

## **Proposed Minor CP Modification to W298BU at Avon Park, FL**

### **Facility ID 138526**

### **Technical Statement**

#### **Summary**

This application proposes to amend Construction Permit File No. 000116473 to change the antenna site and height above ground. The proposed service contour overlaps that presently authorized (both green in Figure 1) and remains within 25 miles of the antenna site of primary WAVP(AM) (gray circle.)

#### **Section 74.1204 Study**

The following facilities were considered:


Call Sign	C	ST	City	Freq. 	ERP	Class	Status	D
WAVP	1	FL	AVON PARK	1390	1000.0	LD	LIC	6.38
WWMA-LP	1	FL	AVON PARK	107.9	100.0	LP100	LIC	8.04
WMGF	1	FL	MOUNT DORA	107.7	98000.0	C	LIC	151.60
Proposed	4	FL	AVON PARK	107.5	250.0	D	APP	0.00
W298BU	3	FL	AVON PARK	107.5	215.0	D	LIC	0.00
W298BO	1	FL	WINTER HAVEN	107.5	27.0	D	LIC	55.49
WXGL	1	FL	ST. PETERSBURG	107.3	100000.0	C1	LIC	126.04
WAOA-FM	1	FL	MELBOURNE	107.1	100000.0	C1	LIC	100.65
WZZS	1	FL	ZOLFO SPRINGS	106.9	5000.0	A	LIC	36.98

Figure 1 illustrates the absence of prohibited overlap between the proposed translator interfering contours and the pertinent service of each of these facilities, except for WWMA-LP (Key: same colors may not overlap.)

The site lies within the service contour of WWMA-LP. Therefore, the applicant respectfully requests a waiver pursuant to 74.1204(d) as described below.

WWMA-LP places a 72.0 dBu service contour over the proposed site (purple contour in Figure 1.) The Commission has generally considered overlap from a proposed translator interfering contour to be acceptable where the ratio of undesired to desired signal (U/D) does not exceed 40 dB i.e. where in this case the proposed translator F(50,10) interfering signal does not exceed 112.0 dBu.

### **Interference Protection On The Ground**

The proposed translator facility will operate with an ERP of 0.250 kW. For an ERP of 0.250 kW, the distance to the 112.0 dBu F(50,10) contour in free space is 279 meters.

The antenna is a two bay 0.75 wavelength spaced Nicom BKG-77/2 with the center of radiation at 58 meters AGL. The array produces a vertical radiation pattern that prevents the 112.0 dBu F(50,10) interfering contour from reaching the ground within 279 meters of the antenna site. The antenna vertical pattern is illustrated and field values tabulated in Figures 3 and 4.

Based on the actual distance in space from the antenna center of radiation to points on the ground within 279 meters of the antenna site, the table in Figure 2 provides calculations of the interference protection at each point in order to establish that the 112.0 dBu interfering contour does not reach the ground.

For each point, the downward or depression angle and actual distance in space from the proposed antenna CR is shown together with the maximum allowable ERP, and the corresponding maximum allowable antenna field. This is compared with the actual antenna field at the pertinent downward or depression angle. The comparison is shown as a safety margin in dB. As described and illustrated in Figure 2, the margin of safety is not less than 1.01 dB at any point.

The applicant therefore believes its application meets the requirements of Section 74.1204(d) with respect to "other factors" insuring no actual interference to WWMA-LP. Should any actual interference occur, the applicant will take the required steps to eliminate it.

### **Environmental Considerations**

No physical changes are proposed other than an antenna change. RFR compliance was determined through the use of the RF worksheets in Appendix A. The applicant will cease operation or reduce power as necessary, in order to prevent uncontrolled or controlled exposure in excess of the guidelines of OET-65.

Respectfully submitted,

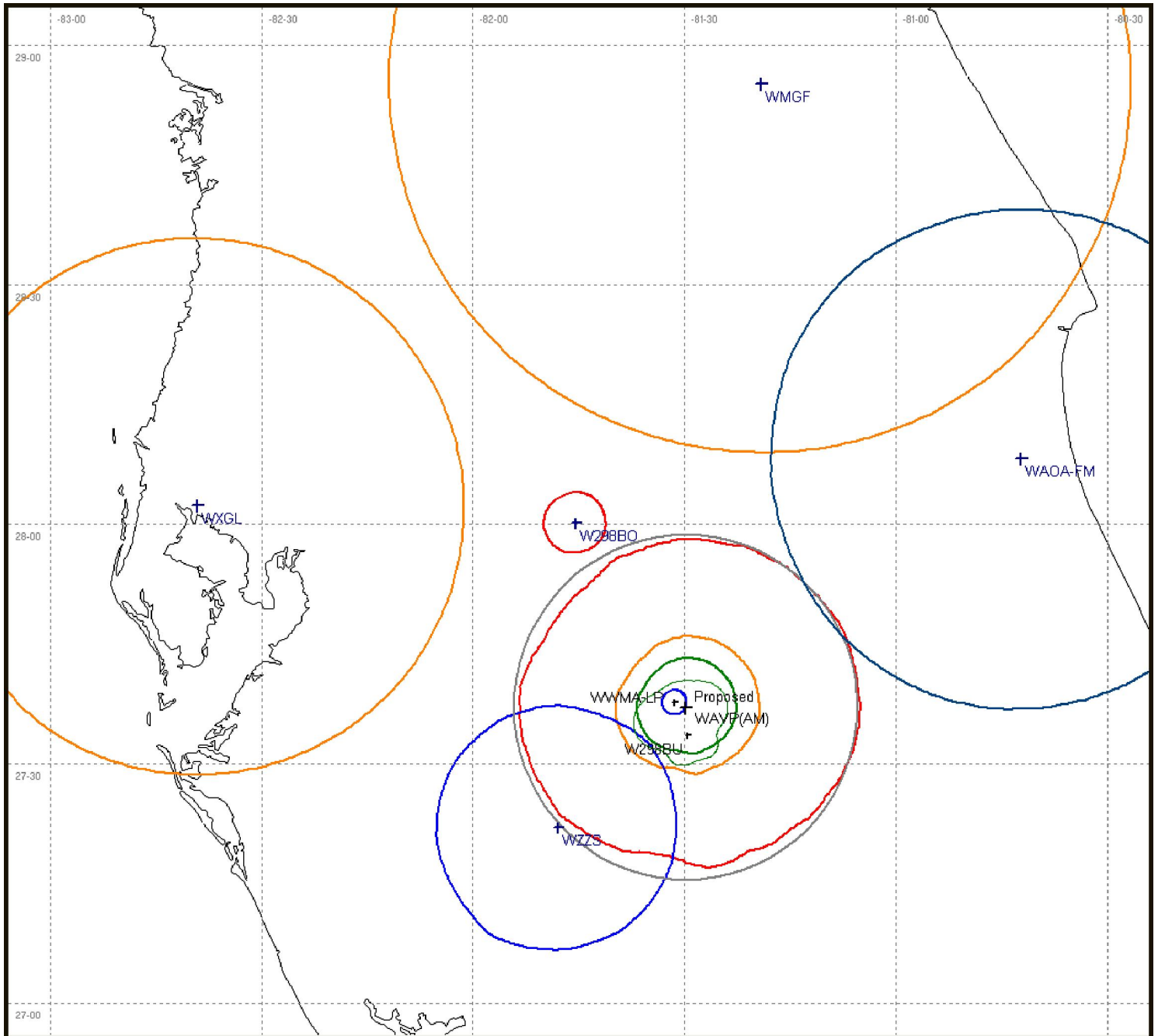
A handwritten signature in black ink, appearing to read 'D. Jackson', with a stylized flourish at the end.

Dennis Jackson  
September 18, 2020

**Figure 1 – Section 74.1204 Study and Fill-In Status**

**No prohibited overlap is created. (Key: Same colors may not overlap.)**

**Proposed service contour (green) does not exceed 25 miles (gray circle) from AM site.**



**Figure 2 - Calculation of Protection to WWMA-LP Illustrating Margin of Safety**

**Maximum Allowable Field At Pertinent Distances and Angles  
Compared to Actual Antenna Field Values**

**Margin of Safety is not less than 1.01 dB at any point within  
the 112.0 dBu F(50,10) interfering contour distance in free space (279 meters.)**

**Notes:**

**Antenna Center of Radiation is at 58 meters AGL.**

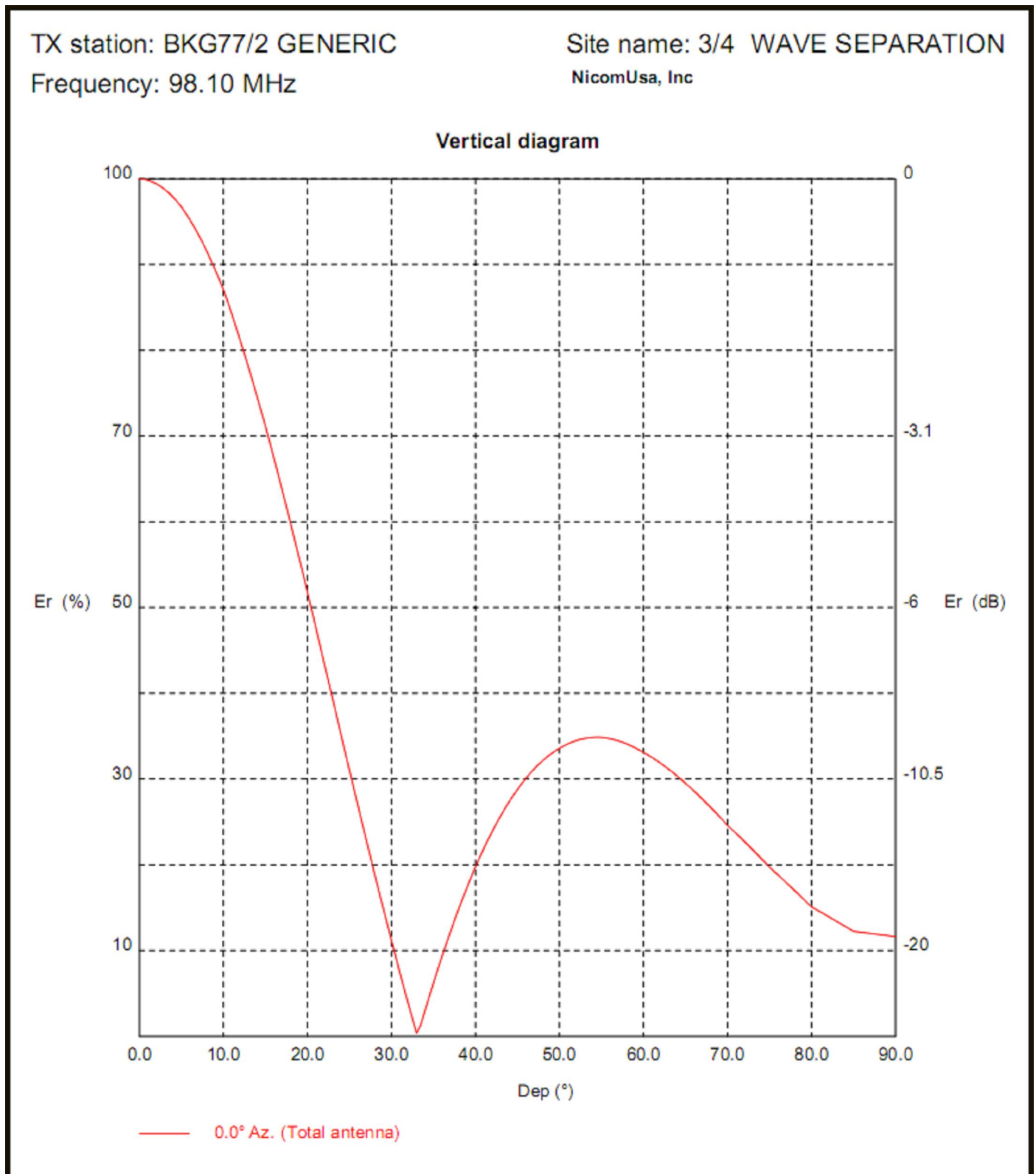
**For each point, the following is shown:**

- A. Horizontal distance from antenna tower base to point on the ground**
- B. Downward or depression angle from antenna CR to point on the ground**
- C. Actual distance in space from antenna CR to point on the ground**
- D. ERP at which 112.0 dBu interfering contour extends actual distance in space**
- E. Corresponding antenna field limit (250 Watts = 1.000 field value)**
- F. Actual antenna vertical field at downward or depression angle**
- G. Margin of safety in dB**

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>
<b>Horizontal Distance From Site (meters)</b>	<b>Downward Vertical Angle (degrees)</b>	<b>Actual Distance in Space (meters)</b>	<b>Power Limit (Watts)</b>	<b>Corresponding Antenna Field Limit</b>	<b>Vertical Antenna Field at Angle</b>	<b>Margin of Safety (dB)</b>
60	44.0	83.5	22.0	0.297	0.273	0.72
80	35.9	98.8	31.0	0.352	0.09	11.85
100	30.1	115.6	43.0	0.415	0.108	11.69
125	24.9	137.8	61.0	0.494	0.335	3.37
150	21.1	160.8	84.0	0.580	0.472	1.78
175	18.3	184.4	110.0	0.663	0.586	1.08
200	16.2	208.2	140.0	0.748	0.666	1.01
225	14.5	232.4	175.0	0.837	0.729	1.20
250	13.1	256.6	213.0	0.923	0.777	1.50
273	12.0	279.1	250.0	1.000	0.812	1.81

**Figure 3**

**2-Bay 0.75 Wavelength Spaced Antenna Vertical Radiation Profile**



**Figure 4****2-Bay 0.75 Wavelength Spaced Antenna Vertical Profile Field Values**

TX station: BKG77/2 GENERIC

Site name: 3/4 WAVE SEPARATION

Frequency: 98.10 MHz

NicomUsa, Inc

**Vertical diagram at an azimuth of 0° degrees**

Dep (°)	Er (%)	ERP (W)	Dep (°)	Er (%)	ERP (W)	Dep (°)	Er (%)	ERP (W)
0.0	100.0	914.2	30.0	11.2	11.5	60.0	33.1	100.1
0.5	100.0	913.3	30.5	9.3	7.9	60.5	32.8	98.4
1.0	99.8	911.3	31.0	7.5	5.1	61.0	32.5	96.7
1.5	99.7	908.1	31.5	5.6	2.9	61.5	32.2	94.8
2.0	99.4	903.9	32.0	3.8	1.3	62.0	31.9	92.8
2.5	99.1	898.4	32.5	2.1	0.4	62.5	31.5	90.8
3.0	98.8	891.9	33.0	0.3	0.0	63.0	31.1	88.7
3.5	98.4	884.3	33.5	1.4	0.2	63.5	30.8	86.5
4.0	97.9	875.7	34.0	3.0	0.8	64.0	30.4	84.2
4.5	97.3	865.9	34.5	4.6	2.0	64.5	29.9	81.9
5.0	96.7	855.2	35.0	6.2	3.5	65.0	29.5	79.5
5.5	96.0	842.7	35.5	7.8	5.5	65.5	29.1	77.2
6.0	95.2	829.2	36.0	9.3	7.9	66.0	28.6	74.8
6.5	94.4	814.9	36.5	10.7	10.5	66.5	28.2	72.5
7.0	93.5	799.7	37.0	12.1	13.5	67.0	27.7	70.0
7.5	92.6	783.6	37.5	13.5	16.7	67.5	27.2	67.6
8.0	91.6	766.9	38.0	14.9	20.2	68.0	26.7	65.1
8.5	90.5	749.4	38.5	16.1	23.8	68.5	26.2	62.7
9.0	89.4	731.2	39.0	17.4	27.7	69.0	25.7	60.2
9.5	88.3	712.5	39.5	18.6	31.6	69.5	25.1	57.8
10.0	87.1	693.1	40.0	19.8	35.7	70.0	24.6	55.3
10.5	85.7	670.8	40.5	20.9	39.8	70.5	24.1	53.3
11.0	84.2	648.2	41.0	21.9	43.9	71.0	23.7	51.2
11.5	82.7	625.3	41.5	22.9	48.1	71.5	23.2	49.2
12.0	81.2	602.3	42.0	23.9	52.2	72.0	22.7	47.2
12.5	79.6	579.0	42.5	24.8	56.4	72.5	22.2	45.2
13.0	78.0	555.7	43.0	25.7	60.4	73.0	21.7	43.2
13.5	76.3	532.4	43.5	26.5	64.4	73.5	21.2	41.3
14.0	74.6	509.1	44.0	27.3	68.3	74.0	20.7	39.3
14.5	72.9	485.8	44.5	28.1	72.1	74.5	20.2	37.4
15.0	71.1	462.7	45.0	28.8	75.8	75.0	19.7	35.5
15.5	69.3	439.1	45.5	29.5	79.3	75.5	19.3	33.9
16.0	67.4	415.8	46.0	30.1	82.7	76.0	18.8	32.4
16.5	65.6	392.9	46.5	30.7	85.9	76.5	18.4	30.8
17.0	63.6	370.3	47.0	31.2	88.9	77.0	17.9	29.3
17.5	61.7	348.1	47.5	31.7	91.8	77.5	17.4	27.8
18.0	59.8	326.5	48.0	32.1	94.4	78.0	17.0	26.4
18.5	57.8	305.3	48.5	32.6	96.9	78.5	16.5	24.9
19.0	55.8	284.7	49.0	32.9	99.2	79.0	16.0	23.5
19.5	53.8	264.7	49.5	33.3	101.2	79.5	15.6	22.1
20.0	51.8	245.3	50.0	33.6	103.1	80.0	15.1	20.8
20.5	49.7	226.1	50.5	33.9	104.8	80.5	14.8	20.0
21.0	47.6	207.5	51.0	34.1	106.3	81.0	14.5	19.3
21.5	45.6	189.8	51.5	34.3	107.6	81.5	14.3	18.6
22.0	43.5	172.8	52.0	34.5	108.7	82.0	14.0	17.8
22.5	41.4	156.7	52.5	34.6	109.6	82.5	13.7	17.1
23.0	39.3	141.3	53.0	34.7	110.3	83.0	13.4	16.4
23.5	37.2	126.8	53.5	34.8	110.8	83.5	13.1	15.7
24.0	35.2	113.0	54.0	34.9	111.1	84.0	12.8	15.0
24.5	33.1	100.1	54.5	34.9	111.2	84.5	12.5	14.4
25.0	31.0	88.1	55.0	34.9	111.1	85.0	12.2	13.7
25.5	29.0	76.8	55.5	34.8	110.7	85.5	12.2	13.6
26.0	26.9	66.3	56.0	34.7	110.2	86.0	12.1	13.4
26.5	24.9	56.7	56.5	34.6	109.4	86.5	12.1	13.3
27.0	22.9	47.9	57.0	34.5	108.5	87.0	12.0	13.2
27.5	20.9	39.9	57.5	34.3	107.5	87.5	11.9	13.0
28.0	18.9	32.7	58.0	34.1	106.3	88.0	11.9	12.9
28.5	17.0	26.3	58.5	33.9	104.9	88.5	11.8	12.8
29.0	15.0	20.6	59.0	33.6	103.5	89.0	11.7	12.6
29.5	13.1	15.7	59.5	33.4	101.8	89.5	11.7	12.5