

NATIONAL RADIO ASTRONOMY OBSERVATORY
SOCORRO, NEW MEXICO
VERY LARGE ARRAY PROJECT

VLA Scientific Memorandum No. 127

AVAILABILITY FOR OBSERVATIONS OF ANTENNAS,
FREQUENCY BANDS AND ANTENNA STATIONS

A. R. Thompson

February 1977

1.0 NUMBER OF ANTENNAS

Six antennas are now operational, i.e. they have been outfitted to work in the array on at least the 6 cm band. During 1977 four more antennas will be put into operation, starting with No. 7 in late February.

Not all antennas will be available for astronomical observations. Two antennas (serial numbers 3 and 5) were withdrawn from the observing array on January 24 for installation of some improved electronic modules. These two antennas will remain as an electronics test array and one more antenna will be added to them during the year. The number of antennas available for astronomical programs during 1977 will, therefore, vary from four to seven. The electronics on these antennas will remain unmodified until near the end of 1977.

2.0 FREQUENCY BANDS

18-21 cm Wavelength

Operation is presently limited by the availability of feeds. Antenna No. 1 has the prototype feed and No. 2 has the new design. No other antennas have 18-21 cm feeds. Delivery of four more feeds is scheduled for early February, and procurement of others is in progress, so all antennas should be outfitted by about May.

6 cm Wavelength

All six antennas are operable at 6 cm and all have the new design 6 cm feed.

2 and 1.3 cm Wavelength

All antennas have feeds at these bands, but operation is limited by the performance of the module which provides the first local oscillator for both bands. This module is unreliable, and a design modification study has recently been started to rectify this problem. Performance on these bands will remain uncertain for several months.

A study to investigate whether feeds with corrugated inner surfaces would give better polarization characteristics on these bands is also still in progress.

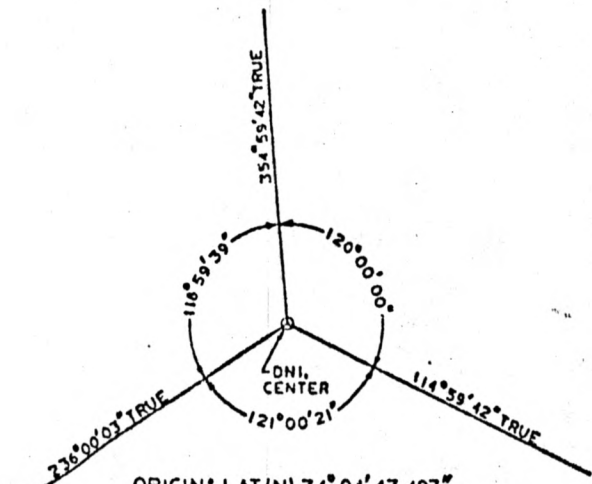
3.0 ANTENNA STATIONS

The availability of antenna stations for observing is limited by the waveguide which is generally not installed until after the track and foundations are in. At the present time waveguide has been laid along the west arm out to station BW8. Most stations out to this point are currently available, but a few require the installation of a waveguide coupler and the short length of waveguide from the coupler manhole to the base of the antenna.

Track and foundations have been completed out to AW6 on the west arm and to CE9 and CN9 on the east and north arms. An extension of the 1976 contract should complete the rail and foundations on the west arm to AW8 by about September 1977. Laying of waveguide out to AW8 will follow and should be completed by late fall of 1977, providing a baseline of 17 km.

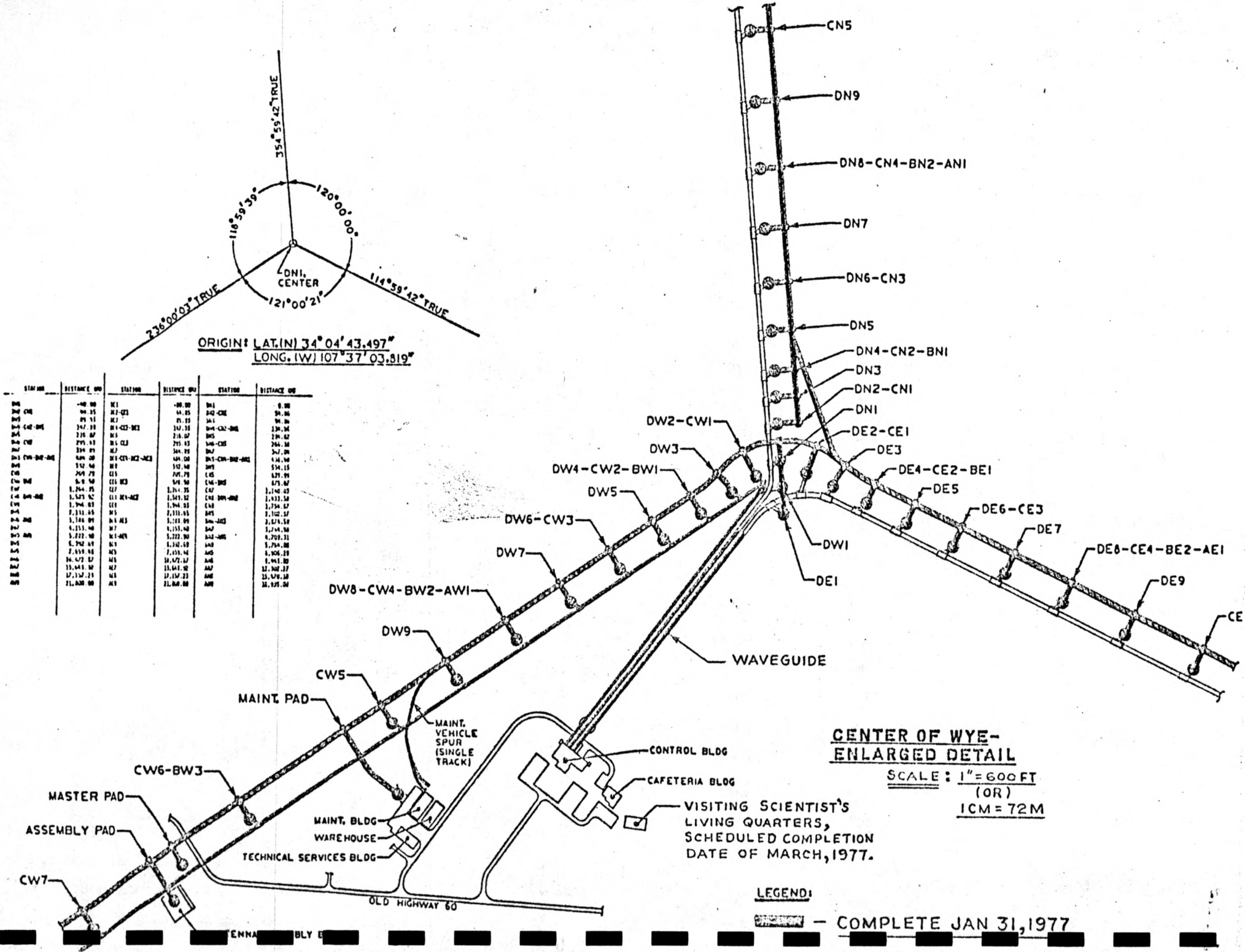
Attached is a list of the distances of antenna stations from the center of the wye and plans showing their positions.

STATION	DISTANCE (M)	STATION	DISTANCE (M)	STATION	DISTANCE (M)
DW1	-40.00	DE1	-80.00	DN1	0.00
DW2-CW1	44.85	DE2-CE1	44.85	DN2-CN1	54.86
DW3	89.93	DE3	89.93	DN3	94.86
DW4-CW2-BW1	147.33	DE4-CE2-BE1	147.33	DN4-CN2-BN1	134.86
DW5	216.07	DE5	216.07	DN5	194.82
DW6-CW3	295.43	DE6-CE3	295.43	DN6-CN3	266.38
DW7	384.89	DE7	384.89	DN7	347.04
DW8-CW4-BW2-AW1	484.00	DE8-CE4-BE2-AE1	484.00	DN8-CN4-BN2-AN1	436.40
DW9	592.40	DE9	592.40	DN9	534.15
CW5	709.79	CE5	709.79	CN5	639.99
CW6-BW3	970.50	CE6-BE3	970.50	CN6-BN3	875.07
CW7	1,264.35	CE7	1,264.35	CN7	1,140.03
CW8-BW4-AW2	1,589.92	CE8-BE4-AE2	1,589.92	CN8-BN4-AN2	1,433.53
CW9	1,946.03	CE9	1,946.03	CN9	1,754.67
BW5	2,331.65	BE5	2,331.65	BN5	2,102.37
BW6-AW3	3,188.09	BE6-AE3	3,188.09	BN6-AN3	2,874.59
BW7	4,153.40	BE7	4,153.40	BN7	3,744.98
BW8-AW4	5,222.90	BE8-AE4	5,222.90	BN8-AN4	4,709.31
BW9	6,392.69	BE9	6,392.69	BN9	5,764.08
AW5	7,659.48	AE5	7,659.48	AN5	6,906.29
AW6	10,472.87	AE6	10,472.87	AN6	9,443.03
AW7	13,643.92	AE7	13,643.92	AN7	12,302.27
AW8	17,157.23	AE8	17,157.23	AN8	15,470.10
AW9	21,000.00	AE9	21,000.00	AN9	18,935.00



ORIGIN: LAT.(N) 34° 04' 43.497"
 LONG.(W) 107° 37' 03.819"

STATION	DISTANCE (FO)	STATION	DISTANCE (FO)	STATION	DISTANCE (FO)
0	0.00	01	0.00	01	0.00
1	0.00	02	0.00	02	0.00
2	0.00	03	0.00	03	0.00
3	0.00	04	0.00	04	0.00
4	0.00	05	0.00	05	0.00
5	0.00	06	0.00	06	0.00
6	0.00	07	0.00	07	0.00
7	0.00	08	0.00	08	0.00
8	0.00	09	0.00	09	0.00
9	0.00	10	0.00	10	0.00
10	0.00	11	0.00	11	0.00
11	0.00	12	0.00	12	0.00
12	0.00	13	0.00	13	0.00
13	0.00	14	0.00	14	0.00
14	0.00	15	0.00	15	0.00
15	0.00	16	0.00	16	0.00
16	0.00	17	0.00	17	0.00
17	0.00	18	0.00	18	0.00
18	0.00	19	0.00	19	0.00
19	0.00	20	0.00	20	0.00
20	0.00	21	0.00	21	0.00
21	0.00	22	0.00	22	0.00
22	0.00	23	0.00	23	0.00
23	0.00	24	0.00	24	0.00
24	0.00	25	0.00	25	0.00
25	0.00	26	0.00	26	0.00
26	0.00	27	0.00	27	0.00
27	0.00	28	0.00	28	0.00
28	0.00	29	0.00	29	0.00
29	0.00	30	0.00	30	0.00
30	0.00	31	0.00	31	0.00
31	0.00	32	0.00	32	0.00
32	0.00	33	0.00	33	0.00
33	0.00	34	0.00	34	0.00
34	0.00	35	0.00	35	0.00
35	0.00	36	0.00	36	0.00
36	0.00	37	0.00	37	0.00
37	0.00	38	0.00	38	0.00
38	0.00	39	0.00	39	0.00
39	0.00	40	0.00	40	0.00
40	0.00	41	0.00	41	0.00
41	0.00	42	0.00	42	0.00
42	0.00	43	0.00	43	0.00
43	0.00	44	0.00	44	0.00
44	0.00	45	0.00	45	0.00
45	0.00	46	0.00	46	0.00
46	0.00	47	0.00	47	0.00
47	0.00	48	0.00	48	0.00
48	0.00	49	0.00	49	0.00
49	0.00	50	0.00	50	0.00
50	0.00	51	0.00	51	0.00
51	0.00	52	0.00	52	0.00
52	0.00	53	0.00	53	0.00
53	0.00	54	0.00	54	0.00
54	0.00	55	0.00	55	0.00
55	0.00	56	0.00	56	0.00
56	0.00	57	0.00	57	0.00
57	0.00	58	0.00	58	0.00
58	0.00	59	0.00	59	0.00
59	0.00	60	0.00	60	0.00
60	0.00	61	0.00	61	0.00
61	0.00	62	0.00	62	0.00
62	0.00	63	0.00	63	0.00
63	0.00	64	0.00	64	0.00
64	0.00	65	0.00	65	0.00
65	0.00	66	0.00	66	0.00
66	0.00	67	0.00	67	0.00
67	0.00	68	0.00	68	0.00
68	0.00	69	0.00	69	0.00
69	0.00	70	0.00	70	0.00
70	0.00	71	0.00	71	0.00
71	0.00	72	0.00	72	0.00
72	0.00	73	0.00	73	0.00
73	0.00	74	0.00	74	0.00
74	0.00	75	0.00	75	0.00
75	0.00	76	0.00	76	0.00
76	0.00	77	0.00	77	0.00
77	0.00	78	0.00	78	0.00
78	0.00	79	0.00	79	0.00
79	0.00	80	0.00	80	0.00
80	0.00	81	0.00	81	0.00
81	0.00	82	0.00	82	0.00
82	0.00	83	0.00	83	0.00
83	0.00	84	0.00	84	0.00
84	0.00	85	0.00	85	0.00
85	0.00	86	0.00	86	0.00
86	0.00	87	0.00	87	0.00
87	0.00	88	0.00	88	0.00
88	0.00	89	0.00	89	0.00
89	0.00	90	0.00	90	0.00
90	0.00	91	0.00	91	0.00
91	0.00	92	0.00	92	0.00
92	0.00	93	0.00	93	0.00
93	0.00	94	0.00	94	0.00
94	0.00	95	0.00	95	0.00
95	0.00	96	0.00	96	0.00
96	0.00	97	0.00	97	0.00
97	0.00	98	0.00	98	0.00
98	0.00	99	0.00	99	0.00
99	0.00	100	0.00	100	0.00

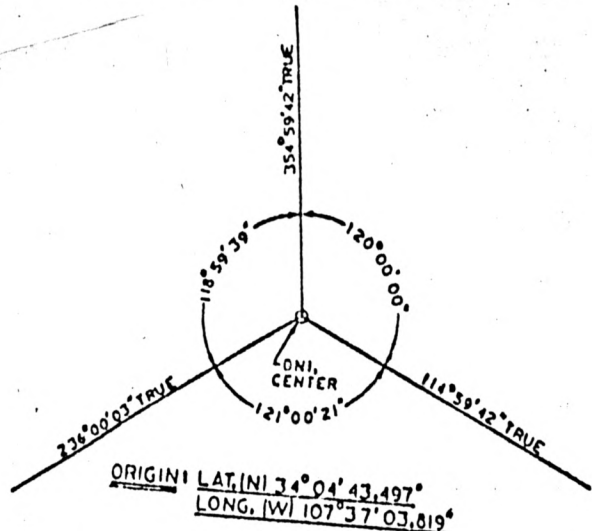


**CENTER OF WYE-
 ENLARGED DETAIL**

SCALE: 1" = 600 FT
 (OR)
 1CM = 72M

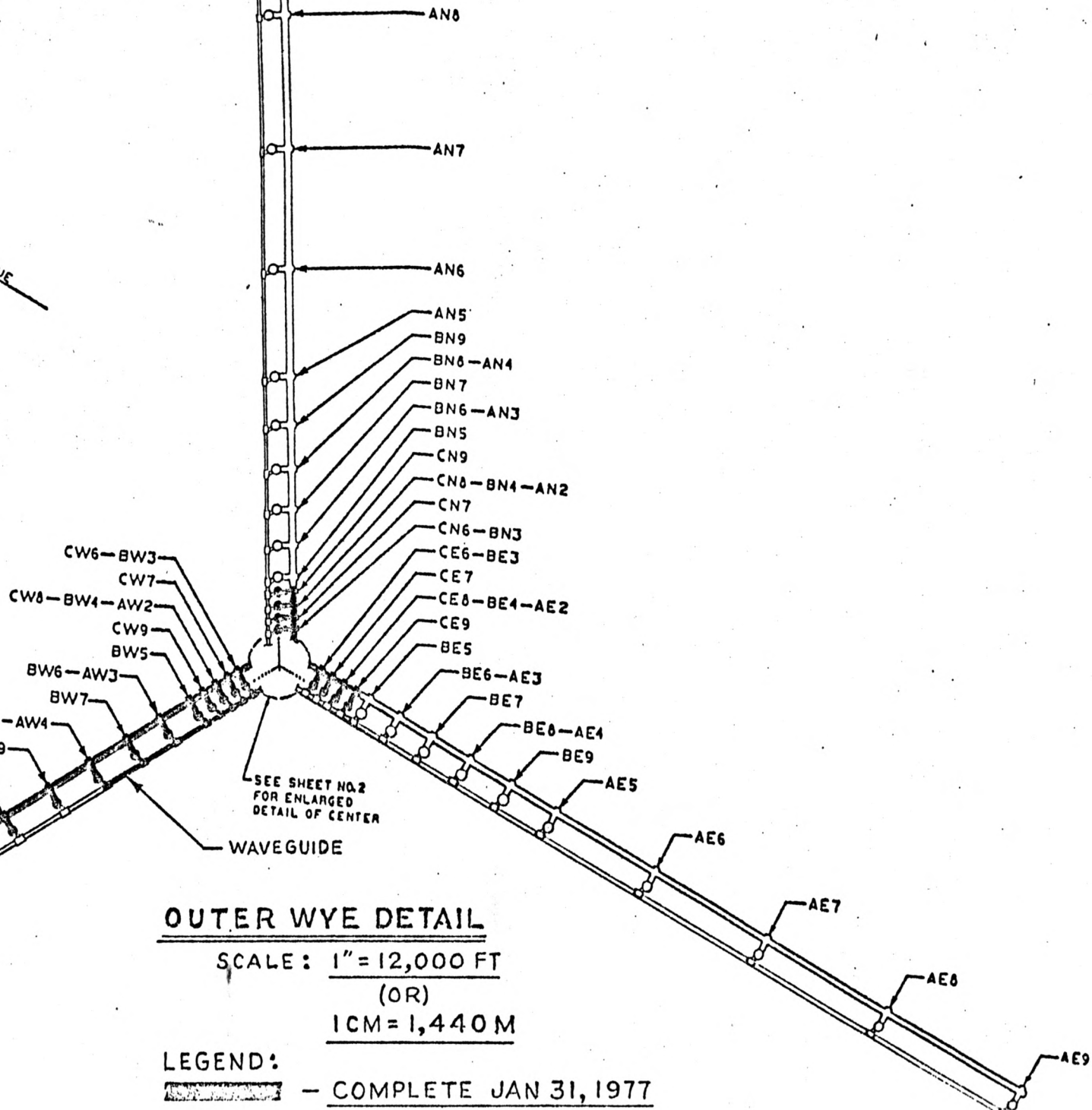
LEGEND:

- COMPLETE JAN 31, 1977



ORIGIN: LAT. (N) 34° 04' 43.497"
 LONG. (W) 107° 37' 03.819"

STATION	DISTANCE (FT)	STATION	DISTANCE (FT)	STATION	DISTANCE (FT)
0+00	0.00	0+00	0.00	0+00	0.00
0+10	10.00	0+10	10.00	0+10	10.00
0+20	20.00	0+20	20.00	0+20	20.00
0+30	30.00	0+30	30.00	0+30	30.00
0+40	40.00	0+40	40.00	0+40	40.00
0+50	50.00	0+50	50.00	0+50	50.00
0+60	60.00	0+60	60.00	0+60	60.00
0+70	70.00	0+70	70.00	0+70	70.00
0+80	80.00	0+80	80.00	0+80	80.00
0+90	90.00	0+90	90.00	0+90	90.00
1+00	100.00	1+00	100.00	1+00	100.00
1+10	110.00	1+10	110.00	1+10	110.00
1+20	120.00	1+20	120.00	1+20	120.00
1+30	130.00	1+30	130.00	1+30	130.00
1+40	140.00	1+40	140.00	1+40	140.00
1+50	150.00	1+50	150.00	1+50	150.00
1+60	160.00	1+60	160.00	1+60	160.00
1+70	170.00	1+70	170.00	1+70	170.00
1+80	180.00	1+80	180.00	1+80	180.00
1+90	190.00	1+90	190.00	1+90	190.00
2+00	200.00	2+00	200.00	2+00	200.00
2+10	210.00	2+10	210.00	2+10	210.00
2+20	220.00	2+20	220.00	2+20	220.00
2+30	230.00	2+30	230.00	2+30	230.00
2+40	240.00	2+40	240.00	2+40	240.00
2+50	250.00	2+50	250.00	2+50	250.00
2+60	260.00	2+60	260.00	2+60	260.00
2+70	270.00	2+70	270.00	2+70	270.00
2+80	280.00	2+80	280.00	2+80	280.00
2+90	290.00	2+90	290.00	2+90	290.00
3+00	300.00	3+00	300.00	3+00	300.00
3+10	310.00	3+10	310.00	3+10	310.00
3+20	320.00	3+20	320.00	3+20	320.00
3+30	330.00	3+30	330.00	3+30	330.00
3+40	340.00	3+40	340.00	3+40	340.00
3+50	350.00	3+50	350.00	3+50	350.00
3+60	360.00	3+60	360.00	3+60	360.00
3+70	370.00	3+70	370.00	3+70	370.00
3+80	380.00	3+80	380.00	3+80	380.00
3+90	390.00	3+90	390.00	3+90	390.00
4+00	400.00	4+00	400.00	4+00	400.00
4+10	410.00	4+10	410.00	4+10	410.00
4+20	420.00	4+20	420.00	4+20	420.00
4+30	430.00	4+30	430.00	4+30	430.00
4+40	440.00	4+40	440.00	4+40	440.00
4+50	450.00	4+50	450.00	4+50	450.00
4+60	460.00	4+60	460.00	4+60	460.00
4+70	470.00	4+70	470.00	4+70	470.00
4+80	480.00	4+80	480.00	4+80	480.00
4+90	490.00	4+90	490.00	4+90	490.00
5+00	500.00	5+00	500.00	5+00	500.00
5+10	510.00	5+10	510.00	5+10	510.00
5+20	520.00	5+20	520.00	5+20	520.00
5+30	530.00	5+30	530.00	5+30	530.00
5+40	540.00	5+40	540.00	5+40	540.00
5+50	550.00	5+50	550.00	5+50	550.00
5+60	560.00	5+60	560.00	5+60	560.00
5+70	570.00	5+70	570.00	5+70	570.00
5+80	580.00	5+80	580.00	5+80	580.00
5+90	590.00	5+90	590.00	5+90	590.00
6+00	600.00	6+00	600.00	6+00	600.00
6+10	610.00	6+10	610.00	6+10	610.00
6+20	620.00	6+20	620.00	6+20	620.00
6+30	630.00	6+30	630.00	6+30	630.00
6+40	640.00	6+40	640.00	6+40	640.00
6+50	650.00	6+50	650.00	6+50	650.00
6+60	660.00	6+60	660.00	6+60	660.00
6+70	670.00	6+70	670.00	6+70	670.00
6+80	680.00	6+80	680.00	6+80	680.00
6+90	690.00	6+90	690.00	6+90	690.00
7+00	700.00	7+00	700.00	7+00	700.00
7+10	710.00	7+10	710.00	7+10	710.00
7+20	720.00	7+20	720.00	7+20	720.00
7+30	730.00	7+30	730.00	7+30	730.00
7+40	740.00	7+40	740.00	7+40	740.00
7+50	750.00	7+50	750.00	7+50	750.00
7+60	760.00	7+60	760.00	7+60	760.00
7+70	770.00	7+70	770.00	7+70	770.00
7+80	780.00	7+80	780.00	7+80	780.00
7+90	790.00	7+90	790.00	7+90	790.00
8+00	800.00	8+00	800.00	8+00	800.00
8+10	810.00	8+10	810.00	8+10	810.00
8+20	820.00	8+20	820.00	8+20	820.00
8+30	830.00	8+30	830.00	8+30	830.00
8+40	840.00	8+40	840.00	8+40	840.00
8+50	850.00	8+50	850.00	8+50	850.00
8+60	860.00	8+60	860.00	8+60	860.00
8+70	870.00	8+70	870.00	8+70	870.00
8+80	880.00	8+80	880.00	8+80	880.00
8+90	890.00	8+90	890.00	8+90	890.00
9+00	900.00	9+00	900.00	9+00	900.00
9+10	910.00	9+10	910.00	9+10	910.00
9+20	920.00	9+20	920.00	9+20	920.00
9+30	930.00	9+30	930.00	9+30	930.00
9+40	940.00	9+40	940.00	9+40	940.00
9+50	950.00	9+50	950.00	9+50	950.00
9+60	960.00	9+60	960.00	9+60	960.00
9+70	970.00	9+70	970.00	9+70	970.00
9+80	980.00	9+80	980.00	9+80	980.00
9+90	990.00	9+90	990.00	9+90	990.00
10+00	1000.00	10+00	1000.00	10+00	1000.00



OUTER WYE DETAIL

SCALE: 1" = 12,000 FT
 (OR)
 1CM = 1,440M

LEGEND:
 [Symbol] - COMPLETE JAN 31, 1977

V9