SUMMARY OF POINTING AND GAIN RESULTS - JUNE 27- and JULY 8-13, 1991



### Craig Walker July 19, 1991

Below are the results from pointing observations made in late June and early July, 1991. Tables are given of the gain information while only comments are made about any pointing problems. I have the full details, including the usual plots, of all of the data. In all cases, the pointing parameters can be left as is unless otherwise noted. This does not mean that they cannot be improved, just that they are good enough. Of course, the pointing can be improved greatly with the new pointing equations at Pie Town and Kitt Peak.

PIE TOWN Gains: Item		90cm	50cm	20cm	13cm	13cmsx	6cm	4cm	4cmsx	3cm	lcm
PT June 27-28, 1991											
Zenith system temp. (K):	RCP:	167.9	215.7	33.8	34.6		43.8	45.2			131.4
• • • •	LCP:	187.8	189.4	31.5	37.8		47.7	42.9			130.0
Efficiency (Opa. Corr.)	RCP :	0.42	0.37	0.57	0.52		0.67	0.72			0.62
* => assumed value used.	LCP :	0.45	0.33	0.55	0.60		0.71	0.70			0.62
Zenith system temp. (Jy):	RCP :	2265.	3301.	332.	372.		370.	353.			1191.
	LCP:	2367.	3198.	323.	353.		375.	343.			1184.
PT July 8-13, 1991											
Zenith system temp. (K):	RCP:	155.5	224.1	32.6	33.9	31.9	44.1	47.5	49.8		157.8
	LCP :	174.6	197.1	30.9	37.4	36.2	48.0	45.1	46.9		157.2
Efficiency (Opa. Corr.)	RCP :	0.43	0.39	0.57	0.50	0.45	0.63	0.73	0.71		0.58
* => assumed value used.	LCP :	0.46	0.36	0.54	0.59	0.52	0.68	0.73	0.67		0.56
Zenith system temp. (Jy):	RCP:	2054.	3221.	320.	382.	402.	393.	367.	395.		1540.
	LCP:	2118.	3102.	319.	356.	393.	398.	345.	395.		1568.

# COMMENTS:

1. There is an 11 arcminute azimuth pointing offset at 50 cm compared to 0.8 arcminute at 90 cm. I would guess that this indicates a problem with the 50 cm feed. It has always been there, to my knowledge.

2. Note the effect of the 13cm vs the 13cmsx. The only difference is the focus position and the position of the elipsoid with the focus probably having the main effect. Moving the focus out seems to reduce Ts slightly (less spillover on edge of dish?) and reduces the gain.

\* 3. The 6 cm pointing offsets should be updated to 1.12 in Az and 0.05 in El.

4. Note that at 1 cm, there is much more data in July than in June.

KITT PEAK: Item		90cm	50cm	20cm	13cm	13cmsx	6cm	4cm	4cmsx	3cm	1cm
KP June 27-28, 1991											
Zenith system temp. (K):	RCP :			33.0	38.4		42.5	32.8			113.2
	LCP :			34.7	39.7		45.3	35.2	~~~~		116.4
Efficiency (Opa. Corr.)	RCP :			0.56	0.46		0.74	0.69			0.51
* => assumed value used.	LCP :			0.57	0.48		0.74	0.70			0.55
Zenith system temp. (Jy):	RCP :			329.	466.		323.	269.			1242.
	LCP:			343.	461.		346.	281.			1192.
KP July 8-13, 1991											
Zenith system temp. (K):	RCP :					45.1			42.8		
	LCP :					44.9			45.0		
Efficiency (Opa. Corr.)	RCP :					0.38			0.63		
* => assumed value used.	LCP:					0.40			0.65		
Zenith system temp. (Jy):	RCP :					667.			382.		
	LCP :					631.			390.		

#### COMMENTS:

1. We tried to observe 50cm but the data were all bad. 90cm was missed because only 1 BBC was present.

LOS ALAMOS: Item		90cm	50cm	20cm	13cm	13cmsx	6cm	4cm	4cmsx	3cm	1cm
LA June 27-28, 1991											
Zenith system temp. (K):	RCP :			25.6	33.3		45.8	50.0			130.6
	LCP:			32.0	49.8		41.9	53.8			143.1
Efficiency (Opa. Corr.)	RCP :			0.46	0.42		0.80	0.61			0.63
* => assumed value used.	LCP :			0.59	0.65		0.74	0.63			0.65
Zenith system temp. (Jy):	RCP :			316.	447.		324.	460.			1167.
	LCP :			303.	433.		318.	483.			1233.
LA July 8-13, 1991											
Zenith system temp. (K):	RCP :	209.8	214.6	25.4	33.2	29.6	-0.4	61.7	66.2		182.8
	LCP :	199.6	200.8	31.8	46.8	46.2	-0.5	65.2	68.9		194.8
Efficiency (Opa. Corr.)	RCP :	0.44	0.44	0.45	0.42	0.36	0.01	0.69	0.54		0.57
* => assumed value used.	LCP:	0.45	0.43	0.58	0.63	0.60	0.01	0.75	0.57		0.57
Zenith system temp. (Jy):	RCP :	2706.	2727.	317.	443.	461.	-228.	500.	686.		1791.
	LCP:	2485.	2643.	307.	416.	433.	-320.	487.	676.		1925.

### COMMENTS:

FOR DAUTS.

1: The 6cm cal was broken in the July data. A maintenance form has been submitted.

Item		90cm	50cm	20cm	13cm	13cmsx	6cm	4cm	4cmsx	3cm	1cm
FD June 27-28, 1991											
Zenith system temp. (K):	RCP:			33.9	46.2		39.8	30.9			257.3
	LCP :			33.9	42.2		44.6	32.3	~~~~		262.0
Efficiency (Opa. Corr.)	RCP :			0.54	0.61		0.67	0.66			0.39
* => assumed value used.	LCP :	<b>*</b>		0.60	0.67		0.70	0.65			0.39
Zenith system temp. (Jv):	RCP :			353.	424.		336.	263.			3740.
	LCP:			320.	354.		357.	278.			3758.
FD July 8-13, 1991											
Zenith system temp. (K):	RCP :	2.2		34.6	56.4	47.7	41.2	33.3	44.4		103.8
	LCP :	2.2		35.0	51.9	44.7	46.9	34.5	44.5		101.8
Efficiency (Opa. Corr.)	RCP :	0.00		0.53	0.56	0.52	0.64	0.70	0.61		0.33
* => assumed value used.	LCP :	0.00		0.56	0.60	0.54	0.67	0.69	0.60		0.33
Zenith system temp. (Jv):	RCP :	4255.		366.	568.	513.	361.	269.	411.		1791.
	LCP :	3276.		348.	482.	466.	391.	283.	415.		1735.

### COMMENTS:

1. The Tcal's were missing for 90 cm when the data was analyzed. The Ts(Jy) should be correct - there was a significant amount of data (23 measurements in each polarization) and the results showed good consistency.

2. The 20, 13, 4/13, 4, and 1 cm pointing offsets could stand to be changed. New values are: 20cm: Az 0.01 El -2.54 13cm: Az -0.79 El -4.25 4/13cm: Az -1.16 El -4.06 4cm: Az -0.15 El -3.86 1cm: Az -1.66 El -3.41

3. Somehow the s/x pointing offset was set to 0 for July 10 which messed up the 13cm pointing data for that period. The error was sufficiently large that no 4 cm results were obtained.

NORTH LIBERTY: Item		90cm	50cm	20cm	13cm	13cmsx	6cm	4cm	4cmsx	3cm	lcm
NL July 8-13, 1991											
Zenith system temp. (K):	RCP :	2.1		32.4	40.6		42.5	49.8	56.2		144.1
	LCP :	2.1		36.3	46.3		46.9	50.8	57.4		148.6
Efficiency (Opa. Corr.)	RCP :	0.00		0.46	0.47		0.60	1.51	0.59		0.55
* => assumed value used.	LCP:	0.00	~~~~	0.52	0.63		0.60	1.71	0.60		0.67*
Zenith system temp. (Jy):	RCP :	5043.		396.	486.		401.	185.	532.		1475.
	LCP :	3895.		388.	413.		439.	166.	541.		1238.

COMMENTS:

1. The elevation encoder was realigned after these observations so new pointing equations are needed.

2. On July 17 and 18, during pointing observations with the realigned elevation encoder, the FRM was observed to move significantly between scans. The peak to peak motions were enough to cause almost 0.5 arcminute pointing change so the pointing results may be somewhat confused.

3. Several of the pointing offsets could be changed based on July 8-13 data, but a full new equation is needed so I won't bother giving the new values.

OWENS VALLEY: Item		90cm	50cm	20cm	13cm	13cmsx	6cm	4cm	4cmsx	3cm	lcm
OV June 27-28, 1991											
Zenith system temp. (K):	RCP :			39.4			35.7	38.7			180.0
	LCP:			41.2			36.5	34.3			183.3
Efficiency (Opa. Corr.)	RCP :			0.60			0.68	0.74			0.50
* => assumed value used.	LCP :			0.51			0.70	0.64			0.59
Zenith system temp. (Jy):	RCP :			369.			296.	294.			2035.
	LCP :			458.		~~~~	292.	299.	*-		1752.
OV July 8-13, 1991											
Zenith system temp. (K):	RCP:			39.5			36.1	40.0			190.8
• • •	LCP :			41.4			36.8	34.8			188.9
Efficiency (Opa. Corr.)	RCP :			0.59			0.66	0.72			0.46
* => assumed value used.	LCP:			0.49			0.68	0.62			0.55
Zenith system temp. (Jy):	RCP :			375.			306.	311.		****	2317.
	LCP:			471.			304.	318.			1938.

COMMENTS:

1.	New pointing equation parame	eters are:	West Ti North 1 Az. End Sag:	lt: 11t: oder:	0.18 -0.05 -181D44'32" -1.17	(=El. Encoder Offset Cos)
2.	New colimation offsets are:	4cm Az: 6cm Az: 1cm Az:	1.25 -0.47 -0.35	El: El: El:	-8.42 -8.26 -8.67	

BREWSTER: Item		90cm	50cm	20cm	13cm	13cmsx	6cm	4cm	4cmsx	3cm	lcm
BR July 8-13, 1991											
Zenith system temp. (K):	RCP :			28.7			33.4	34.6			125.8
	LCP :										
Efficiency (Opa. Corr.)	RCP :			0.49			0.69	0.63			0.67*
* => assumed value used.	LCP:										
Zenith system temp. (Jy):	RCP :		****	330.			273.	308.			1048.
	LCP:										

# COMMENTS:

1. The pointing was very strange (large scatter) until near the end. When the poor data was edited, only 4 cm remained. Enough of that remained to get an improved pointing equation and good 4 cm offsets. The offsets at other frequencies should be considered suspect.

2.	The new pointing parameters are:	West Tilt: 0.09 North Tilt: -0.11 Azimuth Encoder: -1800 Sag: -1.55	0067 32 •
3.	The new colimation offsets are:	4cm Az: -1.32 E1:   20cm Az: 1.23 E1:   6cm Az: 2.36 E1:   1cm Az: 0.31 E1:	-0.62 -2.01 More data needed. 2.69 " " " 2.83 More data badly needed.

4. Note that a gain of 0.12 K/Jy was assumed for 1 cm since no good data were obtained on a flux calibrator. As a result, the Ts(Jy) is probably a bit lower than it should be.

5. Only 1 BBC was working so the LCP data were lost.