

## CONSOLIDATED ENGINEERING EXHIBIT

NEW FX, FIN #202495

October 2018

**Fig. 1** illustrates the 60 dBu contour proposed in the original short-form application (BNPFT-20180130AAP) and the 60 dBu contour from the new site proposed herein, showing that they overlap and that the instant proposal's 60 dBu contour is fully contained within a 25-mile radius of WRPA(AM).

**Figures 2, 3 and 4** demonstrate that the instant proposal complies with all co-channel and first-channel protections, except with respect to WODS and WKLB-FM. As shown in **Fig. 4**, WKLB's signal strength at the proposed site is 60 dBu; therefore, the relevant interfering contour is 100 dBu.

As indicated in **Fig. 5**, at the proposed power level of 115 watts and using the proposed 2-bay, vertically-stacked Scala CA-2-FM/CP, the 100 dBu contour clears ground by at least 11.9 meters, except at depression angles lower than 45 degrees or distances closer than 156 meters from the tower base.

As the aerial image below illustrates, there are no residences or other occupied structures within a 156-meter radius of the tower.



There are no stations on IF channels (221,222) close enough to require interference protection.

Figure 1  
Proposed Coverage Contour

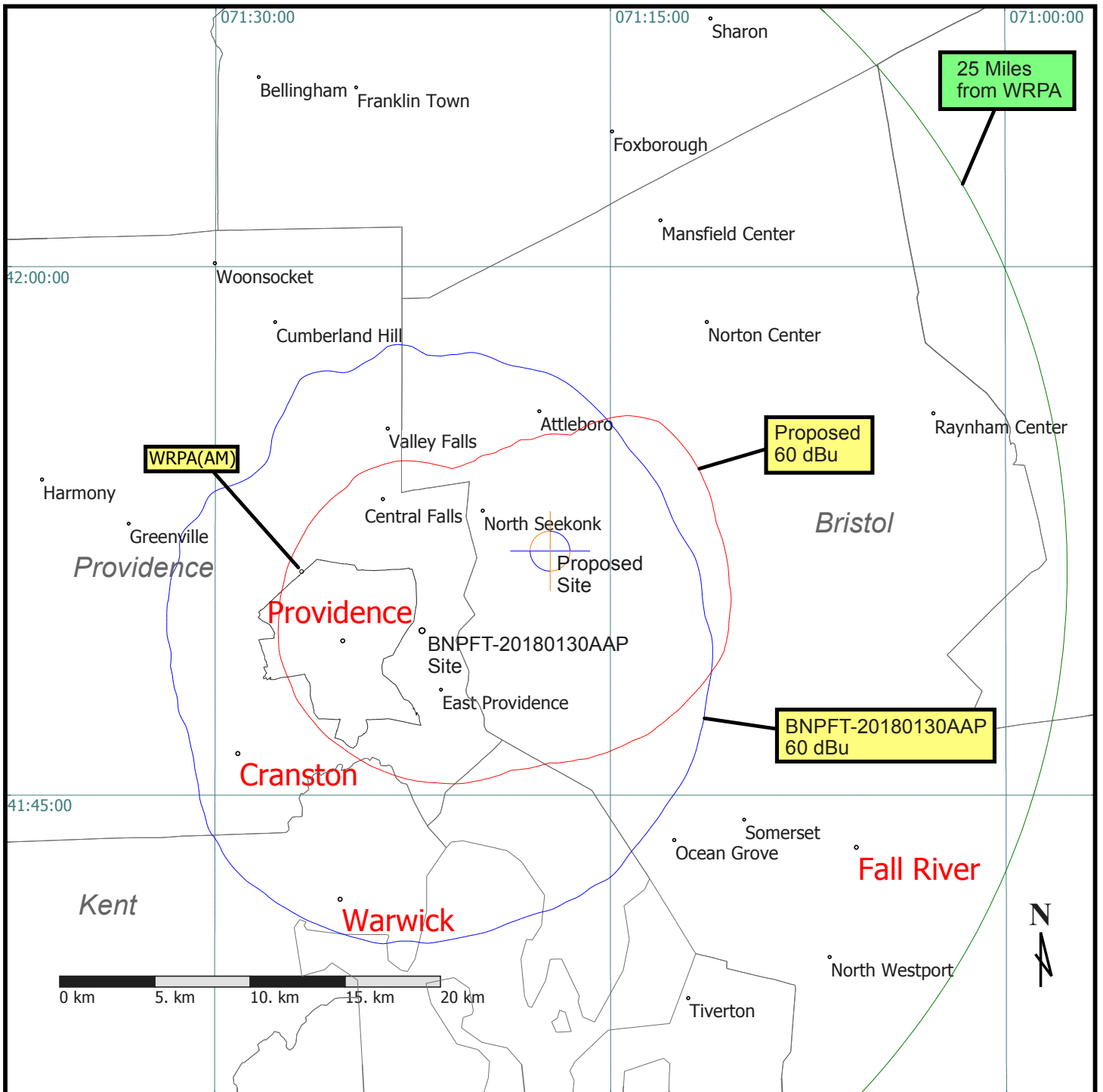


Figure 2  
Co-Channel and 1st-Adjacent Interference Contours

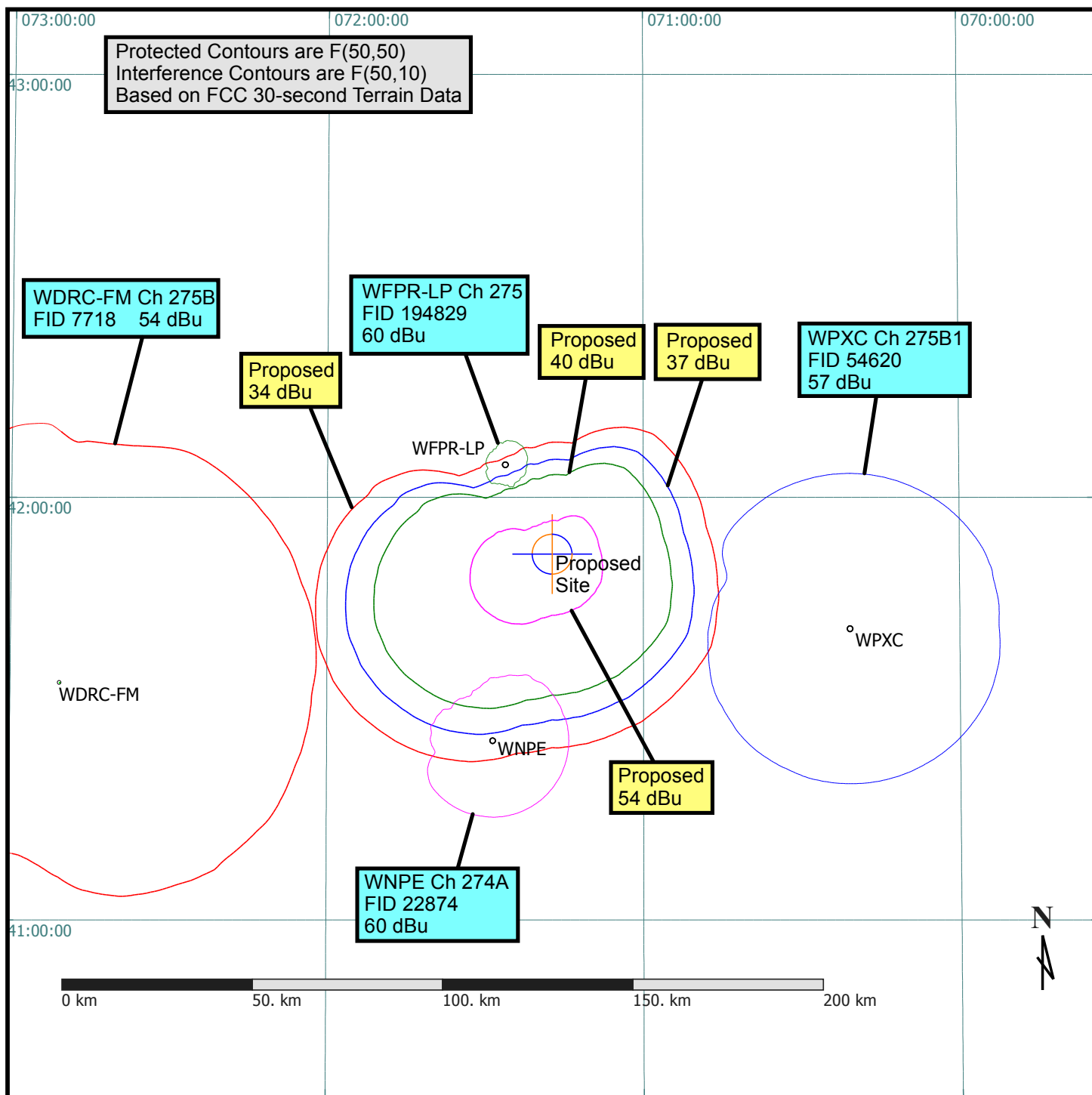


Figure 3  
Detail of Contour Clearance

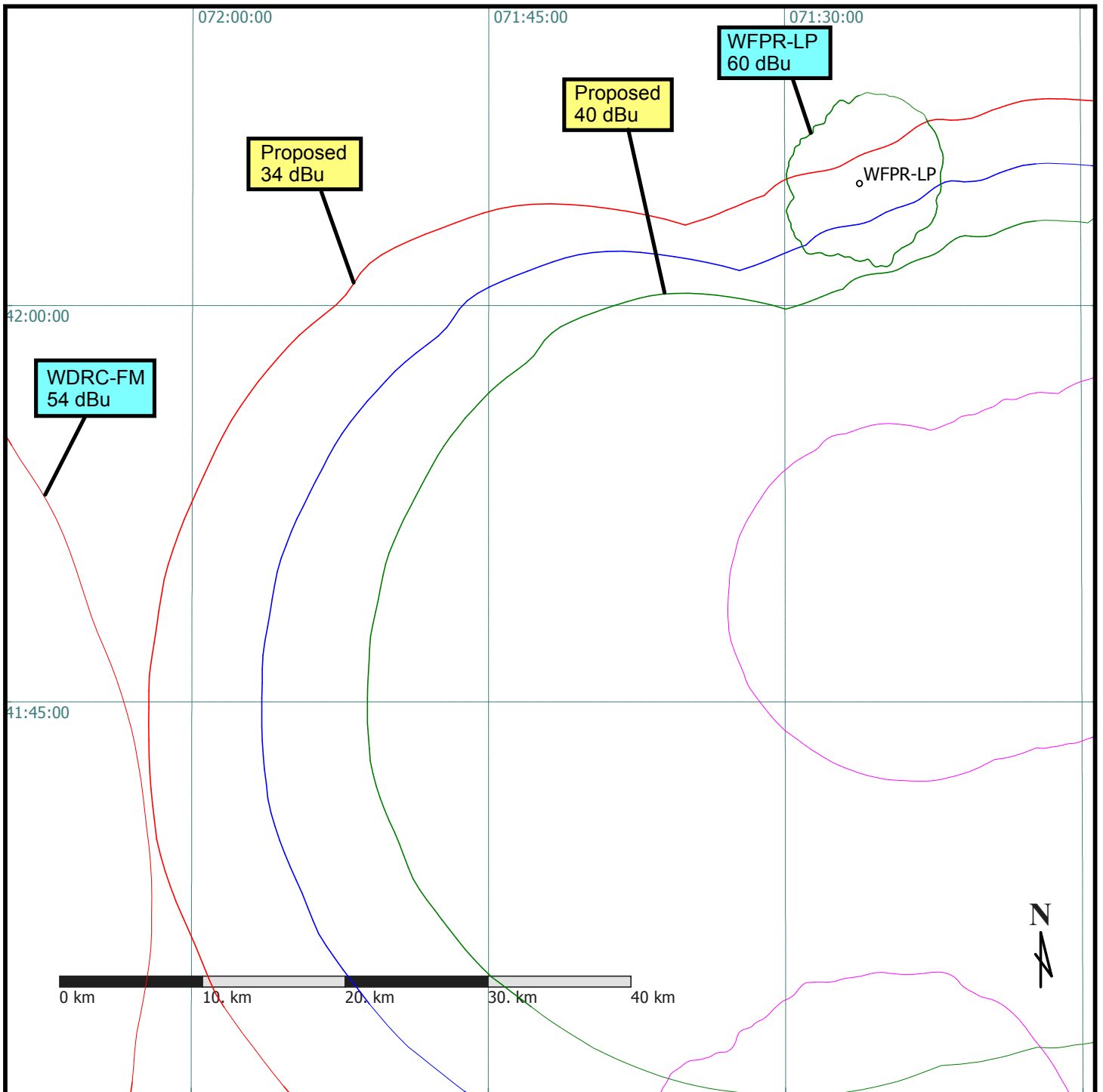
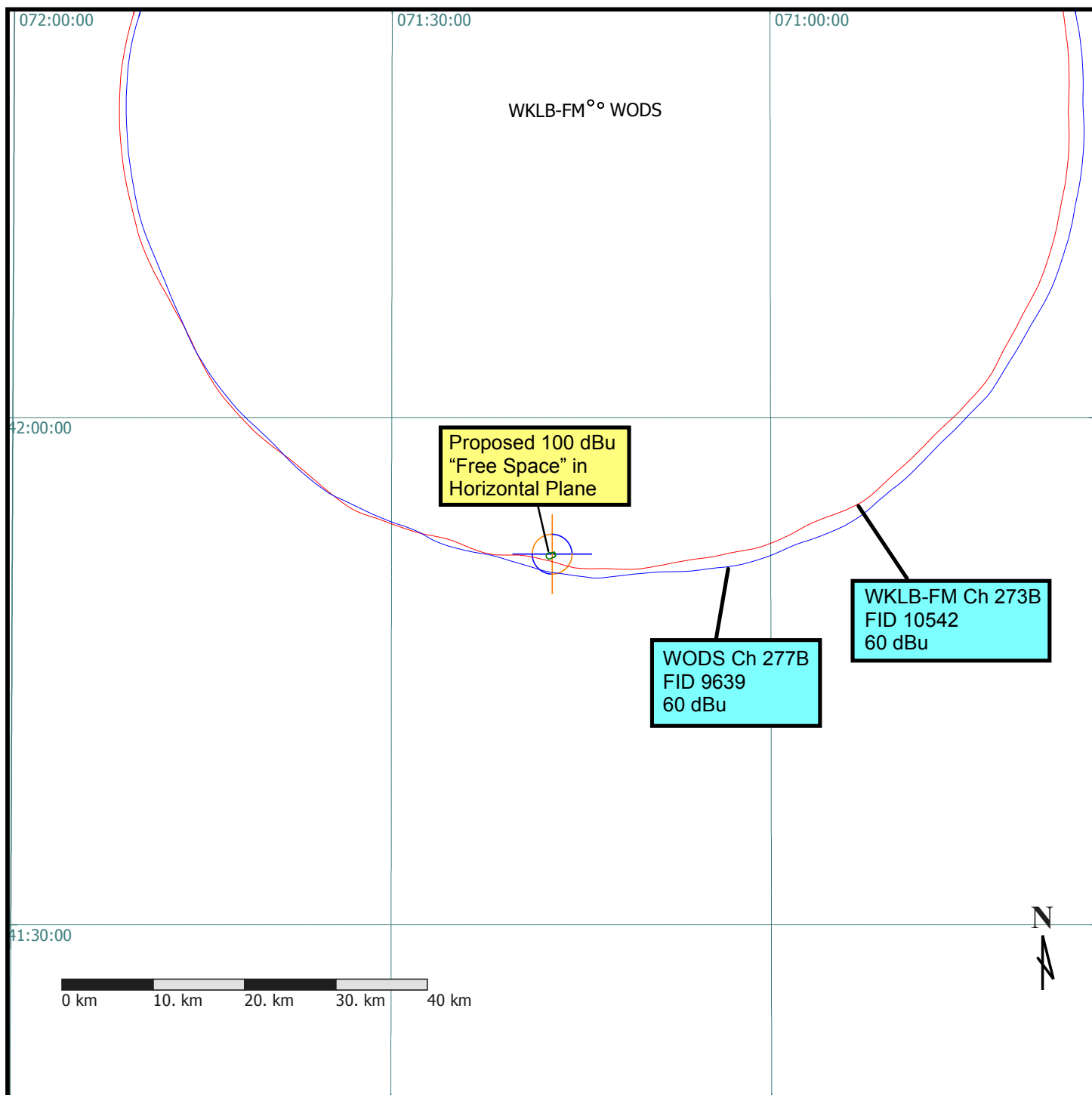
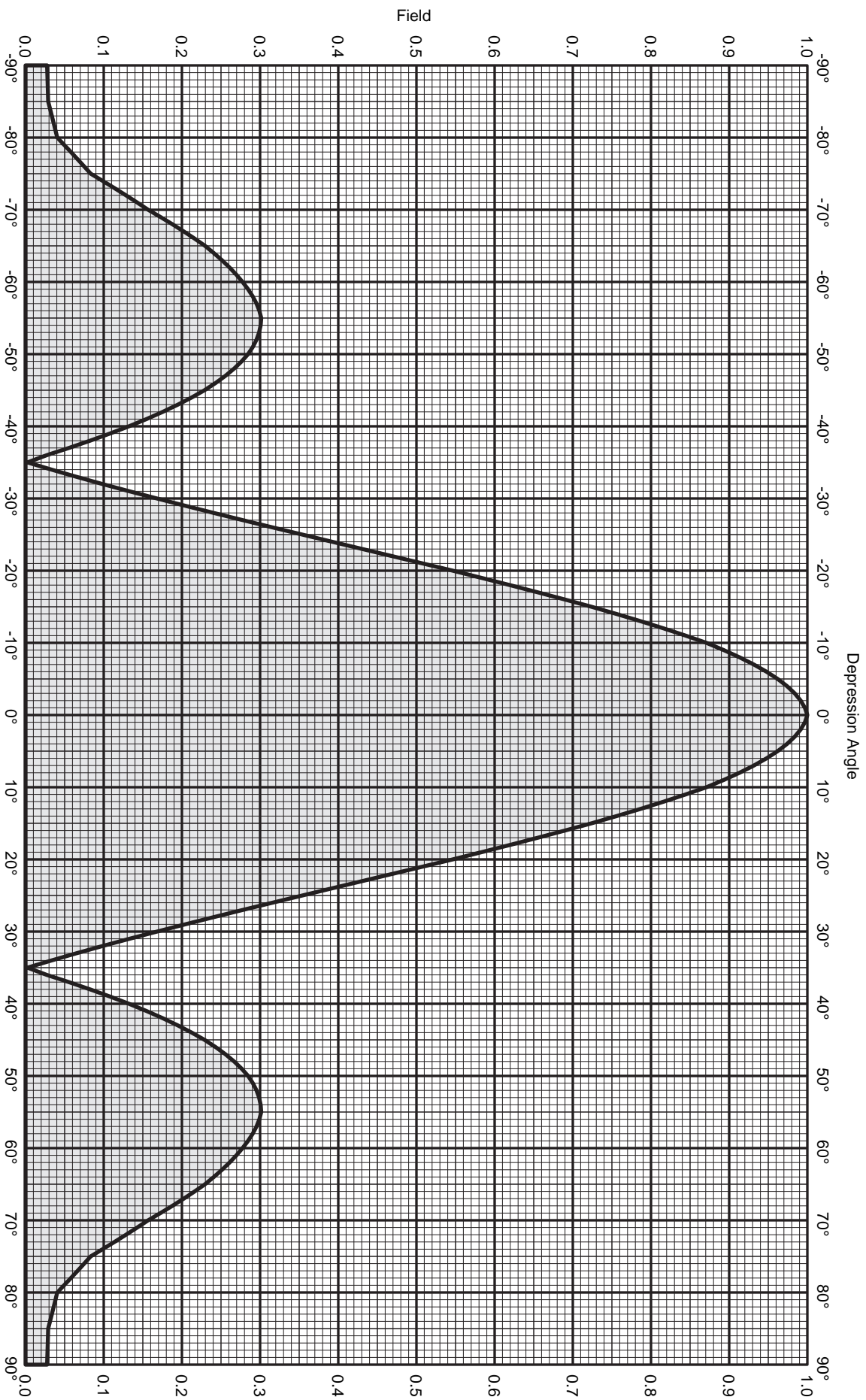


Figure 4  
2nd-Adjacent Contours





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Two CA2-FW/CP Yagi Antennas

Oriented at 0 degrees

Vertical Spacing 0.87 wavelength

Circular Polarization

Vertical plane Pattern

Gain: 3.5 dBd (x 2.2)



Two CA2-FM/CP Yagi Antennas  
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 Circular Polarization

Vertical plane Pattern  
 Gain: 3.5 dBd (x 2.2)

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
-90	0.028	-31.20	-27.70	0.00	-45	0.229	-12.81	-9.31	0.12
-89	0.028	-31.11	-27.61	0.00	-44	0.213	-13.45	-9.95	0.10
-88	0.028	-31.02	-27.52	0.00	-43	0.195	-14.21	-10.71	0.08
-87	0.028	-30.93	-27.43	0.00	-42	0.175	-15.12	-11.62	0.07
-86	0.029	-30.85	-27.35	0.00	-41	0.155	-16.21	-12.71	0.05
-85	0.029	-30.77	-27.27	0.00	-40	0.132	-17.57	-14.07	0.04
-84	0.031	-30.09	-26.59	0.00	-39	0.108	-19.33	-15.83	0.03
-83	0.034	-29.46	-25.96	0.00	-38	0.082	-21.69	-18.19	0.02
-82	0.036	-28.88	-25.38	0.00	-37	0.055	-25.13	-21.63	0.01
-81	0.038	-28.34	-24.84	0.00	-36	0.027	-31.33	-27.83	0.00
-80	0.041	-27.85	-24.35	0.00	-35	0.010	-40.00	-36.50	0.00
-79	0.049	-26.14	-22.64	0.01	-34	0.033	-29.57	-26.07	0.00
-78	0.058	-24.73	-21.23	0.01	-33	0.065	-23.71	-20.21	0.01
-77	0.067	-23.53	-20.03	0.01	-32	0.098	-20.13	-16.63	0.02
-76	0.075	-22.50	-19.00	0.01	-31	0.133	-17.54	-14.04	0.04
-75	0.083	-21.59	-18.09	0.02	-30	0.168	-15.48	-11.98	0.06
-74	0.099	-20.12	-16.62	0.02	-29	0.204	-13.81	-10.31	0.09
-73	0.114	-18.88	-15.38	0.03	-28	0.241	-12.37	-8.87	0.13
-72	0.128	-17.82	-14.32	0.04	-27	0.278	-11.12	-7.62	0.17
-71	0.143	-16.90	-13.40	0.05	-26	0.316	-10.01	-6.51	0.22
-70	0.157	-16.09	-12.59	0.06	-25	0.354	-9.02	-5.52	0.28
-69	0.173	-15.26	-11.76	0.07	-24	0.392	-8.13	-4.63	0.34
-68	0.188	-14.53	-11.03	0.08	-23	0.431	-7.31	-3.81	0.42
-67	0.202	-13.88	-10.38	0.09	-22	0.469	-6.57	-3.07	0.49
-66	0.216	-13.30	-9.80	0.10	-21	0.508	-5.88	-2.38	0.58
-65	0.230	-12.78	-9.28	0.12	-20	0.546	-5.25	-1.75	0.67
-64	0.241	-12.37	-8.87	0.13	-19	0.583	-4.68	-1.18	0.76
-63	0.251	-12.00	-8.50	0.14	-18	0.620	-4.16	-0.66	0.86
-62	0.261	-11.67	-8.17	0.15	-17	0.655	-3.67	-0.17	0.96
-61	0.270	-11.38	-7.88	0.16	-16	0.690	-3.22	0.28	1.07
-60	0.278	-11.13	-7.63	0.17	-15	0.724	-2.81	0.69	1.17
-59	0.285	-10.92	-7.42	0.18	-14	0.756	-2.43	1.07	1.28
-58	0.291	-10.73	-7.23	0.19	-13	0.787	-2.08	1.42	1.39
-57	0.295	-10.59	-7.09	0.20	-12	0.816	-1.76	1.74	1.49
-56	0.299	-10.48	-6.98	0.20	-11	0.844	-1.47	2.03	1.60
-55	0.301	-10.42	-6.92	0.20	-10	0.871	-1.20	2.30	1.70
-54	0.301	-10.44	-6.94	0.20	-9	0.893	-0.98	2.52	1.79
-53	0.299	-10.49	-6.99	0.20	-8	0.913	-0.79	2.71	1.87
-52	0.295	-10.59	-7.09	0.20	-7	0.931	-0.62	2.88	1.94
-51	0.291	-10.73	-7.23	0.19	-6	0.948	-0.47	3.03	2.01
-50	0.285	-10.91	-7.41	0.18	-5	0.962	-0.34	3.16	2.07
-49	0.276	-11.17	-7.67	0.17	-4	0.974	-0.23	3.27	2.12
-48	0.267	-11.48	-7.98	0.16	-3	0.984	-0.14	3.36	2.17
-47	0.256	-11.84	-8.34	0.15	-2	0.991	-0.07	3.43	2.20
-46	0.243	-12.28	-8.78	0.13	-1	0.997	-0.03	3.47	2.22
					0	1.000	0.00	3.50	2.24



Two CA2-FM/CP Yagi Antennas  
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 Circular Polarization

Vertical plane Pattern  
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Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
0	1.000	0.00	3.50	2.24	45	0.229	-12.81	-9.31	0.12
1	0.997	-0.03	3.47	2.22	46	0.243	-12.29	-8.79	0.13
2	0.991	-0.07	3.43	2.20	47	0.256	-11.85	-8.35	0.15
3	0.984	-0.14	3.36	2.17	48	0.267	-11.48	-7.98	0.16
4	0.974	-0.23	3.27	2.12	49	0.276	-11.17	-7.67	0.17
5	0.962	-0.34	3.16	2.07	50	0.285	-10.91	-7.41	0.18
6	0.948	-0.47	3.03	2.01	51	0.291	-10.73	-7.23	0.19
7	0.931	-0.62	2.88	1.94	52	0.295	-10.59	-7.09	0.20
8	0.913	-0.79	2.71	1.87	53	0.299	-10.49	-6.99	0.20
9	0.893	-0.98	2.52	1.79	54	0.301	-10.44	-6.94	0.20
10	0.871	-1.20	2.30	1.70	55	0.301	-10.42	-6.92	0.20
11	0.844	-1.47	2.03	1.60	56	0.299	-10.48	-6.98	0.20
12	0.816	-1.76	1.74	1.49	57	0.295	-10.59	-7.09	0.20
13	0.787	-2.08	1.42	1.39	58	0.291	-10.73	-7.23	0.19
14	0.756	-2.43	1.07	1.28	59	0.285	-10.92	-7.42	0.18
15	0.724	-2.81	0.69	1.17	60	0.278	-11.13	-7.63	0.17
16	0.690	-3.22	0.28	1.07	61	0.270	-11.38	-7.88	0.16
17	0.655	-3.67	-0.17	0.96	62	0.261	-11.67	-8.17	0.15
18	0.620	-4.16	-0.66	0.86	63	0.251	-12.00	-8.50	0.14
19	0.583	-4.68	-1.18	0.76	64	0.241	-12.37	-8.87	0.13
20	0.546	-5.25	-1.75	0.67	65	0.230	-12.78	-9.28	0.12
21	0.508	-5.88	-2.38	0.58	66	0.216	-13.30	-9.80	0.10
22	0.469	-6.57	-3.07	0.49	67	0.202	-13.88	-10.38	0.09
23	0.431	-7.31	-3.81	0.42	68	0.188	-14.53	-11.03	0.08
24	0.392	-8.13	-4.63	0.34	69	0.173	-15.26	-11.76	0.07
25	0.354	-9.02	-5.52	0.28	70	0.157	-16.09	-12.59	0.06
26	0.316	-10.01	-6.51	0.22	71	0.143	-16.90	-13.40	0.05
27	0.278	-11.12	-7.62	0.17	72	0.128	-17.82	-14.32	0.04
28	0.241	-12.37	-8.87	0.13	73	0.114	-18.88	-15.38	0.03
29	0.204	-13.81	-10.31	0.09	74	0.099	-20.12	-16.62	0.02
30	0.168	-15.48	-11.98	0.06	75	0.083	-21.59	-18.09	0.02
31	0.133	-17.54	-14.04	0.04	76	0.075	-22.50	-19.00	0.01
32	0.098	-20.13	-16.63	0.02	77	0.067	-23.53	-20.03	0.01
33	0.065	-23.70	-20.20	0.01	78	0.058	-24.73	-21.23	0.01
34	0.033	-29.56	-26.06	0.00	79	0.049	-26.14	-22.64	0.01
35	0.010	-40.00	-36.50	0.00	80	0.041	-27.85	-24.35	0.00
36	0.027	-31.33	-27.83	0.00	81	0.038	-28.34	-24.84	0.00
37	0.055	-25.13	-21.63	0.01	82	0.036	-28.88	-25.38	0.00
38	0.082	-21.69	-18.19	0.02	83	0.034	-29.46	-25.96	0.00
39	0.108	-19.33	-15.83	0.03	84	0.031	-30.09	-26.59	0.00
40	0.132	-17.57	-14.07	0.04	85	0.029	-30.77	-27.27	0.00
41	0.155	-16.22	-12.72	0.05	86	0.029	-30.85	-27.35	0.00
42	0.175	-15.12	-11.62	0.07	87	0.028	-30.93	-27.43	0.00
43	0.195	-14.21	-10.71	0.08	88	0.028	-31.02	-27.52	0.00
44	0.213	-13.45	-9.95	0.10	89	0.028	-31.11	-27.61	0.00
					90	0.028	-31.20	-27.70	0.00



<b>ERP(kW):</b>	0.115	<b>Depression</b>	<b>Rel Field</b>	<b>ERP (kW)</b>	<b>ERP (dBk)</b>	<b>Slant Distance</b>	<b>Clearance Above</b>
<b>HAGL(m):</b>	156.000	<b>Angle (deg)</b>				<b>(meters)</b>	<b>Ground (meters)</b>
<b>dBu:</b>	100.000						
		0	1	0.115	-9.39	752.2	156.0
		1	0.997	0.114	-9.42	750.0	142.9
		2	0.991	0.113	-9.47	745.5	130.0
		3	0.984	0.111	-9.53	740.2	117.3
		4	0.974	0.109	-9.62	732.7	104.9
		5	0.962	0.106	-9.73	723.6	92.9
		6	0.948	0.103	-9.86	713.1	81.5
		7	0.931	0.100	-10.01	700.3	70.7
		8	0.913	0.096	-10.18	686.8	60.4
		9	0.893	0.092	-10.38	671.7	50.9
		10	0.871	0.087	-10.59	655.2	42.2
		11	0.844	0.082	-10.87	634.9	34.9
		12	0.816	0.077	-11.16	613.8	28.4
		13	0.787	0.071	-11.47	592.0	22.8
		14	0.756	0.066	-11.82	568.7	18.4
		15	0.724	0.060	-12.20	544.6	15.0
		16	0.69	0.055	-12.62	519.0	12.9
		17	0.655	0.049	-13.07	492.7	11.9
		18	0.62	0.044	-13.55	466.4	11.9
		19	0.583	0.039	-14.08	438.5	13.2
		20	0.546	0.034	-14.65	410.7	15.5
		21	0.508	0.030	-15.28	382.1	19.1
		22	0.469	0.025	-15.97	352.8	23.8
		23	0.431	0.021	-16.70	324.2	29.3
		24	0.392	0.018	-17.53	294.9	36.1
		25	0.354	0.014	-18.41	266.3	43.5
		26	0.316	0.011	-19.40	237.7	51.8
		27	0.278	0.009	-20.51	209.1	61.1
		28	0.241	0.007	-21.75	181.3	70.9
		29	0.204	0.005	-23.20	153.5	81.6
		30	0.168	0.003	-24.89	126.4	92.8
		31	0.133	0.002	-26.92	100.0	104.5
		32	0.098	0.001	-29.57	73.7	116.9
		33	0.065	0.000	-33.13	48.9	129.4
		34	0.033	0.000	-39.02	24.8	142.1
		35	0.01	0.000	-49.39	7.5	151.7
		36	0.027	0.000	-40.77	20.3	144.1
		37	0.055	0.000	-34.59	41.4	131.1
		38	0.082	0.001	-31.12	61.7	118.0
		39	0.108	0.001	-28.72	81.2	104.9
		40	0.132	0.002	-26.98	99.3	92.2
		41	0.155	0.003	-25.59	116.6	79.5
		42	0.175	0.004	-24.53	131.6	67.9
		43	0.195	0.004	-23.59	146.7	56.0
		44	0.213	0.005	-22.83	160.2	44.7
		45	0.229	0.006	-22.20	172.3	34.2
		50	0.285	0.009	-20.30	214.4	-8.2
		55	0.301	0.010	-19.82	226.4	-29.5

		60	0.278	0.009	-20.51	209.1	-25.1
		65	0.230	0.006	-22.16	173.0	-0.8
		70	0.157	0.003	-25.48	118.1	45.0
		75	0.083	0.001	-31.01	62.4	95.7
		80	0.041	0.000	-37.14	30.8	125.6
		85	0.029	0.000	-40.15	21.8	134.3
		90	0.028	0.000	-40.45	21.1	134.9