Interoffice

VLB ARRAY MEMO No. 250

National Radio Astronomy Observatory

Charlottesville, Virginia

07 Aug 83

To: VLBA Configuration/Site Group

From: R. C. Walker

Subject: Use of Los Alamos and alternate Winston site.

The two VLBA sites near the VLA are the most sensitive to changes in location because of the short baselines connecting them to the VLA. They are also among the few VLBA sites that are not at existing facilities and so are free to move.

The site south of the VLA (VLAE3 in VLBA Memo 205) is in a rather remote area where access and availability of power are major considerations. A good line of sight for a microwave link to the VLA is also a consideration. Peter Napier and Dick Thompson have suggested two possible sites near the original position. One is a bit north of Winston and the other is in the Rio Grande Valley north of Truth or Consequences. I have examined uv plots for both and for an alternate further north in the Rio Grande Valley and have chosen the Winston site. It gives a smaller gap to the VLA. It is also at about 8000 feet instead of the 5000 of the other sites which may help for water vapor.

The other site near the VLA in Memo 205 was at Bernal, along I25 east of Santa Fe. That site seems to have some operational and security problems so I have examined several alternates including Los Alamos which was mentioned in Memo 205 as a possiblity. Los Alamos seems acceptable and, in fact, better than most of the other possibilities. My array quality measure program rates Los Alamos above all other sites tried including Bernal. The specific site tested is about 6 miles south east of Los Alamos, but the exact site is not too critical.

The attached plots show the coverage of the array with the new Winston site (called VLATN2) and Los Alamos (called LASL2) on a maximum scale of 500 km. Figure 1 shows the coverage of the 10 station VLBA plus 4 VLA antennas. Figure 2 shows what could be done with 3 additional telescopes in New Mexico to fill the gap to the VLA. These plots can be directly compared with the corresponding plots in Memo 205 to see the changes that have been made.

HAWAII	19.80	155.50
ARECIBO	18.34	66.75
HSTK	42.43	71.49
IOWA	41.58	91.57
OVRO	37.05	118.28
OROVILE	48.90	119.75
KITT	31.96	111.60
FDVSNEW	30.47	103.95
LASL2	35.81	106.27
VLATN2	33.43	107.73
AN9	34.24	107.63
AW9	33.97	107.81
AE9	34.00	107.41
AE3	34.07	107.59

Scale in km
(kilometers x 10^2)

10 VLBA
+ 4 VLA

500 km max

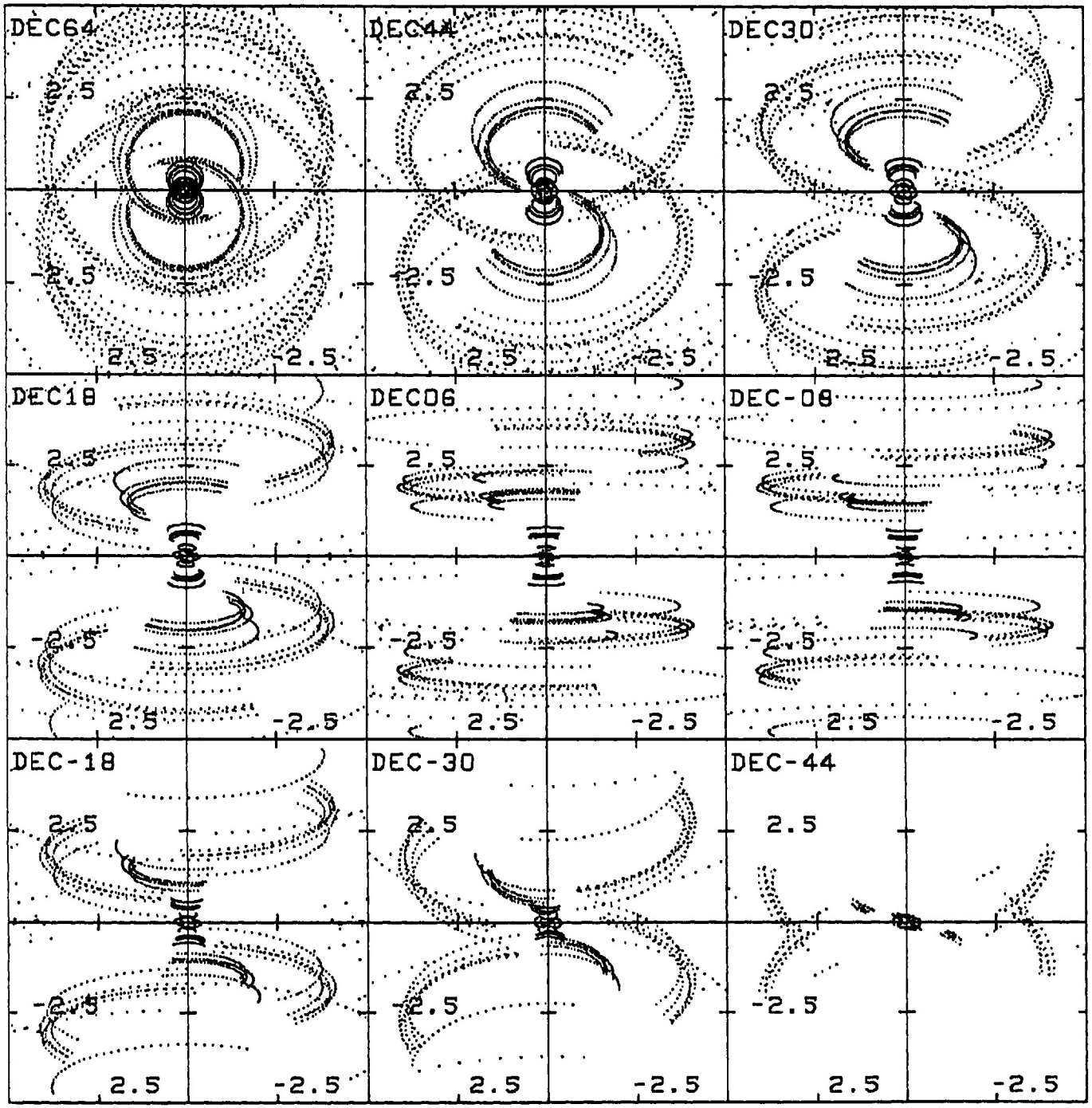

Figure 1

HAWAII	19.80	155.50
ARECIBO	18.34	66.75
HSTK	42.43	71.49
IOWA	41.58	91.57
OVRO	37.05	118.28
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FDVSNEW	30.47	103.95
LASL2	35.81	106.27
VLATN2	33.43	107.73
VLAE4	34.30	108.30
VLAE5	34.38	106.95
ROSWELL	33.40	104.55
AN9	34.24	107.63
AW9	33.97	107.81
AE9	34.00	107.41
AE3	34.07	107.59

Scale in km
(kilometers x 10^2)

13 VLBA
+ 4 VLA

500 km max

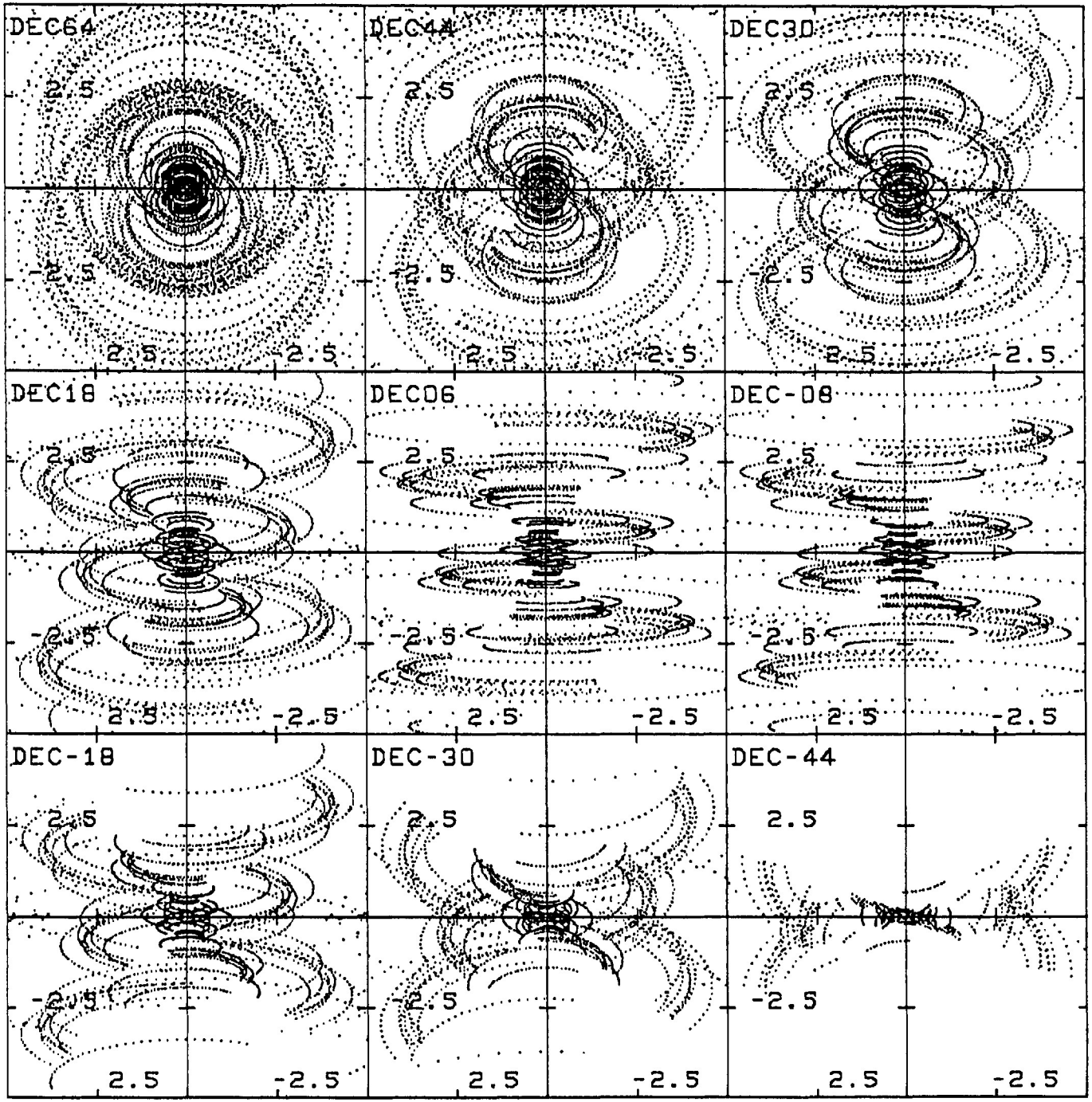

Figure 2