85	0.14
63	0.3	31	0.04	7.8	0.59	1.4	0.99			-6	0.74	-22	0.24	-54	0.16	-86	0.13
62	0.29	30	0	7.6	0.6	1.2	0.99			-6.2	0.73	-23	0.23	-55	0.18	-87	0.12
61	0.28	29	0.04	7.4	0.62	1	0.99			-6.4	0.71	-24	0.21	-56	0.21	-88	0.12
60	0.27	28	0.08	7.2	0.64	0.8	1			-6.6	0.69	-25	0.19	-57	0.23	-89	0.11
59	0.26	27	0.12	7	0.66	0.6	1			-6.8	0.67	-26	0.16	-58	0.25	-90	0.1

ARMSTRONG FMA-707/727/737 FM ANTENNA VERTICAL PATTERN



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Longley-Rice Point Data

(*See following sheet*)

Longley-Rice Point Data for WYNA(FM)
15 kW ERP at 107 m AMSL

Azimuth (deg. True)	Long Rice Field (dBu)	Distance from WYNA (km)	Elev (m)
63	75.0	23.0	13.1
63	75.4	23.1	13.6
63	75.0	23.2	13.3
63	75.6	23.3	14.0
63	75.5	23.4	14.0
63	75.1	23.5	13.7
63	76.0	23.6	14.9
63	75.6	23.7	14.5
63	73.9	23.8	11.8
63	73.8	23.9	11.0
63	73.7	24.0	11.0
63	73.6	24.1	11.0
63	73.5	24.2	11.0
63	73.4	24.3	12.0
63	73.4	24.4	12.0
63	73.5	24.5	13.0
63	73.5	24.6	13.0

Azimuth (deg. True)	Long Rice Field (dBu)	Distance from WYNA (km)	Elev (m)
67	75.8	23.0	15.0
67	75.7	23.1	15.0
67	75.6	23.2	15.0
67	75.4	23.3	15.0
67	75.3	23.4	15.0
67	75.2	23.5	15.0
67	75.1	23.6	15.0
67	75.0	23.7	15.0
67	74.8	23.8	15.0
67	74.7	23.9	15.0
67	74.6	24.0	15.0
67	74.5	24.1	15.0
67	73.7	24.2	14.3
67	73.5	24.3	14.0
67	73.4	24.4	14.0
67	73.3	24.5	14.0
67	73.2	24.6	14.0

Azimuth (deg. True)	Long Rice Field (dBu)	Distance from WYNA (km)	Elev (m)
70	75.9	26.6	7.4
70	76.0	26.7	7.8
70	76.1	26.8	8.0
70	75.9	26.9	8.0
70	75.8	27.0	8.0
70	75.9	27.1	8.2
70	75.7	27.2	8.2
70	75.5	27.3	8.0
70	74.9	27.4	7.3
70	75.1	27.5	7.8
70	75.2	27.6	8.1
70	75.3	27.7	8.4
70	75.4	27.8	8.8
70	75.6	27.9	9.2
70	75.7	28.0	9.5
70	75.7	28.1	9.7
70	75.8	28.2	10.2