

Interoffice

National Radio Astronomy Observatory

Very Large Array

March 9, 1982

To: Mark Gordon, John Payne

From: Bill Horne

Subject: 36' Azimuth Bearing

12 METER MILLIMETER WAVE TELESCOPE

MEMO No. 141

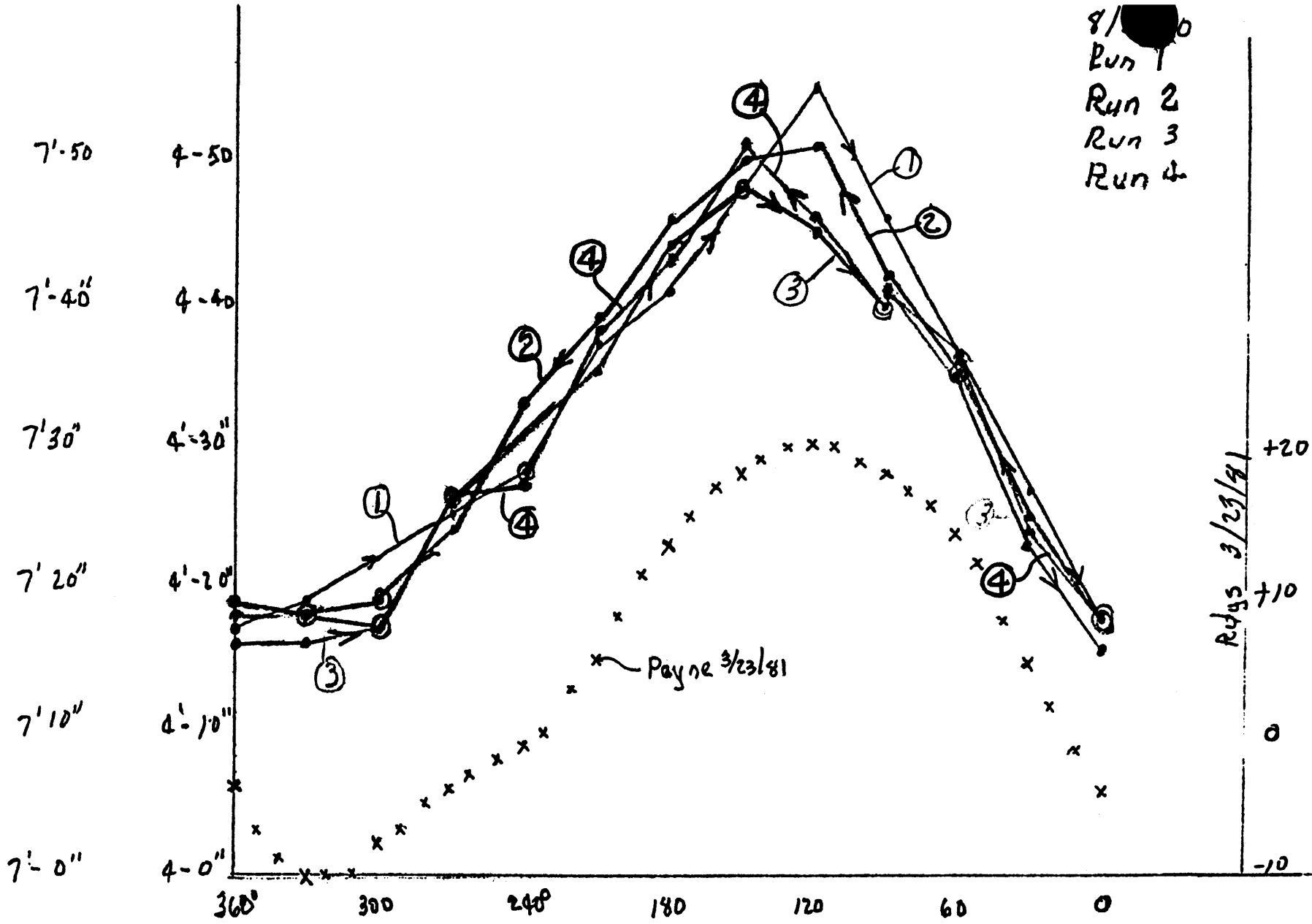
After Mark Gordon's calls of March 5 and March 8 concerning the 36 ft. azimuth bearing, I dug into my records and resurrected the attached set of readings taken on the tilt and run-out of the bearing by Sid Smith on August 22, 1980. S. Smith made 2 clockwise and 2 counter-clockwise measurements just as John Payne did on March 23, 1981 (Memo 30). I am attaching a Zerox of plots of Sid's readings on which I have added a plot of the 1st run that John Payne did in March 81 (no use using the other 3 runs, they are practically identical). Disregard the offset between the curves; it's irrelevant. Note that the amount of tilt is unchanged, the direction of tilt is unchanged and the indication of a slight irregularity around AZ 240° to AZ 280° existed then as now.

While the plots from Sid's readings are not as repeatable as John's the clino rdg's are subject to operator error of a second or so of arc and mounting the clino on the ladder would lead to some variation. I think, however, the agreement between Payne's readings and Smith's readings are remarkable and certainly indicate no deterioration of the bearing or change in antenna tilt in the last 11 years.

c.c. H. Hvatum

BY _____ DATE _____ SUBJECT _____ SHEET NO. _____ OF _____
 CHKD. BY _____ DATE _____ JOB NO. _____

Tilt Rdy.



Az. Bearing 36'
 Aug. 22, 1970

S.C. Smith

Aug 22, 70

SUBJECT Az. Bearing 36'

SHEET NO. 1 OF 1

Temp. 68°F

JOB NO.

For W.G. Horne

AZ. Rdy.	E-W	CCW	E-W	CCW
4	0		358-55-35	10
3	30°	-41"	-41	11
2	60°	-41"	-41.5	12
① Start 90° (telescope pt. East)		-43	-42	1
12	120°	-33	-35	2
11	150°	-24	-27	3
10	180°	-14	-18	4
9	210°	-05	-09	5
8	240°	-12	-10	6
7	270°	-19	-14	7
6	300°	-23	-21	8
5	330°	-31.5	-27	9
13	90°	-42	-42.5	13

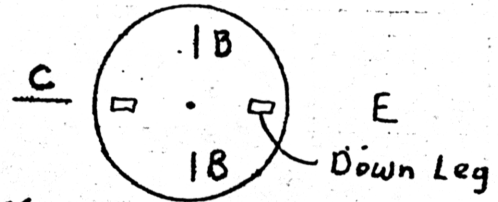
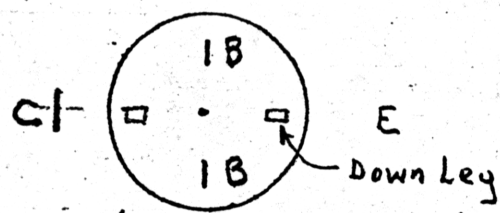
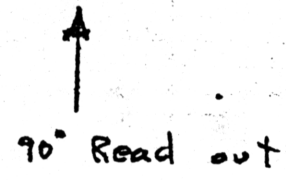
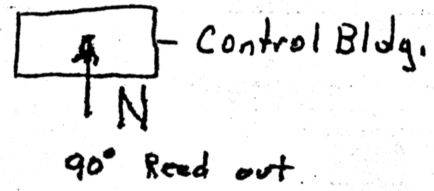
N-S	CCW	N-S	CCW
4	0°-07'-16"	10	0°-07'-18"
3	23	11	24
2	345	12	36
① start	41	1	40
12	45	2	46
11	48	3	51
10	44	4	43
9	35	5	38
8	28	6	27
7	26	7	26
6	17	8	17
5	16	9	18
13	40	13	41

1st set of readings

2nd

3rd

4th



Clinometer II to deck bearings Clinometer I to deck bearings

Starting Sketch - note that face orientation of clino not identified in other words direction of tilt cannot be identified for sure

Note. Clinometer placed on ladder leading to deck drive, three feet above floor on ladder 2nd bar from the bottom. I stood on floor to take reading. Tried with clinometer in center of disk, this proved to be no good.

Rdgs. taken Aug. 22, 1970

Interpretation of Smith's readings of 36'

①

Az	Smith No.	Rdg. No.	Telesc.	Tilt ccw
360° (0°)	1		90°	(1° 4' 17")
330°	2		60°	(1° 4' 19")
300°	3		30°	(1° 4' 19")
270°	4		0°	(1° 4' 25")
240°	5		330°	(1° 4' 28")
210°	6		300°	(1° 4' 37")
180°	7		270°	(1° 4' 41")
150°	8		240°	(1° 4' 48")
120°	9		210°	(1° 4' 55")
90°	10		180°	(1° 4' 46")
60°	11		150°	(1° 4' 36")
30°	12		120°	(1° 4' 27")
0° (360°)	13		90°	(1° 4' 18")

②

Az	Rdg. No.	Clin. Az	Rdg.
360°	13	360°	(1° 4' 15")
330°	12	330°	(1° 4' 18")
300°	11	300°	(1° 4' 19")
270°	10	270°	(1° 4' 24")
240°	9	240°	(1° 4' 33")
210°	8	210°	(1° 4' 39")
180°	7	180°	(1° 4' 46")
150°	6	150°	(1° 4' 50")
120°	5	120°	(1° 4' 51")
90°	4	90°	(1° 4' 42")
60°	3	60°	(1° 4' 35")
30°	2	30°	(1° 4' 25")
0° (360°)	1	0° (360°)	(1° 4' 18")

Total runout 0°-0'-36"
Tilt Axis 300° to 120° Az
Tilt amount 18 sec.

Total runout 0°-0'-32"
Tilt Axis 300° to 120° Az
Tilt amount 16 sec.

③

ccw	Rdg. No.	Az	Tilt
360° (0°)	4	360° (0°)	0° 7' 16"
330°	5	330°	0° 7' 16"
300°	6	300°	0° 7' 17"
270°	7	270°	0° 7' 26"
240°	8	240°	0° 7' 28"
210°	9	210°	0° 7' 35"
180°	10	180°	0° 7' 44"
150°	11	150°	0° 7' 48"
120°	12	120°	0° 7' 45"
90°	1	90°	0° 7' 41"
60°	2	60°	0° 7' 35"
30°	3	30°	0° 7' 23"
0°	13	90°	0° 7' 40"

④

CW	Rdg. No.	Clin. Az	Tilt
360°	10	360°	0° 7' 18"
330°	9	330°	0° 7' 18"
300°	8	300°	0° 7' 17"
270°	7	270°	0° 7' 26"
240°	6	240°	0° 7' 27"
210°	5	210°	0° 7' 38"
180°	4	180°	0° 7' 43"
150°	3	150°	0° 7' 51"
120°	2	120°	0° 7' 46"
90°	1	90°	0° 7' 40"
60°	11	60°	0° 7' 36"
30°	11	30°	0° 7' 24"
0°	13	90°	0° 7' 41"

Total Runout 0°-0'-32"
Tilt axis 330° - 150°
Tilt amount 16 sec

Total Runout 0°-0'-33"
Tilt axis 330° - 150°
Tilt 16 sec