

VLA ASTRONOMICAL OBSERVING/UTILIZATION DECEMBER 1982

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs
AA-15	C. Ambruster K. Wood K. Johnston	NRL NRL NRL	X-Ray transient H0547-14.	6 and 20	29	6.5
AB-129	B. Geldzahler P. F. Burke P. E. Greenfield D. H. Roberts	NRL MIT MIT Brandeis U	Monitoring double quasar 0957+561.	6	4, 19	4
AB-188	R. Becker	VPI & SU	Distribution and polarization of the radio emission of two Crab-like SNR.	2	20	9
AB-204	T. J. Balonek J. O. Burns M. Zeilik P. Smith J. J. Puschell R. Barvainis J. Kenny C. D. Impey	New Mexico U of New Mexico U of New Mexico U of New Mexico U of Calif., San Diego Mass. U of Mass. U of Hawaii U of	Simultaneous radio, infrared and optical polarimetry of quasi-stellar objects.	2, 6 and 20	4, 5	8.3
AB-210	R. L. Brown F. J. Lockman	NRAO/CV NRAO/CV	The density structure of Galactic HI regions.	6	31	13.5
AC-57	D. Chernoff C. Heiles D. Hollenbach C. McKee M. Stevens	Calif., Berkeley Calif., Berkeley Calif., Berkeley Calif., Berkeley Calif., Berkeley	Search for line radiation from HI in the BN-KL region of Orion.	21 cm line	16	11.5
AC-62	P. C. Crane C. G. Kotanyi E. Hummel J. Van Gorkom R. M. Price J. M. van der Hulst	NRAO/VLA ESO, FRG-NRAO/VLA New Mexico U of NRAO/VLA New Mexico U of NEFA, NETH	Survey of the Virgo cluster.	6	6, 14, 19, 20, 21	22.0
AD-85	I. de Pater D. M. Hunten J. Caldwell T. Owen J. R. Dickel	Arizona U of Arizona U of SUNY, Stony Brook SUNY, Stony Brook Illinois U of	Planetary atmospheres: Jupiter and Saturn.	1.3 and 2	28	6
AD-94	R. Fanti C. Fanti	Arizona U of Bologna U, ITALY	Monitoring polarization of variable radio sources.	2 and 6	3, 9, 28	6
AF-54	A. C. Fabian S. Phinney J. J. Condon	Cambridge U of, ENGLAND Cambridge U of, ENGLAND NRAO/CV	Galaxies with emission-line filaments.	6 and 20	11	3
AH-97	C. Henkel J. H. Bieging T. L. Wilson K. J. Johnston R. Crutcher	MPIR, FRG/Calif, Berkeley Calif., Berkeley MPIR, FRG NRL Illinois U of	H2CO absorption toward NGC 2024.	6 cm line	1	9.5
AH-98	B. P. Hine A. H. Rots	Texas U of NRAO/VLA	Neutral Hydrogen in M81.	21 cm line	12	12
AH-104	D. J. Helfand R. H. Becker	Columbia U VPI & SU	Search for radio synchrotron nebulae surrounding radio pulsars.	6 and 20	22	24
AH-105	R. M. Hjellming M. S. Hjellming	NRAO/VLA Illinois U of	Polarization mapping of M31 central radio source.	6, 18, 20 and 22	26, 27	29.5
AH-106	R. M. Hjellming K. J. Johnston	NRAO/VLA NRL	Calibrate Faraday rotation of SS433 and search for large structures and holes.	6, 18, 20 and 22	19	10

VLA ASTRONOMICAL OBSERVING/UTILIZATION DECEMBER 1982 (Cont.)

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs
AH-107	C. Heiles	Calif., Berkeley	HI shells round novae.	21 cm line	17	18
AH-108	M. Stevens	Calif., Berkeley				
AH-108	P. T. P. Ho	CFA	High luminosity stellar objects without HI regions.	1.3 cm line	4,6	17.5
AH-109	A. D. Haschick	Haystack Obs.				
AH-109	P. T. P. Ho	CFA	NH3 emission region in the spiral galaxy IC 342.	1.3 cm line	2	14.5
AH-110	R. N. Martin	MPFR, FRG	Low mass proto stars -(1,1) Ammonia lines.	1.3 cm line	1	17.5
AH-110	P. T. P. Ho	CFA				
AH-110	R. N. Martin	MPFR, FRG	Monitoring AFGL 618.	1.3, 2, 6 and 20	28	2
AK-47	S. Kyoik	NRC, CANADA				
AK-47	R. C. Bignell	NRAO/VLA	Monitoring AFGL 618.	1.3, 2, 6 and 20	15	9
AK-70	M. L. Kutner	Rensselaer Inst.	Orion Nebula: NGC 1977.	6		
AK-70	N. J. Evans	Texas U of				
AK-73	C. G. Kotanyi	ESO, FRG-NRAO/VLA	HI survey of the Virgo cluster.	21 cm line	26,27	17.8
AK-73	C. Balikowski	Meudon Obs, FRANCE				
AK-73	J. van Gorkom	NRAO/VLA				
AL-47	R. A. Laing	NRAO/CV	The radio galaxy 3C452.	2	12	0
AL-47	G. G. Pooley	Cambridge U of, ENGLAND				
AL-51	J. M. Riley	Cambridge U of, ENGLAND				
AL-51	H. Liszt	NRAO/CV	HI mapping of NGC 1068 and NGC 4151.	21 cm line	4	20
AM-72	L. Molnar	Harvard U				
AM-72	M. Reid	CFA	Polarization monitoring of BL Lac objects.	2,6 and 20	24,28	10 w/AM-79
AM-72	R. C. Bignell	NRAO/VLA				
AO-37	F. N. Owen	NRAO/VLA	3C75 and 3C465.	6	21	7.0
AO-37	J. Eilek	NMIMT				
AO-37	C. O'Dea	NRAO/VLA				
AO-37	J. O. Burns	New Mexico U of				
AO-37	M. Inoue	Tokoyo Ast. Obs. JAPAN				
AR-66	J. H. Romig	Radiophysics Inc.	Saturn electrostatic discharges.	20	18	11
AR-66	D. R. Evans	Radiophysics Inc.				
AR-66	J. W. Warwick	Radiophysics Inc.				
AR-71	A. C. S. Readhead	Caltech	North celestial pole region.	20	19	9
AR-71	W. L. W. Sargent	Caltech				
AR-71	A. T. Moffet	Caltech				
AR-71	D. T. Wilkinson	Princeton U				
AR-71	J. M. Uson	Princeton U				
AR-72	L. J. Rickard	Howard U	M83 - Studies of HI.	2 and 6	16	5
AR-72	T. P. Stecher	NASA/Goddard				
AR-72	R. C. Bohlin	NASA/Goddard				
AR-72	J. K. Hill	Sys. & Appl. Sci. Corp.				
AR-72	R. C. Cornett	Sys. & Appl. Sci. Corp.				
AR-74	L. J. Rickard	Howard U	HI maps of CO galaxies.	21 cm line	18	13
AR-74	P. Palmer	Chicago U of				
AS-79	S. R. Spangler	Iowa U of	Monitoring of low frequency variables.	1.4, 5, 15 and 20	24,28	10 w/AM-72
AS-79	W. D. Cotton	NRAO/CV				
AS-80	R. A. Sramek	NRAO/VLA	Supernovae SN 1980 in NGC 6946 and SN 1979C in M100.	6 and 20	4,29,30	7
AS-80	J. M. van der Hulst	NRAO/VLA				
AS-137	P. Schwartz	NRL	Emission line object 0259+64.	6 and 20	28	0
AS-137	B. Geldzahler	NRL				
AS-137	J. Heckathorn	NASA/Goddard				
AS-137	H. Heckathorn	NRL				
AT-27	N. Thonnard	DTM	Neutral hydrogen distribution in SC galaxies.	21 cm line	8,12	25.7
AT-27	V. C. Rubin	DTM				
AT-28	C. H. Townes	Calif., Berkeley	Continuum emission from small, rotating NH3 clumps and an NH3 region.	2 and 6	17	6
AT-28	P. Palmer	Chicago U of				
AT-28	D. N. Matsakis	USNO				
AT-28	A. Harris	Calif., Berkeley				

VLA ASTRONOMICAL OBSERVING/UTILIZATION DECEMBER 1982 (Cont.)

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs
AT-29	C. H. Townes D. N. Matsakis P. Palmer A. Harris	Calif., Berkeley USNO Chicago U of Calif., Berkeley	NH3 observations of B335, OMC2 and Orion north of KL.	1.3 cm line	13, 14	30
AV-79	J. M. van der Hulst P. C. Crane R. C. Kennicutt R. J. Allen	NRAO, NETHERLANDS NRAO/VLA Minnesota U of Groningen U of, NETH	Extended radio emission in M51 and NCG 6946.	20	2	9
AW-76	G. Wynn-Williams E. Becklin N. Z. Scoville	Hawaii U of Hawaii U of Mass. U of	The 3 kpc disk of NCG 1068.	2 and 6	30	6.5
AY-2	J. S. Young N. Z. Scoville	Mass. U of Mass. U of	Extended radio continuum emission in M82.	2, 6 and 20	30, 31	14.5
VAH4	M. Schneps M. Reid J. M. Moran R. Genzel D. Downes	CFA CFA MPIR, FRG MPIR, FRG IRAM, FRANCE	M33 water maser.	1.3 cm phased array VLB	1	4.0
VAH7	N. Bartel	MIT	Cyg X-1.	1.3 cm phased array VLB	7	2.2
VB-26	N. Bartel B. J. Geldzahler	MIT NRL	M81.	1.3 cm single antenna VLB	3	11 w/AH-109 & tests
VB-34	D. B. Shafer R. S. Booth D. L. Jones	NASA/Goddard Chalmers, SWEDEN Chalmers, SWEDEN Caltech	A0235+164 and 0735+178.	1.3 cm single antenna VLB	1	5.5 w/AH-110
VB-38	N. Bartel J. M. Marcaide M. V. Gorenstein I. I. Shapiro K. W. Weiler B. E. Corey	MIT MIT MIT CFA NSF Haystack obs	SNR 1979c in M100.	6 cm phased array VLB MK 111	8	5
VB-39	J. A. Biretta W. R. Lind M. Cohen S. Unwin	Caltech Caltech Caltech Caltech	3C273 and 3C279.	1.3 cm single antenna VLB	2	13 w/AH-97 & AV-79
VJ-21	D. L. Jones S. C. Unwin M. M. Davis	Caltech Caltech NAIC	A0 0235+164.	1.3 cm single antenna VLB MK 111	1, 2	7.9 w/AH-97 & AH-109
VK-12	K. I. Kellermann M. Reid J. Schmitt J. Romney	NRAO/GB CFA CFA MPIR, FRG	M87.	6 cm phased array VLB	11	11
VL-21	K. Y. Lo M. H. Cohen D. C. Backer J. M. Moran	Caltech Caltech Calif., Berkeley CFA	Galactic center source.	1.3 cm single antenna VLB	1	10.6 w/AH-110
VN-4	S. Neff J. Benson R. L. Brown	NRAO/GB NRAO/CV NRAO/CV	Bent jet sources: 1222+216 and 2223+210.	6 cm single antenna VLB	5	11.5 w/AL-51 & AB-204
VP-36	E. Preuss I. I. K. Pauliny-Toth K. I. Kellermann	MPIR, FRG MPIR, FRG NRAO/GB	3C147.	6 cm single antenna VLB	3, 4	16.3 w/AD-94, AB-204 & software

VLA ASTRONOMICAL OBSERVING/UTILIZATION DECEMBER 1982 (Cont.)

Program	Observer	Affiliation	Program Title	Polarization of strong sources.	Bands (cm)	Obsv Date	Sched Hrs
VR-19	D. H. Roberts J. F. C. Wardle R. I. Potash B. F. Burke	Brandeis U Brandeis U Brandeis U MIT		phased array VLB	6 cm MK III	5, 6	24.7
VM-17	A. E. E. Rodgers P. N. Wilkinson T. J. Cornwell	Haystack Obs Manchester U of NRAO/VLA			6 cm phased array VLB	10	14.7
VM-18	R. C. Walker J. M. Benson G. A. Seielstad S. C. Urwin NRAO staff	NRAO/CV NRAO/CV Caltech Caltech	3C120.	phased array VLB	6 cm phased array VLB	9	12.1
				Electronics, etc. Software Pointing, baselines Calibration related work General tests			90.5 30.3 33.1 13 27.8

The average downtime for the month of December, 1982 was approximately 5.01 percent.

Average downtime of operational antennas lost due to hardware and software failures during scheduled observing = $\frac{\text{Total number of operational antennas lost due to hardware and software failures during scheduled observing}}{\text{Total number of operational antennas scheduled}} \times 100$

where "antenna-hours" definition is: An array consisting of N antennas operating for Y hours is defined to have YN antenna-hours operation.

The array was scheduled for 95 percent (708 hours) of the time: 72.5 percent (513.3 hours) to astronomical programs and the remaining 27.5 percent (194.7 hours) went to tests.

The following independent proposals shared simultaneous observing:

- AH-110/VB-34 5.5
- AH-110/VL-21 10.5
- AH-97/VJ-21 3.0
- AH-97/VB-39 3.5
- AV-79/VB-39 6.5
- AH-109/VJ-21 4.9
- Test/VB-26 2.1
- AH-109/VB-26 9.0
- Software/VP-36 3.6
- AD-94/VP-36 1.0
- AB-104/VP-36 3.5
- AB-129/VP-36 2.0
- AS-80/VP-36 0.2
- AL-51/VN-4 6.8
- AB-204/VN-4 4.8
- Test/VP-36 4.9
- AF-54/VP-36 1.0
- AM-72/AS-79 10.0

VLA ASTRONOMICAL OBSERVING/UTILIZATION NOVEMBER 1982

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs
AB-186	J. P. Basart M. D. Andrews	Iowa State U Iowa State U	Center of W 28.	2	6	6
AB-197	R. C. Lamb A. H. Barrett J. T. Armstrong J. M. Jackson P. T. P. Ho	MIT MIT MIT MIT CFA	Ammonia in Sgr A.	1.3 cm line	2,7, 29	9.8
AB-198	F. Bash M. Kaufman	Texas U of Ohio State U	Giant HII regions, spiral structure, and supernova remnants in M81.	6	6	8
AB-199	N. W. Broten J. M. Macleod J. P. Vallee	CANADA CANADA CANADA	Gemini Ring - rotation measures of background sources seen through it.	2,6 and 20	7	12
AB-210	R. L. Brown F. J. Lockman	NRAO/CV NRAO/CV	The density structure of Galactic HII regions.	6	12	16
AC-56	M. J. Claussen K. Y. Lo	Catech Catech	Molecular cloud cores.	21 cm line	21	12
AC-58	M. J. Claussen C. R. Masson K. Y. Lo	Catech Catech Catech	Ammonia maps of molecular cloud cores.	1.3 cm line	20	15.5
AC-60	B. G. Clark R. A. Perley A. H. Bridle G. Grueff	NRAO/VLA NRAO/VLA queen's U, CANADA Bologna U, ITALY	Weak and extended objects from the B3 survey.	20	11,14, 27	12
AC-62	C. C. Crane C. G. Kotanyi E. Hummel R. M. Price J. H. van Gorkom J. M. van der Hulst	NRAO/VLA ESO, FRG New Mexico U of New Mexico U of NRAO/VLA NRA, NETHERLANDS	Survey of the Virgo cluster.	6	8,28	20
AD-84	G. A. Duik T. Bastian	Colorado U of Colorado U of	Monitoring the solar transition region and corona, and major solar flares.	6	18,21	17
AD-87	M. de Groot I. Skillen	Armagh Obs, IRELAND Armagh Obs, IRELAND	Spectroscopic binaries.	6	1,2	13.5
AD-88	B. Demnison J. J. Gondon	VPI and State U NRAO/CV	Interstellar scintillations in extragalactic sources.	20	17,19	25
AF-52	S. M. Faber E. Raimond G. R. Knapp J. S. Gallagher	Lick Obs (U of CA) NRA, (Dwingeloo) NETH Princeton U Illinois U of	HI distribution in the elliptical galaxy NGC 1052.	21 cm line	15,18	23
AG-102	D. M. Gibson	NMIMT	M-dwarf flare stars.	6,18 and 20	1,2	12
AH-92	G. Helou Y. Terzian	Cornell U NAIC/Ithaca	HI in binary galaxies.	21 cm line	22	9
AH-109	P. T. P. Ho R. N. Martin	CFA MPIR, FRG	NH3 emission region in the spiral galaxy IC 342.	1.3 cm line	29	16
AH-110	P. T. P. Ho R. N. Martin	CFA MPIR, FRG	Low mass proto stars - (1,1)	1.3 cm line	30	6
AH-111	D. E. Hogg A. S. Wilson	NRAO/CV Maryland U of	Ammonia lines. Crab Nebula.	6 and 20	23	8
AJ-83	D. W. Johnson S. T. Gottesman	Battelle Obs Florida U of	Dwarf elliptical NGC 147.	21 cm line	7	12
AK-71	K. I. Kellermann D. B. Shaffer R. A. Sramek	NRAO/GB NASA/GSFC (Phoenix Corp) NRAO/VLA	Search for Palomar bright quasars.	6	22,24, 26,27, 28	48.3

VLA ASTRONOMICAL OBSERVING/UTILIZATION NOVEMBER 1982 (Cont.)

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs
AM-71	I. F. Mirabel	Puerto Rico U of	H I emission and absorption in	21 cm	11	18
	A. S. Wilson	Harvard U of	highly inclined active galaxies.	line		
AM-72	L. Molnar	Harvard	Polarization monitoring of BL Lac	2,6 and	19,28	7.5
	M. Reid	CFA	objects.	20	with AS-79	
AO-37	R. C. Bignell	NRAO/VLA		6	10	8
	F. N. Owen	NRAO/VLA	3C75 and 3C465.			
	J. Eilek	NMIMT				
	C. O'Dea	NRAO/VLA				
	J. O. Burns	New Mexico U of				
	M. Inoue	Tokoyo Ast. Obs.				
AR-75	L. Rodriguez	Mexico U of, MEXICO	Ammonia clumps in regions with	1.3 cm	13,14	41
	J. Canto	Mexico U of, MEXICO	bipolar mass outflow.	line		
	J. M. Torreslles	Mexico U of, MEXICO				
	P. T. P. Ho	CFA				
	J. M. Moran	Calif. U of, Berkeley				
AS-79	S. R. Spangler	Iowa U of	Monitoring low frequency variables.	1.3, 2,	19,28	7.5
	W. D. Cotton	NRAO/CV		6 and 20	with AM-72	
AS-80	R. A. Sramek	NRAO/VLA	Supernovae SNI980 in NGC 6946 and	6 and 20	22	2
	J. M. van der Hulst	NFRA, NETHERLANDS	SNI979c in M100.			
	K. W. Weiler	NSF				
AS-139	M. Simon	SUNY, Stony Brook	Circumstellar ionized regions.	1.3	3,4	21
	M. Felli	Arceetri, ITALY				
AU-14	J. S. Ulvestad	NRAO/CV	Diffuse emission around BL Lac	6 and 20	1,2,	19.5
	K. J. Johnston	NRL	objects.	5		
AV-52	J. M. van der Hulst	NFRA, NETHERLANDS	Monitoring extragalactic supernovae;	6 and 20	26	5
	R. A. Sramek	NRAO/VLA	the next four.			
	K. W. Weiler	NSF				
AW-66	B. Willis	Texas U of	Radio structure and radio optical	6	6,9	2.5
	D. Willis	Texas U of	emission lines.			
AW-79	B. A. Williams	NRAO/CV	Neutral hydrogen in Seyfert's sextet,	21 cm	27	10
	J. R. Dickel	Illinois U of	a compact group of galaxies.	line		
	H. J. Rood	Inst. Adv. Study				
AY-3	K. Young	Caltech	Five faint dwarf galaxies mapped	21 cm	8	18
	K. Y. Lo	Caltech	in the H I line.	line		
	W. L. W. Sargent	Caltech				
AZ-21	H. Zirin	Caltech	Solar observations.	1.3, 2	15,20,	26
	G. J. Hurford	Caltech		and 6	23	
	A. Kattenberg	Caltech				
VA-3	W. Aief	MPIR, FRG	NGC 1275.	1.3 cm	29,30	17
	J. J. Romney	MPIR, FRG				
	I. K. Pauliny-Toth	MPIR, FRG	single antenna VLB			
	K. I. Kellermann	NRAO/GB				
	L. Matveyenko	NRAO/GB				
	L. Kogan	Inst for Space Res., USSR				
	V. Kostenko	Inst for Space Res., USSR				
VB-34	L. B. Baath	Chalmers, SWEDEN	AD 0235+164 and 0735+178.	1.3 cm	30	6
	R. S. Booth	Chalmers, SWEDEN	single antenna VLB			
	D. Jones	Caltech				
VK-11	K. I. Kellermann	NRAO/GB	Galactic center source.	1.3 cm	30	10.5
	R. D. Ekers	NRAO/VLA				
	NRAO staff					
			NUG Calibration			2
			Electronics, etc.			74.5
			Software			35
			Pointing, baselines			45
			General tests			44.5

The average downtime for the month of November, 1982 was approximately 6.84 percent.

$$\text{Average downtime of operational antennas} = \frac{\text{Total number of antenna-hours of operational antennas lost due to hardware and software failures during scheduled observing}}{\text{Total number of antenna-hours of operational antennas scheduled}} \times 100$$

where "antenna-hours" definition is: An array consisting of N antennas operating for Y hours is defined to have YN antenna-hours operation.

The array was scheduled for 96.4 percent (694 hours) of the time: 71 percent (493 hours) to astronomical programs and the remaining 29 percent (201 hours) went to tests.

The array was down for 26 hours during the month of November for Holidays.

The following independent proposals shared simultaneous observing:

AM-72/AS-79	7.5
AB-197/VA-3	3.8
AH-109/VA-3	14.4
AH-110/VB-34	<u>6.0</u>
	31.7

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VLA ASTRONOMICAL OBSERVING UTILIZATION OCTOBER 1982

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs
AB-129	B. F. Burke P. E. Greenfield D. H. Roberts	MIT MIT	Double quasar 0957+561.	6	25	2
AB-165	J. O. Burns T. J. Balonek C. J. MacCallum	Brandeis U New Mexico U of New Mexico U of Sandia Labs	Wide-angle tailed radio galaxy 1919+479.	6 and 20	3	9
AB-182	J. O. Burns T. J. Balonek E. Hummel	New Mexico U of New Mexico U of New Mexico U of	Monitoring the cores of extended radio sources and spiral galaxies.	2, 6 and 20	25, 26	6.5
AB-185	R. L. Brown	NRAO/CV	Quasar 3C245.	6 and 18 line	1, 4	20
AB-190	B. F. Burke C. R. Lawrence C. L. Bennett	MIT MIT MIT	350 sources from the MIT 5 GHz survey.	6	14, 15	24
AB-208	F. H. Briggs P. H. Coleman W. Christiansen	Pittsburgh U of Pittsburgh U of North Carolina U of	Confirmation of radio emission from HII galaxies.	20	7	3
AC-59	C. Foltz J. T. Stocke R. Weymann	Arizona U of Arizona U of Arizona U of	Survey of broad absorption line QSO's.	6	21, 22	21
AC-61	M. J. Claussen K. Y. Lo J. M. Dickey	Caltech Caltech Minnesota U of	Spectrum of the galactic nucleus.	1.3, 2 and 6	18	8
AD-78	J. M. Dickey	Minnesota U of	HI absorption in bright spiral galaxies.	21 line	9, 10	28.12
AD-83	L. Davis	KRNO	Bright interacting galaxies.	6 and 20	2, 3	18
AD-87	M. de Groot I. Skillen	Armagh Obs, IRELAND Armagh Obs, IRELAND	Radio flux from spectroscopic binaries as a function of phase.	6	30	10.5
AF-54	A. C. Fabian S. Phinney J. J. Gibson	Cambridge U of, ENGLAND Cambridge U of, ENGLAND NRAO/CV	Galaxies with emission-line filaments.	6 and 20	25	3.5
AG-102	D. M. Gibson	NMIMT	M-dwarf flare stars.	6, 18 and 20	25-30	59.5
AG-108	B. Geldzahler K. J. Johnston	NRL NRL	A flare of Cyg X-3.	1.3, 6 and 18	9, 10	13.04
AH-89	A. D. Haschick P. T. Ho J. M. Moran	Haystack Obs CFA CFA	Proper motions of H2O masers associated with Herbig-Haro object HH1.	1.3	23	5
AH-99	L. F. Rodriguez R. M. Hjellming R. T. Newell	Mexico U, MEXICO NRAO/VLA NRAO/VLA	Sco radio sources.	2, 6 and 20	22	7
AH-111	D. E. Hogg A. S. Wilson	NRAO/CV Maryland U of	Crab nebula.	6 and 20	16	8
AI-14	M. Inoue M. Ishiguro H. Tabara	Nobeyama Obs, JAPAN Nobeyama Obs, JAPAN Utsunomiya U, JAPAN	Small scale bent beam in 4C26.42	1.3 and 2	18	6
AI-15	R. Isaacman H. Gabling I. Gatley	Leiden U of, NETH Leiden U of, NETH UK Infrared tel., HI	A radio survey of compact planetary nebulae.	20	1, 2	17
AJ-81	W. Jaffe	NRAO/CV	High redshift clusters.	6 and 20	2, 6, 7, and 16	5
AK-72	A. Kembhavi E. D. Feigelson	Tata Inst, INDIA MIT	81 quasars with known X-ray properties.	6	23, 24	21
AK-74	C. Kotanyi P. Veron J. H. van Gorkom	ESO, FRG ESO, FRG NRAO/VLA	Nucleus of Seyfert NGC 5728.	6	9	2.97

VLA ASTRONOMICAL OBSERVING/UTILIZATION OCTOBER 1982 (Cont.)

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs
AM-61	D. J. Doiron	Iowa U of	Eclipse observations of the binary star AR Lacertae.	6 and 18	12, 13, 15, 16	16.5
AM-69	R. L. Mutel	Iowa U of	Stellar objects in Taurus cloud	6	1	5
	P. C. Myers	CFA	cores.			
AM-72	L. Morinar	Harvard U	Polarization monitoring of BL Lac objects.	2, 6 and 20	25	9.5 with AS-79
	M. Reid	CFA				
	R. C. Bignell	NRAO/VLA				
AM-73	J. M. Moran	CFA/Calif., Berkeley	Zeeman splitting of the 21 cm absorption feature in planetary nebula NGC 6302	21 cm line	16, 17	8
	L. F. Rodriguez	Mexico U, MEXICO				
AM-75	R. L. Mutel	Iowa U of	Coordinated VLA/VLBI observations of RS CVn binary star systems.	2, 6 and 18	16-18	12
	D. J. Doiron	Iowa U of				
	J. P. Lestrade	JPL				
	M. Slade	JPL				
	R. Preston	JPL				
	D. M. Gibson	NMIMT				
AN-13	R. T. Newell	NRAO/VLA	X Persei.	20	4, 7	12
AN-14	S. G. Neff	NFRA, NETHERLANDS	quasars with very large bent jets.	2, 6 and 20	6, 7	12
AN-15	S. G. Neff	NFRA, NETHERLANDS	Quasars with end-on jets.	2, 6 and 18	17, 18	7
AN-16	E. R. Nelson	New Mexico U of	PKS 0301-123: A coincident X-ray and radio tail source.	6 and 20	18, 19	8.5
	J. O. Burns	New Mexico U of				
	R. A. White	NASA/Goddard				
AO-36	F. N. Owen	NRAO/VLA	Cluster source 3C75.	20	20	11
	C. P. O'Dea	NRAO/VLA				
	M. Inoue	Nobeyama Obs., JAPAN				
	H. Tabara	Utsunomiya U, JAPAN				
	M. Ishiguro	Nobeyama Obs., JAPAN				
AR-70	M. Reid	CFA	Ammonia absorption toward W3 (OH).	1.3 line	13, 14	12
	P. Myers	MIT/CFA				
	J. H. Bieging	Calif., Berkeley				
AR-79	L. Rudnick	Minnesota U of	The spectra of low radio luminosity QSO's.	2	29, 30	11
	W. A. Stein	Minnesota U of				
	M. Sitko	Minnesota U of				
AS-79	S. R. Spangler	Iowa U of	Monitoring low frequency variables.	1.4, 5, 15 and 21	25	9.5 with AM-72
	W. D. Cotton	NRAO/CV				
AS-80	R. A. Sramek	NRAO/VLA	Supernovae SN 1980 in NGC 6946 and SN 1979c in M100.	6 and 20	25, 28	6
AS-138	J. M. van der Hulst	NFRA, NETHERLANDS				
	N. Z. Scoville	Massachusetts U of	Search for broad Hydrogen and Helium recombination lines in the galactic center.	6 line	15, 24	6.5
	J. H. van Gorkom	NRAO/VLA				
	D. N. B. Hall	NRAO/VLA				
	S. G. Kleinmann	Johns Hopkins U				
	U. J. Schwarz	MIT				
AS-141	L. L. Smarr	Groningen U of, NETH				
	R. D. Ekers	Illinois U of	High resolution studies of jet structures in Dumbell galaxies.	6 and 20	5, 6	18
	W. van Breugel	NRAO/VLA				
	T. J. Cornwell	KPNO				
AT-25	J. Turner	NRAO/VLA				
	P. T. P. Ho	Calif., Berkeley	Massive star formation regions in nearby spiral nuclei.	6	24	12
AT-26	V. Terzian	CFA				
	R. C. Bignell	Cornell U	Angular expansion of planetary nebulae.	6	2, 6	12
AT-30	J. H. van Gorkom	NRAO/VLA				
	A. J. Turtie	NRAO/VLA				
	M. R. Calabretta	Sydney U of, AUSTRALIA	Seyfert 2 galaxy M4-1.	20	6	4
	M. M. Phillips	Sydney U of, AUSTRALIA				
		CTIO, CHILE				

VLA ASTRONOMICAL OBSERVING/UTILIZATION OCTOBER 1982 (Cont.)

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs.
AV-52	J. M. van der Hulst R. A. Sramek K. W. Weiler	NRAO, NETHERLANDS NRAO/VLA NSF	Monitoring of extragalactic supernovae; the next four.	6 and 20	2	5
AV-77	J. H. van Gorkom D. Hunter	NRAO/VLA Illinois U of	Interacting irregulars.	6 and 20	17	12
VB-36	N. Bartel B. E. Corey J. M. Marcaide A. E. E. Rogers I. I. Shapiro I. I. K. Pauliny-Toth	MIT MIT MIT Haystack obs CFA MPIR, FRG	Nucleus of M81.	18 phased array VLBI	9	13.53
VL-15	R. P. Linfield R. S. Simon	Calif., Berkeley Caltech	Jet in 3C380.	18 single antenna VLBI	6 AN-14 and AT-26	17.02 w/AS-141
VL-16	R. P. Linfield	Calif., Berkeley	Jet in 3C390.3.	18 phased array VLBI	5	11
VS-22	R. T. Schilizzi S. G. Neff G. K. Miley P. D. Barthel T. J. Cornwell P. N. Wilkinson	NRAO, NETHERLANDS NRAO, NETHERLANDS Leiden U of, NETHERLANDS Leiden U of, NETHERLANDS NRAO/VLA Manchester U of, ENGLAND	Nucleus of 3C236.	18 phased array VLBI	11, 12	23.5
VS-23	R. S. Simon A. C. S. Readhead P. N. Wilkinson	Caltech Caltech Manchester U of, ENGLAND	3C147.	18 single antenna VLBI	7 w/AN-13, AB-208 and tests	15.05
VU-11	S. C. Unwin	Caltech	Spectral index maps.	18 single antenna VLBI	4, 5 w/AS-141 and tests	24.57 15.88
VM-19	R. C. Walker J. M. Benson G. A. Seljestad S. C. Unwin NRAO staff	NRAO/CV NRAO/CV Caltech Caltech	3C120.	18 phased array VLBI	10, 11	67.0 38.0 41.5 53.67

The average downtime for the month of October, 1982 was approximately 8.45 percent.

Average downtime of = $\frac{\text{Total number of antenna-hours of operational antennas lost due to hardware and software failures during scheduled observing}}{\text{Total number of antenna-hours of operational antennas scheduled}}$ x 100

where "antenna-hours" definition is: An array consisting of N antennas operating for Y hours is defined to have YN antenna-hours operation.

The array was scheduled for 100 percent (747.17 hours) of the time: 74.4 percent (555.50 hours) to astronomical programs and the remaining 25.6 percent (191.67 hours) went to tests.

The following independent proposals shared simultaneous observing:

AM-72/AS-79	9.50
VU-11/AB-185	4.30
VU-11/Tests	8.00
VU-11/AS-141	12.00
VU-11/VL-16	0.27
VL-15/VL-16	0.20
VL-15/AS-141	4.80
VL-15/AN-14	5.17
VL-15/AT-26	6.00
VL-15/Tests	0.85
VS-23/Tests	1.15
Tests/Tests	2.00
VS-23/AJ-81	2.00
VS-23/AN-13	6.00
VS-23/Tests	3.00
VS-23/AB-208	2.90
AG-108/AK-74	2.97
AG-108/AD-78	<u>10.07</u>
	81.78 hours

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VLA ASTRONOMICAL OBSERVING/CALIBRATION SEPTEMBER 1982

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs
AB-129	B. F. Burke P. E. Greenfield D. H. Roberts	MIT MIT Brandeis	Monitoring double quasar 0957+561.	6	23	2
AB-185	R. L. Brown	NRAO/CV	Quasar 3C245.	6 and 18 line	27	10
AB-194	B. F. Burke C. L. Bennett C. R. Lawrence	MIT MIT MIT	High resolution observations of faint sources.	6 and 20	13	13
AC-52	J. Cordes J. Simonetti S. R. Spangler I. Wasserman	Cornell U Cornell U U of Iowa Cornell U	Rotation-measure fluctuations toward extragalactic radio sources.	6, 18 and 21	6	21
AC-53	J. J. Condon M. A. Condon	NRAO/CV	High-resolution radio surface photometry of 8 face-on spiral galaxies.	20	12	20
AC-55	F. A. Cordova K. O. Mason R. M. Hjellming	Los Alamos Lab U College London, UK NRAO/VLA	Cataclysmic variable stars.	6	3,5, 10	17
AD-74	I. de Pater W.-H. Ip	U of AZ MPIA, FRG	Radio source occultations by Comet Austin.	6 and 20	14, 15, 16	7.5
AE-15	R. D. Ekers C. Fanti R. Fanti P. Parma	NRAO/VLA Bologna, ITALY Bologna, ITALY Bologna, ITALY	Low luminosity radio galaxy B2 1637+29.	20	24	8
AF-46	E. D. Feigelson G. W. Clark J. W. Dreher	MIT MIT MIT	Hercules A = 3C348.	6 and 20	2	8
AF-53	E. D. Feigelson H. Bradt	MIT MIT	Spectrum of an unusual X-ray object, H0323+022.	1.3, 2, 6 and 20	1	3
AG-95	A. C. Gower	U of Victoria, CANADA	Halo of quasar 4C18.68.	20	20	3
AG-98	S. Guilloteau D. Downes	Grenoble, FRANCE IRAM, FRANCE	Ammonia absorption toward W3(OH).	1.3 cm line	1, 2, 8, 10	47.5
AG-100	D. M. Gibson C. M. Wade P. Palmer L. E. Snyder T. M. Banla	NMIMT NRAO/VLA U of Chicago U of IL Boston U	Continuum and OH observations of Comet Austin.	6 and 18 line	3, 6, 10, 15, 18, 26	23.5
AH-89	P. T. P. Ho A. D. Haschick J. M. Moran L. F. Rodriguez	U of CA, Berkeley Haystack obs CFA UNA of MEXICO	Position and proper motion of H20 masers associated with Herbig-Haro 1.	1.3 cm line	6	6
AI-13	F. P. Israel J. M. van der Hulst K. Edgar	ESTEC, NETHERLANDS NFRA, NETHERLANDS U of MN	The peculiar galaxy NGC 1569 (VII Zw 16).	6 and 20	24	10
AJ-73	D. T. Jaffe C. M. Telesco	U of Chicago U of HI	Nearby spiral galaxies.	20	20	9
AK-47	S. Kwok R. C. Bignell	NRC, CANADA NRAO/VLA	AFGL 618 - monitoring.	1.3, 2, 6 and 20	15	2
AK-68	A. Kafatos J. M. Hollis	George Mason U NASA/GSFC NASA/GSFC	R Aquarii.	6	25, 26	16
AL-50	L. Feretti P. Parma	Bologna, ITALY Bologna, ITALY	Extended quasar B2 1320+29.	6 and 20	12	1.5

VLA ASTRONOMICAL OBSERVING/UTILIZATION SEPTEMBER 1982 (Cont.)

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs
AM-39	L. Molnar M. Reid R. C. Bignell	CFA CFA NRAO/VLA	Monitoring polarization of BL Lac objects.	2 and 6	26,30 with AS-79	6
AM-62	J. M. Moran L. F. Rodriguez	CFA UNA of MEXICO	Positions of H2O masers in regions of mass loss outflow.	1.3 cm	14,17	13.5
AM-63	M. Morris F. Yousser Zadeh D. Chance	Columbia U Columbia U Columbia U	Compact Galactic Center sources in the continuum arc.	2 and 6	23,30	14
AM-66	J. M. Moran L. F. Rodriguez D. C. Backer	CFA UNA of MEXICO U of CA, Berkeley	Hydrogen absorption in NGC 6334 B.	21 cm	12	4
AO-34	F. N. Owen R. White J. O. Burns C. P. O'Dea	NRAO/VLA NASA/GSCF UNM	Abell clusters of galaxies.	21	24	24
AP-57	G. G. Pooley J. P. Leahy	U of MA/NRAO-VLA Cambridge U, ENGLAND	The extended radio galaxy 3C66 B - polarization.	2.6 and 20	21	3.5
AP-58	F. F. Gardner J. B. Whiteoak	CSIRO, AUSTRALIA CSIRO, AUSTRALIA	Excited OH in the compact HII regions W3 (OH) and DR 21.	6 cm line	15,16	24.5
AP-59	G. G. Pooley J. P. Leahy J. M. Riley	Cambridge U, ENGLAND Cambridge U, ENGLAND Cambridge U, ENGLAND	Fine-scale structure in the Galactic Faraday medium.	18 and 20	17,18	16
AP-60	P. Parma C. Fanti R. Fanti H. de Ruiter	Bologna, ITALY Bologna, ITALY Bologna, ITALY NRAO/VLA	Low luminosity radio galaxies with small angular sizes.	20	5,6,9, 11,18	48
AR-68	A. H. Rots J. R. Forster J. B. Whiteoak	NRAO/VLA CSIRO, AUSTRALIA CSIRO, AUSTRALIA	Ultra compact HII regions.	1.3,2 and 6 cm line	18-20	29
AS-79	S. R. Spangler W. D. Cotton	U of IA NRAO/CV	Monitoring low frequency variables.	5,14,15 and 20	26,30 with AM-39	6
AS-80	R. A. Sramek J. M. van der Hulst K. W. Weiler	NRAO/VLA NRA, NETHERLANDS NSF	Supernovae SN 1980 in NGC 6946 and SN 1979c in M100.	2,6 and 20	23,24, 29	10
AS-102	S. R. Spangler R. A. Laing	U of IA NRAO/CV	Radio galaxy 3C192.	20	26	8
AS-113	E. R. Seaquist M. B. Bell R. C. Bignell	U of Toronto, CANADA Herzberg Inst., CANADA NRAO/VLA	Stimulated recombination lines in M82 and NGC 253.	6 and 21 cm line	27	17.5
AS-125	E. Skillman B. Balick	U of WA U of WA	Nuclei of giant extragalactic HII regions.	6	19	9
AS-133	A. Sandquist P. O. Lindblad S. Jorsater	Stockholm Obs, SWEDEN Stockholm Obs, SWEDEN Stockholm Obs, SWEDEN	Weak radio galaxies: barred spiral NGC 1365 and cluster ellipticals 3309/11.	6	12	13
AT-25	J. Turner P. T. P. Ho	U of CA, Berkeley U of CA, Berkeley	Massive star formation regions in nearby spiral nuclei.	6	4,5	24
AV-71	W. van Breugel G. K. Miley H. Butcher T. Heckman M. H. Ulrich	KPNO Leiden U, NETHERLANDS KPNO U of MD ESO, FRG	Associated extended optical line emission with the radio galaxies NGC 708 and 3C445.	6 and 20	17,18	16
AW-56	C. M. Wade M. A. Perley NRAO Staff	NRAO/VLA NRAO/VLA NRAO/VLA	Monitoring optically flaring quasars 1156+295 = 4C29.45.	1.3,2,6 and 20	26	1
			Electronics, etc.			84.25
			Software			45
			Pointing, baselines			23.25
			General tests			60.5

The average downtime for the month of September, 1982 was approximately 4.62 percent.

Average downtime of operational antennas = $\frac{\text{Total number of antenna-hours of operational antennas lost due to hardware and software failures during scheduled observing}}{\text{Total number of antenna-hours of operational antennas scheduled}} \times 100$

where "antenna-hours" definition is: An array consisting of N antennas operating for Y hours is defined to have YN antenna-hours operation.

The array was scheduled for 100 percent (722 hours) of the time: 70.5 percent (509 hours) to astronomical programs and the remaining 29.5 percent (213 hours) went to tests.

The following independent proposals shared simultaneous observing:

AM-39/AS-79

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VLA ASTRONOMICAL OBSERVING UTILIZATION AUGUST 1982

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs
AA-17	D. C. Abbott J. H. Biegling E. B. Churchwell	U of CO U of CA, Berkeley U of WI	A distance-limited survey of mass loss from Wolf-Rayet stars.	6	19-22	24
AB-129	B. F. Burke P. E. Greenfield D. H. Roberts	MIT MIT Brandeis	Monitoring double quasar 0957+561.	6 and 20	21	2
AB-156	J. P. Basart C. T. Daub	ISU San Diego State	High resolution Te structure of 3 planetary nebulae.	6	8	11
AB-165	J. O. Burns T. J. Balonek C. J. MacCallum	UNM UNM Sandia Labs	Spectral index and polarization of the wide-angle tailed radio galaxy 1919+479.	6 and 20	7	10
AB-187	J. Bailly A. A. Stark	Bell Labs Bell Labs	21 cm HI emission from high velocity molecular outflows.	21 cm line	13	15
AC-42	E. B. Churchwell D. C. Abbott J. H. Biegling R. C. Bignell	U of WI U of CO U of CA, Berkeley NRAO/VLA	Variability of fluxes and spectral indices of P Cy9, 9 Sgr, V1 Cy9 9 and 12.	2 and 6 monitoring	25	3
AC-54	T. L. Cline U. D. Desai B. J. Teegarden R. M. Hjellming	NASA/Goddard NASA/Goddard NASA/Goddard NRAO/VLA	Gamma-ray burst source fields.	6 and 20	3	7
AD-74	I. de Pater W. H. Ip	U of AZ MPIA, FRG	Radio source occultation by Comet Austin	2 and 6	19-27	19.5
AD-78	J. M. Dickey	NRAO/CV	HI absorption in bright spiral galaxies.	21 cm line	13	24
AD-81	J. R. Dickel S. D'Odorico	U of IL ESO, FRG	SNR in M31.	6	1-2	22.7
AF-50	E. B. Fomalont E. D. Feigelson G. K. Miley C. R. Canizares	NRAO/VLA MIT U of Leiden, NETH MIT	Steep spectrum radio galaxy 3C318.1.	20	16	2
AG-100	D. M. Gibson P. Palmer C. M. Wade T. M. Bania	NMIMT U of Chicago NRAO/VLA Boston U	Continuum and OH observations of Comet Austin.	1.3, 2, 6 and 18	9, 10, 12, 20, 22, 24, 26, 29	34.5
AH-80	E. Hummel M. Zeilik	UNM UNM	A selected area in M31.	20	6	4
AH-89	A. D. Haschick J. M. Moran P. T. P. Ho L. F. Rodriguez	Haystack Obs CFA U of CA, Berkeley U of Mexico, MEXICO	Positions and proper motions of water maser spots in HHL.	1.3 cm line	15	4
AH-98	B. P. Hine A. H. Rots	U of MN NRAO/VLA	High resolution HI observations of M81.	21 cm line	7, 8	24
AH-99	R. T. Newell	NRAO/VLA	Sc0 radio source.	6, (20,2)	5	7
AH-103	C. Henkel T. L. Wilson	U of CA, Berkeley MPIR, FRG	H2CO absorption toward W51 (G49.5-0.4).	6 cm line	20, 21, 23	12
AK-69	M. R. Kundu D. McConnell E. J. Schmahl	U of MD U of MD U of MD	Solar active regions and flares.	2 and 6	28-30	24
AL-43	R. A. Laing	NRAO/CV	Hot-spots in luminous extragalactic radio sources.	2 and 6	6, 9	18

VLA ASTRONOMICAL OBSERVING/UTILIZATION AUGUST 1982 (Cont.)

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs
AL-47	R. A. Laing G. G. Pooley	NRAO/CV U of Cambridge, ENGLAND	Rotation measure variations in the radio galaxy 3C452.	17 and 22	18	12
AL-49	J. M. Riley D. Lynden-Bell G. G. Pooley G. Reid	U of Cambridge, ENGLAND U of Cambridge, ENGLAND U of Cambridge, ENGLAND	The very rich cluster Abell 1689.	6 and 20	21	2
AM-39	L. Molnar M. Reid R. C. Bignell	NRAO/VLA CFA	Monitoring polarization of BL Lac objects.	2 and 6	24	6.5 with AS-79
AM-54	B. J. McLean V. A. Hughes	Queen's U, CANADA Queen's U, CANADA	W U Ma stars.	2 and 6	26	6
AM-59	G. K. Miley T. Heckman W. van Breugel M. Uirich	U of Leiden, NETH U of MD KPNO/Steward obs. ESO, FRG	Bright radio galaxies.	6	15	24
AO-31	C. P. O'Dea F. N. Owen	NRAO/VLA NRAO/VLA	Narrow angle tailed radio sources.	20	6,7, 26	15.5
AO-33	M. P. Ondrechen J. M. van der Hulst	U of MN NFRA, NETHERLANDS	Barred spiral galaxies NGC 1097, NGC 5236 (M83).	20	12, 13 27, 30	24.5
AP-60	C. Fanti R. Fanti P. Parma H. de Ruiter	Bologna, ITALY Bologna, ITALY Bologna, ITALY Bologna, ITALY	Low luminosity radio galaxies with small angular sizes.	20	3,5,6, 16,27, 28	19.5
AP-61	P. Palmer R. Rubin	U of Chicago NASA/Ames	K3-50A.	1.3 and 2	4	14
AS-79	S. R. Spangler W. D. Cotton	NRAO/CV NRAO/CV	Monitoring low frequency variables.	1.4, 5, 15 and 21	24	6 with AM-39
AS-80	R. A. Sramek J. M. van der Hulst K. W. Weiler	NRAO/VLA NFRA, NETHERLANDS NSF	Supernovae SN1980 in NGC 6946 and SN1979c in M100.	6 and 20	24	4.5
AS-109	M. Stevens S. Kulkarni C. H. Heiles	U of CA, Berkeley U of CA, Berkeley U of CA, Berkeley	Galactic magnetic field structure determined from extragalactic source rotation measures.	21 cm line mode	27, 30	16.5
AS-111	S. R. Spangler	NRAO/CV	Double radio sources.	6	1, 14	24
AS-128	E. R. Seaquist N. Duric P. C. Crane R. C. Bignell L. E. Davis	U of Toronto, CANADA U of Toronto, CANADA NRAO/VLA NRAO/VLA KPNO	NGC 3079.	6 and 20	2	12
AS-130	J. T. Stocke J. O. Burns	U of AZ U of NM	B20800+24: A head-tail radio source in an extremely sparse region.	6 and 20	31	13
AS-132	R. A. Sramek L. Bothune B. Balick	NRAO/VLA SAO U of WA	0351+026, a Seyfert 1? with strong natural hydrogen.	20 cm line	21, 22, 24	28
AS-135	D. J. Saikia C. S. Salter V. K. Kapahi	TIFR, INDIA TIFR, INDIA TIFR, INDIA	D2 doubles; classification checks.	2 and 6	10	7
AV-76	J. M. van der Hulst P. C. Crane D. G. Lawrie H. C. Ford	NFRA, NETHERLANDS NRAO/VLA OSU Sp. Tel. Sci. Inst.	Supernova remnant candidate near the nucleus of M51.	6	15	6
AW-56	C. M. Wade M. Perley	NRAO/VLA NRAO/VLA	Monitoring optically flaring quasar 1156+295 = 4C29.45.	1.3, 2, 6 and 20	8, 19, 31	3

VLA ASTRONOMICAL OBSERVING/UTILIZATION AUGUST 1982 (Cont.)

<u>Program</u>	<u>Observer</u>	<u>Affiliation</u>	<u>Program Title</u>	<u>Bands (cm)</u>	<u>Obsv Date</u>	<u>Sched Hrs</u>
AW-59	D. W. Weedman R. A. Sramek	Penn State U NRAO/VLA	Star burst objects.	6	22, 23	23
AW-66	B. Willis D. Willis	U of TX U of TX	Structures of broad emission line objects.	6	3, 6, 7	8
AW-76	G. Wynn-Williams E. Becklin N. Scoville Staff	U of HI U of HI U of MA NRAO/VLA	The 3 kpc disk of NGC 1068. Electronics, etc. Software Pointing/baselines General tests	6 and 20	29	6.5 67 35 23 85.8

The average downtime for the month of August, 1982 was approximately 6.78 percent.

Average downtime of operational antennas lost due to hardware and software failures during scheduled observing = $\frac{\text{Total number of antenna-hours of operational antennas scheduled}}{\text{Total number of antenna-hours of operational antennas scheduled}} \times 100$

where "antenna-hours" definition is: An array consisting of N antennas operating for Y hours is defined to have YN antenna-hours operation.

The array was scheduled for 100 percent (746 hours) of the time: 72.8 percent (543.2 hours) to astronomical programs and the remaining 27.2 percent (202.8 hours) went to tests.

The following independent proposals shared simultaneous observing:

- Pointing/General Tests 8
- AM-39/AS-79 6

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VLA ASTRONOMICAL OBSERVING UTILIZATION JULY 1982

<u>Program</u>	<u>Observer</u>	<u>Affiliation</u>	<u>Program Title</u>	<u>Bands (cm)</u>	<u>Obsv Date</u>	<u>Sched Hrs</u>
AB-129	B. F. Burke P. E. Greenfield D. H. Roberts	MIT MIT Brandeis	Double quasar 0957+561.	6	16	2
AB-167	R. C. Bignelli E. R. Sequist	NRAO/VLA NRAO/VLA	Monitoring the SNR in the galaxy NGC 4449.	6, 20	12	1
AB-178	B. Balick R. M. Hjellming R. C. Bignelli	U of WA NRAO/VLA NRAO/VLA	Planetary nebulae NGC 40, NGC 6543.	6, 20	24, 27	18.5
AB-181	J. O. Burns J. P. Basart D. S. DeYoung	U of NM ISU KPNO	Search for radio jets in extended sources with powerful cores.	6	31	12
AB-182	J. O. Burns T. J. Balonek E. Hummel	UNM UNM UNM	Monitoring the cores of extended radio sources and spiral galaxies.	2, 6, 21	1, 2	5.5
AB-184	R. L. Brown	NRAO/CV	Recombination line emission from quasars.	6 line	14, 16	18
AB-186	J. P. Basart M. D. Andrews	ISU ISU	Scaled array observations of the center of W28.	20	30	6
AB-188	R. C. Lamb	ISU	Two Crab-like SNR.	20	28	8
AB-193	B. Baud H. J. Habing J. Herman	Groningen, NETH Leiden, NETH Leiden, NETH	OH/IR stars with very high mass loss rates.	6	15	7
AB-194	B. F. Burke C. L. Bennett C. R. Lawrence	MIT MIT MIT	High resolution observations of faint sources.	6, 20	20, 31	20.5
AB-195	V. Borjako	Cornell U	Exact position of new pulsar PSR1848+04.	20	2	2
AB-196	W. Baan J. H. van Gorkom I. F. Mirabel A. D. Haschick	U PA/NRAO-CV NRAO/VLA U PR Haystack Obs	Hydrogen absorption in IC 4553.	21 line	1	4
AD-62	I. de Pater D. M. Huntten J. Caldwell T. Owen W. Jaffe S. Gulikis	U of AZ U of AZ SUNY SUNY Groningen, NETH JPL	Neptune and Uranus.	1.3, 2	17, 18, 19	21
AD-70	G. A. Dulik G. Chammugam	U of CO LSU, Baton Rouge	AM Herculis-type binary stars.	2, 6, 20	7, 8, 9	24
AD-80	J. R. Dickey R. Fesen W. Straka	U of IL NASA/GSFC Jackson S U	Filaments in the Cygnus Loop.	18 line system	25, 29	13.5
AD-81	J. R. Dickey S. DiOdorico	U of IL ESO, SWEDEN	Supernova remnants in M31.	6	26, 31	15
AD-82	I. de Pater	U of AZ	Jupiter patrol.	6, 20	23, 24	12
AE-13	J. A. Fieleck F. N. Owen J. O. Burns C. P. O'Dea	NMIMT NRAO/VLA UNM U of MA/NRAO-VLA	Wide angle tail radio galaxies: 3C465.	6	19	8
AE-16	R. D. Ekers N. Kijlaen G. Bicknell	NRAO/VLA Mt. Stromlo, AUSTR Mt. Stromlo, AUSTR	Jet radio galaxy 1333-33.	6, 20	9, 10, 11	13
AF-50	E. B. Fomalont E. D. Feigelson G. K. Miley C. R. Canizares	NRAO/CV MIT MIT MIT	3C318.1, a steep spectrum, extended source.	6, 18, 20	28, 31	6.5

VLA ASTRONOMICAL OBSERVING/UTILIZATION JULY 1982 (Cont.)

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs
AG-85	D. B. Garrett	U of TX	Low radio frequency variables from the Texas survey.	6	18, 20, 23, 24	10
AG-97	J. N. Douglass	U of TX	Dynamics of the star formation region G351.78-0.54.	1.3, 6 line	8, 9	13
AH-102	J. D. Fix	U of IA				
	E. Hummel	U of NM	peculiar radio structure in the spiral galaxies N2992 and N4388.	20	17	6
	C. G. Kotanyi	ESO, FRG				
	J. H. van Gorkom	NRAO/VLA				
	M. Phillips	CTIO, CHILE				
	A. Turtle	U of Sydney, AUST				
AK-63	G. R. Knapp	Princeton U	Monitoring of continuum flux of IRC+10216.	6	18	4
	D. N. Spergel	Princeton U				
AL-45	K. R. Lang	Tufts U	Coronal loops and decimetric bursts.	20	12, 13, 19, 20, 27, 28	49
	R. F. Willson	Tufts U				
AM-39	L. Molnar	Hycel Inc.	Monitoring polarization of BL Lac objects.	2, 6	4, 10	6
	M. Reid	CFA				
	R. C. Bignell	NRAO/VLA				
AM-60	R. L. Mutel	U of IA	Polarization properties of RS CVn binaries.	6, 18, 20	2, 17	13
	D. J. Doiron	U of IA				
AM-69	P. C. Myers	CFA	Stellar objects in Taurus molecular clouds.	6	2, 3	7.5
	P. R. Schwartz	NRL				
AN-12	Nguyen-Q-Rieu	Meudon, FRANCE	OH absorption in the continuum spectra of 3C111 and 3C123.	18 line	9, 10, 11	19
	A. Winberg	Onsala, SWEDEN	Compact sources - the effects of luminosity and spectral shape.	2, 6	4	48
AR-67	L. Rudnick	U of MN				
	T. W. Jones	U of MN				
	J. Pedately	U of MN				
AS-79	S. R. Spangler	NRAO/VLA	Monitoring of low frequency variables.	1.3, 2, 6, 20	4, 10	6
	W. D. Cotton	NRAO/CV				
AS-80	J. A. Sramek	NRAO/VLA	Supernovae SN 1980 in NGC 6946 and SN 1979c in M100.	6, 20	11, 12	9.5
	R. M. van der Hulst	Westerbork, NETH				
	K. W. Weiler	NSF				
AS-88	K. Seilgren	Catech	Reflection nebulae.	6, 20	3	5
	R. L. White	UCLA				
	R. Becker	VPI & SU				
	S. H. Pravdo	Catech				
AS-127	E. R. Sequist	U of Toronto/VLA	Symbiotic star survey.	6, 20	1, 12, 14	14.5
AS-131	R. J. Sopka	U of MD	R Aquarii jet.	20	18	3
	B. Zuckerman	NRAO/CV				
AT-24	H. E. Matthews	NRC, CANADA	Central cavities in Ultracompact HII regions.	2	3	14.5
	S. Kwok	NRC, CANADA				
	A. Winberg	Onsala, Sweden				
AU-12	J. S. Ulvestad	NRAO/CV	Narrow emission line X-ray galaxy NGC 2110.	2	24	3
	A. S. Wilson	U of MD				
AU-13	J. S. Ulvestad	NRAO/CV	3C459, an N galaxy with young stars.	2, 6, 20	24	5.5
AV-73	P. Veron	ESO, FRG	Evolved steep spectrum radio galaxies.	20	20	8
	J. Roland	IAP, FRANCE				
AM-56	C. M. Wade	NRAO/VLA	Monitoring the optically flaring quasar 1156+295 = 4C29.45.	1.3, 2, 6, 20	12	3
	M. Perley	NRAO/VLA	Formaldehyde clouds associated with Sgr B2.	6	10	7
AW-70	J. B. Whiteoak	CSIRO, AUST				
	F. F. Gardner	CSIRO, AUST				
AW-73	J. B. Whiteoak	CSIRO, AUST	1612 and 1720 MHz OH absorption associated with the molecular clouds of Sgr B2.	18 line	11	7
	F. F. Gardner	CSIRO, AUST				

VLA ASTRONOMICAL OBSERVING/UTILIZATION JULY 1982 (Cont.)

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs
VL-17	R. P. Linfield	U of CA, Berkeley	The 3C111 Jet.	6 cm	28	14.05
VM-25	S. C. Unwin	Caltech	The QSO pair 1038+528A, B.	single antenna VLB		
	J. Marcaido	MIT		6 cm	25	17
	I. Shapiro	MIT		phased array VLB		
	B. Corey	Haystack		Mk III		
	J. Webber	Haystack				
	D. Downes	IRAM, FRANCE				
	D. Emerson	IRAM, FRANCE				
	L. Baath	Onsala, SWEDEN				
	W. Cotton	NRAO/CV				
	J. Romney	MPI, FRG				
	G. Seielstad	Caltech				
VP-34	R. Porcas	MPI, FRG	Superluminal source 3C179.	6 cm	30	16
				phased array VLB		
VU-10	S. C. Unwin	Caltech	3C84 - variations.	6 cm	30	14.87
	R. L. Mutel	U of IA		single antenna VLB		
	R. B. Phillips	U of KA				
	R. P. Linfield	U of CA, Berkeley				
VM-16	R. C. Walker	NRAO/CV	3C120, superluminal motions.	6 cm	23, 29	18
	G. A. Seielstad	Caltech		phased array VLB		
	S. C. Unwin	Caltech				
	J. M. Benson	NRAO/CV				
	NRAO staff		Electronics, etc.			66.5
			Software			37
			Pointing, baselines			66.5
			General tests			52

The average downtime for the month of July, 1982 was approximately 4.50 percent.

Average downtime of operational antennas = $\frac{\text{Total number of antenna-hours of operational antennas lost due to hardware and software failures during scheduled observing}}{\text{Total number of antenna-hours of operational antennas scheduled}}$ x 100

where "antenna-hours" definition is: An array consisting of N antennas operating for Y hours is defined to have YN antenna-hours operation.

The array was scheduled for 100 percent (746 hours) of the time: 70.2 percent (524 hours) to astronomical programs and the remaining 29.8 percent (222 hours) went to tests.

The following independent proposals shared simultaneous observing:

AM-39/AS-79	6
AB-178/VL-17	7.3
AL-45/VL-17	6.75
AB-186/VU-10	1.10
AB-194/VU-10	6
AB-181/VU-10	7.77
Total Simultaneous Observing	34.92 hours

VLA ASTRONOMICAL OBSERVING/UTILIZATION JUNE 1982

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs
AB-129	B. F. Burke P. E. Greenfield D. H. Roberts J. N. Hewitt	MIT MIT MIT MIT	Monitoring double quasar 0957+561.	6 and 20	2, 27	4
AB-175	B. Balick E. Skillman	U of Wash U of Wash	HI absorption studies of nearby nuclear radial motions in nearby active and normal galaxies. Monitoring the cores of extended radio sources and spiral galaxies.	21-line	8, 22	6
AB-182	J. O. Burns T. J. Balonek E. Humel	U of NM U of NM U of NM	Structures of intermediate-strength sources found at 1400 MHz.	2, 6 and 20	30	3
AC-43	J. J. Condon J. Machalski M. A. Condon	NRAO/CV Cracow/NRAO	Precessing jets in 2300-189.	20	27	2
AC-49	J. J. Condon H. Murdoch	NRAO/CV U of Sydney, AUSTR	Narrow-emission-line region of NGC 3031 (M81).	6	1	.5
AC-51	P. C. Crane R. M. Price	NRAO/VLA U of NM	Neptune and Uranus.	6 and 20	14-15, 15-16, 16-17	21
AD-62	I. de Pater D. M. Hunten J. Caldwell T. Owen W. Jaffe S. Gulikis	U of AZ SUNY SUNY SUNY Groningen, NETH JPL	Structures of faint high-frequency Royal Obs, Edinburgh, UK Royal Obs, Edinburgh, UK RG0, UK	6 and 20	6, 7, 8, 11-12, 12, 15	48
AD-71	A. J. B. Downes M. S. Longair J. A. Peacock J. V. Wall	Cavendish Lab, UK Royal Obs, Edinburgh, UK Royal Obs, Edinburgh, UK RG0, UK	Search for compact galactic sources.	20	1, 3	12.5
AF-43	M. Fich C. Heiles S. Kulkarni M. Stevens	U of CA, Berkeley U of CA, Berkeley U of CA, Berkeley U of CA, Berkeley	Quasar 4C18.65. Structures of sources selected at 408 MHz.	2 and 6 6 and 20	17 19	7.5 13
AG-80	A. C. Gower Gopal-Krishna G. Swarup R. A. Sramek	U of Victoria, CANADA TIFR, INDIA TIFR, INDIA NRAO/VLA	Galactic bulge X-ray sources.	6	21, 21-22	11
AG-92	J. E. Grindlay E. A. Seaguid D. M. Gibson	Harvard U NRAO/U Toronto, CANADA NMIMT	M-dwarf flare stars.	20	25-26, 26-27, 27-28	23
AG-93	R. M. Hjellming K. J. Johnston	NRAO/VLA NRL	Evolution of SS433 "corkscrews".	1.3, 2 and 6	24-25	6
AH-82	E. Hummel R. D. Davies A. Pedlar J. M. van der Hulst W. F. Gollisch	U of Manchester, UK U of Manchester, UK U of Manchester, UK U of MN U of MN	Astrometry of Fk4 and other bright stars.	6	1-2, 5-6	59
AJ-79	K. J. Johnston D. Fiorikowski C. M. Wade	USNO NRAO/VLA	Angular sizes of strong HII region water vapour sources.	1.3-1line	10-11	17
AJ-80	S. H. Knowles R. C. Bignell	NRL NRC, CANADA NRAO/VLA	Monitoring of AFGL 618.	1.3, 2, 6 and 20	24	2

VLA ASTRONOMICAL OBSERVING/UTILIZATION JUNE 1982 (Cont.)

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs
AK-56	K. I. Kellermann R. D. Ekers	NRAO/CB NRAO/VLA	Compact components of 3CR sources.	6	9-10	14
AK-65	J. Ekers P. P. Kronberg R. A. Sramek	U of Toronto, CANADA NRAO/VLA	Small sources in M82 - do they vary?	2, 6 and 20	24	5
AL-44	R. Linfield R. A. Perley	NRAO/VLA U of CA, Berkeley	3C111.	2 and 6	14	12
AM-39	L. Molnar M. Reid	Hyccel Inc. CFA	Monitoring polarization of BL Lac objects.	2 and 6	3, 12 with AS-79	8
AM-51	R. C. Bignelli T. Maccacaro I. M. Gioia P. Giommi H. Tananbaum G. Zamori	NRAO/VLA CFA CFA CFA CFA	A complete sample of X-ray selected active galactic nuclei; spectra.	2, 6 and 21	21	16
AM-55	T. K. Menon	Bologna, ITALY	Small angular size QJ sources.	2 and 6	15	6.5
AM-57	L. Miller	U of BC, CANADA	Fine-scale structure in the hot-spots of weak Classical double sources.	6	2, 3-4	3
AN-11	R. A. Laing R. T. Newell	NRAO/CV NRAO/VLA	Thermal stellar sources.	1.3 and 2	3, 19	16
AO-31	R. M. Hellmuth C. P. O'Dea F. N. Owen	NRAO/VLA NRAO/VLA NRAO/VLA	Narrow angle tailed radio sources.	20	14, 25	5
AP-46	R. A. Perley B. G. Clark A. H. Bridle R. D. Ekers J. O. Burns G. Greuter	NRAO/VLA NRAO/VLA NRAO/VLA NRAO/VLA U of NM Bologna, ITALY	A large sample from the B3 survey.	20	10, 21	9
AP-47	J. M. Douglas R. A. Perley J. J. Cowan	U of TX NRAO/VLA U of OK	Search for radio jets in Cygnus A (3C405).	20	19-20	12
AP-55	R. M. Price M. Zeilik, II	U of NM U of NM	Galactic nuclei with unusual IR properties.	6 and 20	13-14, 27	25
AP-56	J. A. Peacock J. V. Wall M. S. Longair	Royal Obs, Edinburgh, UK RGO, UK Royal Obs, Edinburgh, UK	Compact steep spectrum radio sources.	2 and 6	6-7	22
AS-79	S. R. Spangler W. D. Cotton	NRAO/VLA NRAO/CV	Monitoring low frequency variables.	1.3, 2, 6 and 20	3, 12 with AM-39	8
AS-80	R. A. Sramek J. M. van der Hulst K. W. Weiler	NRAO/VLA U of MN NSF	Supernovae SN1980 in NGC 6946 and SN1979c in M100.	6 and 20	16, 19	4
AS-111	S. R. Spangler P. R. Schwartz M. A. Frerking	NRAO/VLA NRL JPL	Double radio sources with bridges. Search for Tau type stars in dark nebulae with bi-polar CO emission.	6 and 20 2 and 6	12, 13 25	24 5
AS-122	M. A. Frerking W. D. Langer	Bell Labs				
AS-123	D. J. Saikia V. K. Kapahi	TIFR, INDIA TIFR, INDIA	Compact cores of extended radio sources associated with elliptical galaxies. Central cavities in ultracompact HII regions.	1.3, 2, 6 and 21	17-18	33.5
AT-24	B. E. Turner H. E. Matthews S. Kyoik	NRAO/CV NRC, CANADA NRC, CANADA		2	28-29	14
AV-52	A. Winberg J. M. van der Hulst R. A. Sramek K. W. Weiler	Onsala, SWEDEN U of MN NRAO/VLA NSF	Supernova in NGC 4536.	6	25	6
AV-77	J. H. van Gorkom D. Hunter	NRAO/VLA U of IL	Interacting irregular galaxies: NGC 4449.	20	24	1

VLA ASTRONOMICAL OBSERVING/UTILIZATION JUNE 1982 (Cont.)

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs
AZ-19	C. M. Wade	NRAO/VLA	Monitoring the optically flaring	1.3, 2, 6	2, 27	2
	M. Perley	NRAO/VLA	quasar 1156+295 = 4C29.45.	and 20		
AW-71	A. S. Wilson	U of MD	Statistical studies of Seyfert	2, 6	28	1
	J. Ulvestad	NRAO/CV	galaxies.	and 21		
AW-74	W. J. Welch	U of CA, Berkeley	MWC 349.	6	4	2
	J. H. Biegling	U of CA, Berkeley				
	J. W. Dreher	MIT				
	M. Cohen	NASA/Ames				
	B. Zuckerman	U of MD	Astrometry and structure of T Tauri.	2, 6	26	12
	P. Schwartz	NRL		and 20		
	M. Dyck	U of HI				
	T. Simon	U of HI				
VA-3/ VM-26	W. Atef	MPI, FRG	3C84 = NGC 1275.	1.3 single	2, 3	13.19
	J. D. Romney	MPI, FRG		antenna VLB		
	I. K.K. Pauliny-Toth	MPI, FRG				
	K. I. Kellermann	NRAO/GB				
	L. Matvenko	Space Res Inst, USSR				
	L. Kogan	Space Res Inst, USSR				
	V. Kostenko	Space Res Inst, USSR				
	R. L. Moore	Caltech				
	A.C.S. Readhead	Caltech				
	A. T. Moffet	Caltech				
	M. S. Ewing	Caltech				
	D. H. Hough	Caltech				
	R. C. Walker	NRAO/CV				
VB-31	L. B. Baath	Onsala, SWEDEN	3C345 and 4C39.25.	1.3 single	3	12.03
				antenna VLB		
VK-10	K. I. Kellermann	NRAO/GB	M87, M81.	1.3 single	1, 3	14.9
	I. K.K. Pauliny-Toth	MPI, FRG		antenna		
	E. Preuss	MPI, FRG		MK III VLB		
VM-28	J. M. Moran	CFA	Proper motions of water maser sources.	1.3 single	5-7	72.2
	D. Downes	IRAM, FRANCE		antenna VLB		
	R. Genzel	U of CA, Berkeley				
	A. D. Haschick	Haystack Obs				
	M. Reid	CFA				
	B. Ronnang	Onsala, SWEDEN				
	M. Schneds	CFA				
VM-29	R. L. Mutel	U of IA	Rapidly varying BL Lac objects.	1.3 single	2, 8	22.91
	H. D. Aller	U of MI		antenna VLB		
	R. B. Phillips	Haystack Obs				
	R. Edelson	Caltech				
	NRAO Staff		Electronics, etc.			71.5
			Software			40
			Pointing, baselines			19
			Calibration related work			12
			General tests			65

The average downtime for the month of June, 1982 was approximately 5.73 percent.

Average downtime of operational antennas = $\frac{\text{Total number of antenna-hours of operational antennas lost due to hardware and software failures during scheduled observing}}{\text{Total number of antenna-hours of operational antennas scheduled}} \times 100$

where "antenna-hours" definition is: An array consisting of N antennas operating for Y hours is defined to have YN antenna-hours operation.

The array was scheduled for 100 percent (722 hours) of the time: 71.8 percent (518.12 hours) to astronomical programs and the remaining 28.2 percent (203.88 hours) went to tests.

The following independent proposals shared simultaneous observing:

AJ-79/VK-10	7	AF-43/VK-10	2.90
AJ-79/VM-29	10.88	AS-79/AM-39/VK-10	5.00
AJ-79/VA-3/VM-26	3.62	AS-79/AM-39	8.00
AM-57/VA-3/VM-26	2.55	Baselines/VM-28	4.30
AM-57/VB-31	0.45	AJ-79/VM-28	24.00
AB-129/VB-31	2.00	AP-56/VM-28	22.00
AM-56/VB-31	1.00	AD-71/VM-28	16.90
AJ-79/VB-31	6.00	AJ-79/VM-28	5.00
AN-11/VB-31	2.58	AD-71/VM-29	9.10
AN-11/VA-3/VM-26	3.42	Tests/VM-29	2.00
AF-43/VA-3/VM-26	3.60	Pointing/VM-29	0.93
	Total Simultaneous Observing	143.23	hours

VLA ASTRONOMICAL OBSERVING/UTILIZATION MAY 1982

Program	Observer	Affiliation	S	Program Title	Bands	Sched Hrs.
AB-129	B. F. Burke P. E. Greenfield D. H. Roberts	MIT MIT Brandeis	V V V	Monitoring double quasar 0957+561.	20	5
AB-156	J. P. Basart J. N. Hewitt	MIT MIT	V V	High resolution Te structure of three planetary nebulae.	20	8
AB-181	J. O. Burns J. P. Basart D. S. De Young	San Diego U of NM U of IA KPNO	V V V V	A search for radio jets in extended sources with powerful cores.	6	7
AB-183	W. A. Baan A. D. Haschick	Penn State Haystack	V V	Hydroxyl in IC4553.	18 cm line	11.5
AC-39	T. J. Cornwell R. A. Perley A. G. Willis	NRAO/VLA NRAO/VLA NRA/MSRT	R R V	The jets in 3C449.	18 and 20	12
AC-42	E. B. Churchwell D. C. Abbott J. H. Bieging R. C. Bignell	U of WI JILA U of CA, Berkeley NRAO/VLA	V V V P	Monitoring the flux and spectral index variability of OB supergiants.	2 and 6	3
AC-43	J. J. Condon J. J. Machalski M. A. Condon	NRAO/CV Cracow/NRAO	R R V	Structures of intermediate-strength sources found at 1400 MHz.	20	5
AC-50	W. D. Cotton F. N. Owen	NRAO/CV NRAO/VLA	R P	Very steep spectrum sources.	6	6.5
AC-51	P. C. Crane R. M. Price	NRAO/VLA U of NM	R V	Narrow-emission-line region of NGC 3031 (M81).	6	13.5
AD-72	A. K. Dupree B. F. Burke	CFA MIT	V V	Vela X-1.	6 and 20	14.08
AD-77	J. W. Dreher C. R. Lawrence	MIT MIT	V V	Hotspots in nearby extended radio sources.	6	24
AF-48	J. D. Fix R. L. Mutel	U of IA U of IA	V V	The ratio of 18 OH/16 OH maser emission in OH 351.8-0.5.	18 cm line with AF-49	10/ 10/
AF-49	J. D. Fix	U of IA	V	Improved positions for unidentified OH sources.	18 cm line with AF-48	10/ with AF-48
AG-66	B. J. Geldzahler N. L. Cohen W. D. Cotton	NRL Cornell/MIT NRAO/CV	V V R	The three binary pulsars.	20	12
AG-91	W. M. Goss S. R. Pottasch	Kapteyn Lab, NETH Kapteyn Lab, NETH	V V	14 planetary nebulae at the galactic centre.	6	12
AH-72	D. E. Hogg	NRAO/CV	P	Radio emission from WR stars - Gamma Velorum.	1.3, 2 and 6	1.5
AH-82	R. M. Hjellming K. J. Johnston	NRAO/VLA NRL	P V	Evolution of SS433 "corkscrews".	1.3, 2 and 6	5
AH-91	L. A. Higgs T. L. Landecker R. S. Roger	DRAO, CANADA DRAO, CANADA DRAO, CANADA	V V V	Search for stellar remnants of supernova events.	21 cm line	13
AH-95	V. A. Hughes J. G. A. Wouterloot M. Greenberg	Queen's U, CANADA ESO, GERMANY Leiden, NETHERLANDS	V V V	Star formation regions in CepA.	6	12
AH-96	E. Hummel R. A. Laing C. G. Kotanyi F. Bertola	U of NM NRAO/CV ESO, GERMANY Oss. Ast., ITALY	V R V V	Elliptical radio galaxies with dust lanes.	6 and 21	23
AJ-78	K. J. Johnston C. M. Wade E. B. Fomalont R. A. Perley	NRL NRAO/VLA NRAO/CV NRAO/VLA	V P R R	Quasar reference positions.	6	95

VLA ASTRONOMICAL OBSERVING/UTILIZATION MAY 1982 (Continued)

Program	Observer	Affiliation	S	Program Title	Bands	Sched Hrs.
AJ-79	K. J. Johnston D. Florkowski	NRL USNO	V	Astrometry of FK4 and other bright stars.	6	12
AK-54	C. M. Wade M. R. Kundu D. McConnell M. Bobrowsky	NRAO/VLA U of MD U of MD U of MD	P V V V	Solar active regions and flares.	1.3, 2 and 6	32.92
AK-56	K. I. Kellermann R. D. Ekers J. Ekers	NRAO/CV NRAO/VLA NRAO/VLA	P P R	Compact components of 3CR sources.	6	2
AK-65	P. P. Kronberg R. A. Sramek R. A. Laing	U of Toronto, CANADA NRAO/VLA NRAO/CV	R R R	Small sources in M82 - do they vary? Hot-spots in luminous extra-galactic radio sources. Monitoring polarization of BL Lac objects.	2, 6 1.3, 2, 6, 18 and 21	5 18
AM-43	R. A. Laing	NRAO/CV	R			
AM-39	L. Molnar M. Reid	Hycel Inc. CFA	V		2 and 6	7/ with AS-79
AN-11	R. C. Bignell R. T. Newell	NRAO/VLA NRAO/VLA	P R	Thermal stellar sources.	1.3 and 2	6
AO-31	R. M. Hjellming C. P. O'Dea F. N. Owen	NRAO/VLA NRAO/VLA NRAO/VLA	P S P	Narrow angle tailed radio sources.	20	7
AP-46	R. A. Perley B. G. Clark A. H. Bridle R. D. Ekers J. O. Burns G. Greuff	NRAO/VLA NRAO/VLA NRAO/VLA NRAO/VLA U of NM Bologna, ITALY	R P R P V V	A large sample from the B3 survey.	20	4
AP-57	J. M. Douglas J. P. Leahy G. G. Pooley	U of TX Cambridge, ENGLAND Cambridge, ENGLAND	V V V	The extended radio galaxy 3C66B - polarization.	2, 6 and 20	12
AS-79	S. R. Spangler W. D. Cotton	NRAO/VLA NRAO/CV	R R	Monitoring low frequency variables.	1.3, 2, 6 and 20	7/ with AM-79
AS-80	R. A. Sramek J. M. van der Hulst K. W. Weiler	NRAO/VLA U of MN NSF	R V V	Supernovae SN1980 in NGC 6946 and SN1979c in M100.	6 and 20	4.5
AS-88	K. Seligren R. L. White R. Becker	Caltech UCLA VPI & State U	S V V	Reflection nebulae.	6 and 20	5
AS-92	S. H. Pravdo R. G. Strom W. van Breugel J. G. Robertson	Caltech Dwingeloo, NETH KPNO Anglo-Aust Obs, AUST	V V V V	Distorted source J059.08.	6 and 20	8
AS-115	M. Simon M. felll J. Fischer	SUNY, Stony Brook Arcetri, ITALY U of MD	V V V	The protostellar source M8E.	20	5.5
AS-122	P. R. Schwartz M. A. Frerking W. D. Langer	NRL JPL Bell Labs	V V V	Search for T Tau type stars in dark nebulae with bi-polar CO emission.	2 and 6	5
AS-125	E. Skillman B. Balick	U of WA U of WA	V V	Nuclei of giant extragalactic HII regions.	20	14
AV-71	W. van Breugel G. K. Miley H. Butcher T. Heckman M. H. Ulrich	KPNO Leiden, NETHERLANDS KPNO U of MD ESO, GERMANY	V V V V V	Radio galaxies NGC708 and 3C445 with extended optical line emission.	6 and 20	16
AW-48	C. M. Wade P. K. Seidelmann K. J. Johnston	NRAO/VLA USNO NRL	P V V	Astrometric observations of minor planets.	2 and 6	18

VLA ASTRONOMICAL OBSERVING/UTILIZATION MAY 1982 (Continued)

Program	Observer	Affiliation	S	Program Title	Bands	Sched Hrs.
AW-56	C. M. Wade	NRAO/VLA	P	Monitoring the optically flaring	1.3, 2, 6	1.5
	M. A. Perley	NRAO/VLA	R	quasar 1156+295 = 4C29.45.	and 20	
AW-66	B. Willis	U of TX	V	Radio structure of objects with	6	6
	D. Willis	U of TX	V	broad emission lines.		
AW-68	K. W. Weiler	NSF	V	Recent extragalactic supernovae.	6	51.5
	R. A. Sramek	NRAO/VLA	R			
	J. M. van der Hulst	U of MN	V			
	M. S. Roberts	NRAO/CV	P			
AW-71	A. S. Wilson	U of MD	V	Statistical studies of Seyfert	2, 6 and 21	14
	J. S. Ulvestad	NRAO/CV	R	galaxies.		
	NRAO Staff			Electronics, etc		34.5
				Software		41.5
				Pointing, baselines		22.67
				Calibration related work		24
				General tests		75.33
						198

The average downtime for the month of May, 1982 was approximately 2.13 percent.

Average downtime of = $\frac{\text{Total number of antenna-hours of operational antennas lost due to hardware and software failures during scheduled observing}}{\text{Total number of antenna-hours of operational antennas scheduled}}$ x 100

where "antenna-hours" definition is: An array consisting of N antennas operating for Y hours is defined to have YN antenna-hours operation.

The array was scheduled for 100 percent (746 hours) of the time: 73.5 percent (548 hours) to astronomical programs and the remaining 26.5 percent (198 hours) went to tests.

The following independent proposals shared simultaneous observing:

AF-48/AF-49	10
AM-39/AS-79	7
Total	17 hours

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VLA ASTRONOMICAL OBSERVING/UTILIZATION APRIL 1982

Program	Observer	Affiliation	S	Program Title	Bands	Sched Hrs.
AB-172	P. F. Bowers K. J. Johnston	NRL NRL	V V	Mass loss rates of late-type stars.	18 cm line	7
AB-175	J. H. Spencer B. Balick E. Skillman	NRL U of Wash U of Wash	V V V	H I absorption studies of near-nuclear radial motions in nearby active and normal galaxies.	21 cm line	20.5
AB-176	B. Balick G. Boeshaar	U of Wash Seattle U	V V	Serendipitously discovered VLA radio sources.	6 and 21	12
AB-177	D. C. Backer R. A. Sramek	U of CA, Berkeley NRAO/VLA	V R	Astrometric observations of the compact nonthermal radio source in Sagittarius A.	6	24
AB-178	B. Balick R. M. Hjellming	U of Wash NRAO/VLA	V P	Planetary nebulae NGC 40, NGC 6543.	6 and 20	18.5
AB-179	P. Biermann P. P. Kronberg	MPI, GERMANY U of Toronto, CANADA	V V	App 102B. A compact radio and X-ray source in an elliptical galaxy.	1.3, 2 and 6	2
AB-180	P. F. Bowers M. R. Morris	NRL Columbia U	V V	Bipolar nebula OH231.8+4.2 at maximum light.	18 cm line	16
AC-43	J. J. Condon J. Machalski	NRAO/CV Cracow/NRAO	R R	Structure of intermediate strength sources found at 1400 MHz.	20	4.5
AC-50	M. A. Condon W. D. Cotton	NRAO/CV NRAO/VLA	V R	Very steep spectrum sources.	6	8.5
AD-73	F. N. Owen I. de Pater R. A. Brown	U of AZ U of AZ	V V	Galilean satellites.	2 and 6	37.5
AD-76	J. R. Dickel L. L. Dressel	U of IL NASA/GSFC	V V	X-ray emitting SO galaxies.	6 and 21	6
AG-70	A. S. Willson A. C. Gower	U of MD U of Victoria, CANADA	V V	Low redshift QSOs.	6 and 20	20
AG-94	D. Crampton J. B. Hutchings	DRAO, CANADA DRAO, CANADA	V V			
AG-94	G. Garay M. J. Reid	CFA CFA	V V	The 1665 MHz line from OH masers associated with compact Hill regions.	18 cm line	3
AH-82	J. Moran R. M. Hjellming	NRL NRAO/VLA	V P	Evolution of SS433 "corkscrews".	1.3, 2, 6, 18, 20 and 22	4.5
AH-84	K. J. Johnston E. Hummel R. M. Price	NRL UNM UNM	V V V	Radio nuclei in nearby E and SO galaxies.	2, 6 and 21	23.75
AH-93	C. G. Kotanyi D. S. Heessen	Katevyn Lab, NETH NRAO/CV	V V	Mkn 8 and Mkn 297.	6	16
AJ-76	J. H. Heidmann K. J. Johnston	Obs de Paris, FRANCE NRL	V V	Astrometric positions of compact radio sources.	6	29.5
AK-53	E. B. Fomalont C. M. Wade	NRAO/CV NRAO/VLA	R P			
AK-53	S. Kwok H. E. Matthews	NRC, CANADA NRC, CANADA	V V	Emission line stars associated with nebularity.	20 cm line 2, 6 and 20	3 3
AK-63	C. R. Purton G. R. Knapp	DRAO, CANADA Princeton	V V	IRC + 10216. Monitoring continuum flux.	6	1
AK-65	D. N. Spergel P. P. Kronberg	Princeton U of Toronto, CANADA	V V	Small sources in M82 - do they vary?	2, 6 and 20	5.5
AM-39	R. A. Sramek L. Molnar M. Reid R. C. Bignell	NRAO/VLA Hyccel Inc. CFA NRAO/VLA	R V V P	Monitoring polarization of BL Lacertae objects.	2 and 6	7 with AS-79

VLA ASTRONOMICAL OBSERVING UTILIZATION APRIL 1982 (Continued)

Program	Observer	Affiliation	S	Program Title	Bands	Sched Hrs.
AM-50	R. L. Mutel	U of Iowa	V	Four type II OH/IR stars.	18 cm line	8
AM-53	J. D. Fix I. McHardy A. Smith	U of Iowa Leicester U, ENGLAND Leicester U, ENGLAND	V V V	Position and structure of radio sources with very steep low-frequency spectra.	2	24.5
AM-58	J. Moran G. Garay M. Reid R. Genzel	CFA CFA CFA U of CA, Berkeley	V V V V	Observations of the Orion nebula.	1.3	18
AO-31	P. T. P. Ho C. P. O'Dea	NRAO/VLA-U of MA NRAO/VLA	S P	Narrow angle tailed radio sources.	20	1.5
AP-53	F. N. Owen R. A. Perley	NRAO/VLA NRAO/VLA	R P	Superluminal motion in 3C273?	1.3, 2 and 6	8
AS-79	R. D. Ekers S. R. Spangler	NRAO/VLA NRAO/VLA	R R	Monitoring low frequency variables.	1.3, 2, 6 and 20	7 with AM-39
AS-80	W. D. Cotton R. A. Sramak J. M. van der Hulst	NRAO/CV NRAO/VLA U of MN	R R V	Supernovae SN1980 in NGC 6946 and SN1979c in M100.	6 and 20	5
AS-124	K. W. Weiler E. R. Seaquist R. C. Rignell	NSF NRAO/VLA NRAO/VLA	V P P	Circular polarization mapping: 3C273, 3C279 and 3C454.3.	20	6.5
AV-65	P. J. Napier W. van Breugel H. Butcher G. K. Miley E. B. Fomalont	NRAO/VLA KPND Leiden, NETHERLANDS NRAO/CV U of AZ	V V V R V	Fine structure in 3C310.	20	7
AM-56	T. Heckman C. M. Wade M. Perley	NRAO/VLA NRAO/VLA NRAO/VLA	P R R	Monitoring the optically flaring quasar 1156+295 = 4C29.45.	1.3, 2, 6 and 21	2.5
AZ-18	H. Zirin G. J. Hurford A. Kattenberg	Catech Catech Catech	V V V	Small-scale structure of solar impulsive microwave bursts.	2	39.5 with AZ-20
AZ-20	H. Zirin G. J. Hurford A. Kattenberg	Catech Catech Catech	V V V	Support of HIREX, high resolution X-ray solar balloon.	6	with AZ-18
VB-28	R. P. Lin P. D. Barthel G. K. Miley R. T. Schilizzi	U of CA, Berkeley Leiden, NETHERLANDS Leiden, NETHERLANDS Dwingeloo, NETHERLANDS	V V V V	Search for superluminal motion in cores of extended quasars.	6 cm phased array VLB	31
VB-29	E. Preuss R. L. Brown K. J. Mitchell J. J. Broderick	Mpl, GERMANY NRAO/CV NRAO/CV VPI & State U	V P R V	3C196.	18 cm single antenna VLB	17.03
VF-5	J. D. Fix R. L. Mutel J. M. Benson	U of Iowa U of Iowa NRAO/CV	V V R	Polarimetry of OH masers in W51 and VY CMa.	18 cm phased array VLB	15.25
VG-16	J. J. Broderick B. J. Geldzahler E. B. Fomalont	VPI & State U NRAO/CV NRAO/CV	V R R	Sco X-1.	6 cm phased array MK III VLB	8
VM-21	L. Molnar M. Reid J. Moran M. Schneps	Hyccel Inc. CFA CFA CFA	V V V V	Polarization synthesis of BL Lac objects.	18 cm phased array MK III VLB	25
VM-24	R. L. Mutel R. B. Phillips R. B. Phillips	U of Iowa U of Kansas U of Kansas	V V V	Component spectral indices in compact doubles.	6 cm phased array MK III VLB	8
VP-28	R. L. Mutel	U of Iowa	V	Search for compact doubles.	18 cm single antenna VLB	27.08

VLA ASTRONOMICAL OBSERVING UTILIZATION APRIL 1982 (Continued)

Program	Observer	Affiliation	S	Program Title	Bands	Sched Hrs.
VS-18	J. Schmitt	CFA	Y	Jet in Virgo A.	18 cm phased array VLB	16
	M. Reid	CFA	Y			
	F. N. Owen	NRAO/VLA	P			
	D. Shafer	NASA/GSFC	Y			
	K. J. Johnston	NRL	Y			
R. Booth	Onsala, SWEDEN	Y				
P. Wilkinson	Manchester, ENGLAND	Y				
VM-16	R. C. Walker	NRAO/CV	R	3C120. Superluminal motion.	6 cm single antenna VLB	15
	G. A. Seielstad	Caltech	Y			
	S. C. Umwin	Caltech	Y			
	J. M. Benson	NRAO/CV	R			
	NRAO Staff					
Electronics Software Pointing and Baselines Calibration related work General tests 39 48 33.58 36 67.92						

The average downtime for the month of April, 1982 was approximately 4.13 percent.

Average downtime of $\frac{\text{Total number of antenna-hours of operational antennas lost due to hardware and software failures during scheduled observing}}{\text{Total number of antenna-hours of operational antennas scheduled}}$ X 100

where "antenna-hours" definition is: An array consisting of N antennas operating for Y hours is defined to have YN antenna-hours operation.

The array was scheduled for 100 percent (720.99 hours) of the time: 68.9 percent (496.49 hours) to astronomical programs and the remaining 31.1 percent (224.5 hours) went to tests.

The following independent proposals shared simultaneous observing:

AB-179/VP-28	2
AD-73/VB-29	7.17
AD-73/VP-28	0.83
AH-84/VP-28	7.75
AJ-76/VW-16	15
AM-39/AS-79/VB-29	8
AM-39/AS-79/VP-28	6
AZ-18/VB-29	5.87
AZ-18/VP-28	13.33
VF-5/VP-28	0.17
Total	66.12 hours

VLA ASTRONOMICAL OBSERVING/UTILIZATION MARCH 1982

Program	Observer	Affiliation	S	Program Title	Bands	Sched Hrs.
AB-129	B. F. Burke D. H. Roberts P. E. Greenfield	MIT Brandeis MIT	V V V	Monitoring double quasar 0957+561.	6	2
AB-154	A. D. Haschick	Penn State Haystack	V	H I absorption structure of 3C293.	21 cm line	11
AB-157	F. Biraud J. Schneider T. J. Cornwell	Meudon, FRANCE Meudon, FRANCE NRAO/VLA	V V R	A search for gravitationally lensed images of quasars.	2 and 6	1
AB-160	J. A. Biretta F. N. Owen P. E. Hardee	Caltech NRAO/VLA Alabama	V P V	Structure of the jet in M87.	1.3 and 6	10.5
AB-169	J. H. Bieging R. N. Martin T. Pauls T. Wilson	U of CA, Berkeley MPI, W. GERMANY Cologne, W. GERMANY MPI, W. GERMANY	V V V V	Ammonia (1,1) absorption toward W3(OH).	1.3 cm line	9
AB-173	E. P. Bozyan	U of TX	V	First ranked galaxies in faint groups.	20	4
AC-43	J. J. Condon J. Machalski M. A. Condon	NRAO/CV Cracow/NRAO	R V V	Structures of intermediate- strength sources found at 1400 MHz.	20	24
AD-64	H. R. Dickel A. F. Lubenow W. M. Goss A. H. Rots J. R. Forster	U of IL U of IL Groningen, NETHERLANDS NRAO/VLA CSIRO, AUSTRALIA	V V V R V	H2CO absorption toward W3(OH) and W58C.	6 cm line	12
AE-13	J. A. Eileck F. N. Owen C. P. O'Dea J. O. Burns	NMIMT NRAO/VLA NRAO/VLA/U MA U of NM	R R S V	3C465 (2335+267).	2, 6 and 20	8
AF-44	M. Felli M. Massi E. Feigelson G. W. Clark J. W. Dreher	Arcetri, ITALY Arcetri, ITALY MIT MIT MIT	V V V V V	Structure of the thermal unresolved source in M17. Detailed study of Hercules A, 3C348.	1.3 6 and 20	5 8.5
AF-47	E. B. Fomont B. Geldzahler R. M. Hjellming C. M. Wade	NRAO/CV NRL NRAO/VLA NRAO/VLA	R V V P	Third epoch observations of Sco X-1.	6 and 20	9
AG-61	F. D. Ghigo L. Rudnick M. Ondrechen	U of MN U of MN U of MN	V V V	Quasars with faint jet-like optical structure.	6	4
AG-84	W. M. Goss S. R. Pottasch R. Gathier D. E. Hogg	Groningen, NETHERLANDS Groningen, NETHERLANDS Groningen, NETHERLANDS NRAO/CV	V V V P	K 648 and 4 other stellar planetary nebulae.	6	3
AH-74	A. D. Haschick W. A. Baan	Haystack Penn State	V V	Spectral index of radio emission from WR stars. Structure and identification of continuum radio sources displaying HI absorption features.	1.3, 2 and 6	1.5
AH-81	R. M. Hjellming R. T. Newell	NRAO/VLA NRAO/VLA	P R	Sco radio binary.	2, 6 and 20	7
AH-82	R. M. Hjellming K. J. Johnston	NRAO/VLA NRL	P V	Mapping evolution of SS433 "corkscrews".	18, 20 and 22	10
AH-83	J. Herman H. J. Habing B. Baud A. Winberg	Leiden, NETHERLANDS Leiden, NETHERLANDS Groningen, NETHERLANDS Onsala, SWEDEN	V V V V	OH/IR stars.	1612 MHz line	6

VLA ASTRONOMICAL OBSERVING/UTILIZATION MARCH 1982 (Cont.)

Program	Observer	Affiliation	S	Program Title	Bands	Sched Hrs.
AH-86	E. Hummel J. M. van der Hulst J. H. van Gorkom C. G. Kotanyi W. F. Gollisch	U of MN U of MN NRAO/VLA Groningen, NETHERLANDS U of MN	V V R V V	Central sources in interacting galaxies.	6 and 21	12
AJ-76	K. J. Johnston E. B. Fomalont C. M. Wade	NRL NRAO/CV NRAO/VLA	V R P	Astrometric positions of compact radio sources.	6 and 20	64.5
AJ-77	K. J. Johnston P. K. Seidelmann C. M. Wade	NRL USNO NRAO/VLA	V V P	Pallas.	6	9.5
AK-55	K. J. Kellermann P. C. Crane	NRAO/CV NRAO/VLA	R P	3C147.	1.3, 2, 6, 18 and 20	8
AK-56	K. J. Kellermann R. D. Ekers J. A. Ekers	NRAO/CV NRAO/VLA	P P	Compact components of 3CR sources.	6	12
AL-43	R. A. Laing	NRAO/CV	R	Hot spots in luminous extra-galactic radio sources. Monitoring polarization of BL LAC objects.	1.3, 2, 6, 18 and 20	18.5
AM-39	L. Molnar M. Reid	Hycel Inc. Houston CFA	V P	Monitoring polarization of BL LAC objects.	2 and 6	6 (with AS-79)
AO-16	R. C. Bignell F. N. Owen C. P. O'Dea J. O. Burns	NRAO/VLA NRAO/VLA NRAO/VLA U of MN	P P S V	NGC 1265.	20	24
AO-31	F. N. Owen C. P. O'Dea J. O. Burns	NRAO/VLA NRAO/VLA NRAO/VLA	P S P	Narrow angle tailed radio sources.	21	18
AO-32	F. N. Owen R. A. Laing J. J. Puschell	NRAO/VLA NRAO/VLA UCSD	P R V	Radio cores in distant 3C12 radio galaxies.	6	24
AP-46	R. A. Perley B. G. Clark A. H. Bridle J. O. Burns G. Greuff J. N. Douglas	NRAO/VLA NRAO/VLA NRAO/VLA/Toronto U of MN Bologna, ITALY U of TX	R P R V V V	A large unbiased source sample from the B3 survey.	20	15.5
AR-47	D. H. Roberts J. F. C. Wardle	Brandeis Brandeis	V V	Low redshift quasars in clusters and groups.	20	18
AR-60	L. Rudnick W. Stein M. Sitko	U of MN U of MN U of MN	V V V	Nature of low radio luminosity QSOs.	2, 6 and 20	2.5
AR-61	L. Rudnick J. O. Burns B. Hine K. Edgar	U of MN U of MN U of MN U of MN	V V V V	3C129.	6	12
AR-62	L. Rudnick D. Stannard W. Stein M. Sitko	U of MN U of Manchester, ENGLAND U of MN U of MN	V V V V	BL Lac objects without dominant cores.	2, 6 and 20	3
AR-63	L. Rudnick B. K. Edgar	U of MN U of MN	V V	Pieces of jets.	2, 6 and 20	12
AS-79	S. R. Spangler W. D. Cotton	NRAO/VLA NRAO/CV	R R	Monitoring of low frequency variables.	1.4, 5, 15 and 21 (with AM-39)	6
AS-80	R. A. Sramek J. M. van der Hulst K. W. Weiler	NRAO/VLA U of MN NSF	R V V	Supernovae: SN1980 in NGC 6946 and SN 1979c in M100.	6 and 20	4
AS-114	A. Stockton J. Mackenty	IFA IFA	V V	Radio studies of optical structure near QSOs.	6 and 20	5.5

VLA ASTRONOMICAL OBSERVING/UTILIZATION MARCH 1982 (Cont.)

Program	Observer	Affiliation	S	Program Title	Bands	Sched Hrs.
AS-115	M. Simon M. Felli	SUNY, Stony Brook Arcetri, ITALY	V	Proto stellar source M8E.	6	5.5
AS-118	J. Fischer J. H. Spencer P. F. Bowers	U of MD NRL NRL	V	H2O masers in four Mira variables.	1.3 cm line (with AS-119)	12
AS-119	J. H. Spencer P. F. Bowers K. J. Johnston	NRL NRL NRL	V	H2O masers associated with the peculiar stars RX Boo and W Hya.	1.3 cm line (with AS-118)	12
AT-24	B. E. Turner H. E. Matthews S. Kwok	NRAO/CV NRC, CANADA NRC, CANADA	V	Central cavities in ultracompact HI regions.	2	14
AU-11	A. Winberg J. S. Ulvestad A. S. Wilson	Onsala, SWEDEN NRAO/CV U of MD	V	Distance-limited sample of Seyfert/ emission line galaxies.	6 and 20	13.5
AV-70	J. H. van Gorkom R. D. Ekers G. S. Shostak C. G. Kotanyi T. J. Cornwell	NRAO/VLA NRAO/VLA Groningen, NETHERLANDS Groningen, NETHERLANDS NRAO/VLA	R	HI absorption in radio galaxies.	21 cm line	7
AW-57	A. S. Wilson J. S. Ulvestad	U of MD NRAO/CV	R	Seyfert galaxies: detailed mapping and a search for jets.	2, 6 and 20	11.5
AW-65	L. N. Weisachew E. B. Fomalont E. W. Greisen	IRAM, FRANCE NRAO/CV NRAO/CV	R	OH maser sources in the galaxy M82.	18 cm line	16.5
AW-67	J. F. C. Wardle D. H. Roberts R. I. Potash	Brandeis Brandeis Brandeis	V	Search for very high luminosity jets.	6 and 21	24
AW-69	R. L. White R. H. Becker NRAO/VLA staff	UCLA Virginia Tech	V	Spatial resolution of the stellar winds of early-type stars. Calibration, baseline, pointing, software, tests, start-up, etc.	6, 18 and 20	12

The average downtime for the month of March, 1982 was approximately 5.76 percent.

Average downtime of operational antennas = $\frac{\text{Total number of antenna-hours lost due to hardware and software failures during scheduled observing}}{\text{Total number of antenna-hours of operational antennas scheduled}}$ x 100

where "antenna-hours" definition is: An array consisting of N antennas operating for Y hours is defined to have YN antenna-hours operation.

The array was scheduled for 100 percent (746 hours) of the time: 70.38 percent (525 hours) to astronomical programs and the remaining 29.62 percent (221 hours) went to tests.

The following independent proposals shared simultaneous observing:

AM-39/AS-79	6
AC-43/VM-13	12
AE-13/VM-13	8
AG-84/VM-13	3
AS-118/AS-119	12
AW-67/VM-13	24
Tests/VM-13	26
Total	91 hours

VLA ASTRONOMICAL OBSERVING/UTILIZATION FEBRUARY 1982

Program	Observer	Affiliation	S	Program Title	Bands	Sched Hrs.
AB-129	B. F. Burke D. H. Roberts	MIT Brandeis	V V	Monitoring double quasar 0957+561.	6	1
AB-142	P. E. Greenfield R. L. Brown K. Y. Lo	NRAO/CV Caltech NRL	V V V	Structure of compact HII regions in Sgr A (West).	2 and 6	7
AB-152	K. J. Johnson P. D. Barthel G. K. Miley	NRL Leiden, NETHERLANDS Leiden, NETHERLANDS	V V V	The angular size - red-shift relation in quasars.	6	22
AB-153	R. T. Schilizzi J. H. Bieging M. Cohen	Dwingeloo, NETHERLANDS U of CA, Berkeley NASA/Ames	V V V	Radio emission from T-Tauri stars.	2 and 6	10
AB-155	P. Schwartz J. H. Bieging M. Cohen	NRL U of CA, Berkeley NASA/Ames	V V V	Search for mass loss among T-Tauri stars.	6	33
AB-157	J. O. Burns T. J. Balonek C. J. McCallum	U of NH U of NH Sandia Labs	V V V	Wide-tailed radio galaxy 1919+479.	6 and 21	12
AB-166	R. L. Brown	NRAO/CV	P	Search for line emission from 3C245.	6 cm line	12.5
AB-167	R. C. Bignell E. R. Sequist	NRAO/VLA NRAO/VLA	P R	Monitoring the SNR in NGC 4449.	6 and 21	2
AB-168	R. C. Bignell E. R. Sequist	NRAO/VLA NRAO/VLA	P R	SNR in NGC 4449.	2	8.5
AB-170	B. F. Burke C. R. Lawrence C. L. Bennett	MIT MIT MIT	V S S	350 sources from the 5 GHz MIT 300' survey.	6	24.5
AB-174	D. H. Roberts E. B. Churchwell D. C. Abbott	MIT Brandeis U of WI	V V V	Search for radio radiation from a new gravitational lens candidate. Monitoring the flux and spectral index variability of OB supergiants.	6 2 and 6	2 3
AC-42	J. H. Bieging R. C. Bignell R. A. Perley	U of CA, Berkeley NRAO/VLA NRAO/VLA	V R R	Extended, steep spectrum, luminous radio sources with prominent, flat spectrum cores.	6 and 18	3
AC-44	T. J. Cornwell	NRAO/VLA	R	Extended, steep spectrum, luminous radio sources with prominent, flat spectrum cores.	6 and 18	3
AC-47	P. C. Crane J. H. van Gorkom A. D. Haschick	NRAO/VLA NRAO/VLA Haystack Obs	R R V	HI absorption in NGC 1275.	21 cm line	8
AC-48	J. M. van der Hulst R. Crutcher Y.-H. Chu	U of MN U of IL U of IL	V V V	OH absorption toward 3C123.	18 cm line	8.5
AD-59	J. H. Bieging M. de Robertis	U of CA, Berkeley U of Victoria, CANADA	V V	Multiple image candidate quasars.	2 and 6	1.5
AD-60	J. de Pater D. M. Hunten B. A. Smith	Lunar & Planetary Lab U of AZ U of AZ	V V V	Saturn.	1.3, 2 and 6	12
AD-61	J. H. Dickel T. C. Owen L. L. Dressel	U of IL SUNY, Stony Brook NASA/Goddard	V V V	High frequency spectrum of UGC 09114.	1.3 and 2	1.5
AD-66	J. M. Dickey C. H. Heiles	NRAO/CV U of CA, Berkeley	R V	21 cm Zeeman splitting measurement.	21 cm line	12

VLA ASTRONOMICAL OBSERVING/UTILIZATION FEBRUARY 1982 (Cont.)

Program	Observer	Affiliation	S	Program Title	Bands	Sched. Hrs.
AD-67	J. M. Dickey	NRAO/CV	R	HI absorption toward the nuclei of Seyfert and active spiral galaxies.	21 cm line	18.5
AG-69	M. V. Gorenstein N. Cohen E. Falco R. Schild	MIT MIT, Cornell MIT CFA	S S S V	New gravitational lens candidates.	6	3
AG-73	B. J. Geldzahler	NRL	V	Radio sources near the compact radio source G127.61+0.54.	1.3, 2, 6 and 20	6 w/AV-56
AG-77	M. V. Gorenstein	MIT	V	Search for VLBI components ejected from SS433.	6 and 18	10
AG-82	J. M. Greenberg N. Brosch	Leiden, NETHERLANDS Leiden, NETHERLANDS	V V	Search for a very compact HI region in NGC 2264.	6	1
AG-85	D. B. Garrett J. N. Douglas	U of TX U of TX	S V	Low radio frequency variables from the Texas survey.	6 and 21	9.5
AH-69	E. Hummel J. M. van der Hulst	U of NM U of MN	V V	NGC 1097.	6 and 20	4
AH-83	J. Herman H. J. Habing B. Baud	Leiden, NETHERLANDS Leiden, NETHERLANDS Groningen, NETHERLANDS	V V V	OH/IR stars at 1612 MHz.	1612 MHz line	6
AH-87	A. Winberg E. Hummel R. D. Davies A. Pedlar J. M. van der Hulst W. F. Gollisch	U of NM U of NM Jodrell Bank, ENGLAND Jodrell Bank, ENGLAND U of MN U of MN	V V V V V V	Nuclei and disks of Sbc galaxies.	6 and 21	15.5
AH-90	A. D. Haschick W. A. Baan P. C. Crane	Haystack Obs Penn State U NRAO/VLA	V R	Detection and confirmation of HI absorption in 3C268.4.	21 cm line	18.5
AK-54	M. R. Kundu D. McConnell M. Bobrowsky	U of MD U of MD U of MD	V S S	Solar active regions and flares.	1.3, 2 and 6	18.5
AK-58	P. P. Kronberg G. Swarup E. M. Burbidge V. Junkkarinen	U of Toronto, CANADA TIFR, INDIA U of CA, SD KPNO	V V V V	3C9 and 3C280.1.	2 and 6	6
AK-60	S. Kwok R. C. Biemell	NRC, CANADA NRAO/VLA	V P	HM Sagittae.	1.3, 2, 6 and 20	7
AL-42	H. S. Liszt R. D. Ekers J. M. van der Hulst W. B. Burton	NRAO/CV NRAO/VLA U of MN Leiden, NETHERLANDS	R P V V	H2CO absorption spectrum toward the point source in Sgr A (West).	6 cm line	4
AL-43	R. A. Laing	NRAO/CV	R	Hot spots in luminous extragalactic radio sources.	1.3, 2, 6, 18 and 20	7.25
AM-39	L. Molnar M. Reid	Hycel, Inc. Houston CFA	V V	Monitoring polarization of BL Lac objects.	2 and 6	7 w/AS-79
AN-11	R. C. Bignell R. T. Newell R. M. Hiellming	NRAO/VLA NRAO/VLA NRAO/VLA	P R P	High resolution maps of thermal stellar sources.	1.3 and 2	6
AP-46	R. A. Perley A. H. Bridle B. G. Clark R. D. Ekers J. O. Burns J. O. Burns G. Gruett J. N. Douglas M. M. Phillips A. J. Turtle	NRAO/VLA NRAO/VLA NRAO/VLA NRAO/VLA U of MN U of MN Bologna, ITALY U of TX Angl-Aust Obs, AUSTRALIA U of Sydney, AUSTRALIA	R R P P V V V V V V	A large unbiased source sample from the B3 survey.	20	12.5
AP-50	M. M. Phillips A. J. Turtle	U of Sydney, AUSTRALIA	V	Nuclei of nearby Seyfert 2 galaxies.	2, 6 and 20	16

VLA ASTRONOMICAL OBSERVING/UTILIZATION FEBRUARY 1982 (Cont.)

Program	Observer	Affiliation	S	Program Title	Bands	Sched Hrs.
AP-52	P. Palmer J. H. van Gorkom C. H. Townes S. Subramanian D. Matsakis A. Hjalmarsen A. C. Cheung	U of Chicago NRAO/VLA U of CA, Berkeley U of CA, Berkeley USNO Onsala, SWEDEN U of CA, Davis	V R R S V V V	DR 21-0H.	1.3, 2, 6 and 18	3
AP-53	R. A. Perley R. D. Ekers	NRAO/VLA NRAO/VLA	R P	Superluminal motion in 3C273?	1.3, 2 and 6	8
AR-55	L. Rodriguez J. M. Moran D. C. Backer	U of Mexico, MEXICO CFA U of CA, Berkeley	V V V	NGC 6334 (B), galactic or extragalactic.	20 cm line	4
AR-59	A. H. Rots J. M. van der Hulst J. Pedeltly	NRAO/VLA U of MN U of MN	R V V	Suspected SNR in NGC 4395.	6	3
AR-60	L. Rudnick W. Stein M. Sitko	U of MN U of MN U of MN	V V V	The nature of low radio luminosity QSO's.	2, 6 and 20	4
AS-79	S. R. Spangler W. D. Cotton	NRAO/VLA NRAO/CV	R R	Monitoring of low-frequency variables.	1.4, 5, 15 and 21	7 w/AM-39
AS-80	R. A. Sramek J. M. van der Hulst K. W. Weiler	NRAO/VLA U of MN NSF	R V V	SN 1980 in NGC 6946 and SN 1979c in M100.	6 and 20	4
AS-98	I. I. Shapiro N. L. Cohen E. E. Falco M. V. Gorenstein	MIT MIT MIT MIT	V S S V	Cluster of quasi-stellar objects near M82.	6	4
AS-110	E. R. Seaquist L. Davis	NRAO/VLA U of Toronto, CANADA	R V	Emission line object VY 2-2.	2, 6, 20 cont. and 18 cm line	5 17
AS-112	E. R. Seaquist	NRAO/VLA	R	Radio survey of symbiotic stars.	6	17
AS-121	P. Schwartz B. J. Geldzahler J. Heckathorn H. Heckathorn	NRL NRL CSC NRL	V V V V	Emission line object 0259+64.	6 and 20	1
AT-18	H. Tabara M. Inoue M. Ishiguro	Utsunomiya U, JAPAN Tokyo Ast Obs, JAPAN Tokyo Ast Obs, JAPAN	V V V	Blue stellar objects embedded in 2 CD galaxies.	6	5
AU-11	J. S. Ulvestad A. S. Wilson	NRAO/CV U of MD	R V	Distance-limited sample of Seyfert/ emission line galaxies.	6 and 20	1
AV-52	J. M. van der Hulst R. A. Sramek K. W. Weiler	U of MN NRAO/VLA NSF	V R V	Monitoring of extragalactic supernovae; the next four.	2, 6 and 20	5
AV-56	J. H. van Gorkom B. J. Geldzahler	NRAO/VLA MIT	R V	The compact radio source in the center of the SNR G127.1+0.5.	2, 6 and 20 w/AG-73	6
AV-57	W. van Breugel H. Butcher T. Heckman G. K. Miley	KPNO KPNO U of MD Leiden, NETHERLANDS	V V V V	Radio galaxies with optical emission lines in the lobes.	6 and 20	16
AV-65	W. van Breugel H. Butcher G. K. Miley E. B. Fomalont T. Heckman	KPNO KPNO Leiden, NETHERLANDS NRAO/CV U of MD	V V V R V	Fine structure in 3C310.	6 and 20	6
AV-68	J. P. Vallee R. C. Bignell	NRC, CANADA NRAO/VLA	V P	Gum nebula.	2, 6 and 20	4
AV-69	W. van Breugel G. K. Miley T. Heckman	KPNO Leiden, NETHERLANDS U of MD	V V V	Steep spectrum cores.	2, 6 and 20	15.5

VLA ASTRONOMICAL OBSERVING/UTILIZATION FEBRUARY 1982 (Cont.)

Program	Observer	Affiliation	S	Program Title	Bands	Sched Hrs.
AM-59	D. W. Weedman R. A. Sramek	Penn State U NRAO/VLA	Y	Starburst objects.	6 and 20	24
AM-64	C. M. Wade	NRAO/VLA	P	Radio emission of Beta Lyrae.	1.3, 2 and 6	7
				Baseline, pointing, calibration, tests, electronics, software and start-up.	all	177

The average downtime for the month of February, 1982 was approximately 5.35 percent.

Average downtime of = $\frac{\text{Total number of antenna-hours of operational antennas lost due to hardware and software failures during scheduled observing}}{\text{Total number of antenna-hours of operational antennas scheduled}} \times 100$

where "antenna-hours" definition is: An array consisting of N antennas operating for Y hours is defined to have YN antenna-hours operation.

The array was scheduled for 100 percent (673.75 hours) of the time: 73.7 percent (496.75 hours) to astronomical programs and the remaining 26.3 percent (177 hours) went to tests.

The following independent proposals shared simultaneous observing:

AM-39/AS-79	7
AG-73/AV-56	$\frac{6}{13}$ hours
Total	

VLA UTILIZATION REPORT JANUARY 1982

Program	Program Title	S	Observer	Institution	Bands	Scheduled
AB-129	Baseline Pointing Monitoring double quasar 0957+561.	V	B. F. Burke	MIT	All	563.2
AB-163	Interacting galaxy pair NGC 4038/9.	V	D. H. Roberts	Brandeis	6	1
AB-165	Wide-angle tailed radio galaxy 1919+479.	V	P. E. Greenfield	MIT	21 cm line	16.3
AC-38	QSO/galaxy association 4C11.50/1548+115.	V	J. M. van der Hulst	U of MN	6 and 20	12
AC-46	Large scale structure in superluminal sources.	V	C. L. Bennett	MIT	6 and 20	4.5
AD-30	Class II double sources. Saturn.	V	C. R. Lawrence	MIT	6 and 20	6
AD-60	Class II double sources. Saturn.	V	J. M. Mahoney	U of MN	6 and 20	6
AD-65	Position measurements of OH/IR stars.	V	J. O. Burns	U of MN	6 and 20	12
AD-66	21 cm Zeeman splitting measurement 3C123.	V	T. J. Balonek	U of MN	6 and 20	12
AE-13	Wide-angle tail source 3C465.	V	C. J. McCallum	Sandila Labs	6 and 20	4.5
AE-14	Southern jet radio galaxies.	V	T. J. Cornwell	NRAO/VLA	6 and 20	6
AF-40	Radio halo of M87.	V	J. W. Dreher	MIT	2	3-5
AF-46	Detailed study of Hercules A - 3C384.	V	I. de Pater	Lunar & Planetary Lab	1.3, 2 and 6	13
AG-64	Neutral hydrogen in the barred spirals NGC 3092 and NGC 5291.	V	D. M. Hunten	Lunar & Planetary Lab	6 and 20	8
AG-81	HI in galaxies NGC 1512/10 and NGC 5291.	V	B. A. Smith	U of IL	6 and 20	7
AG-86	Recombination lines from compact HI regions associated with OH masers.	V	J. Dickey	NRAO/CV	21 cm line	12
AG-88	Recombination lines from compact HI regions associated with OH masers.	V	C. H. Heiles	U of CA, Berkeley	2, 6 and 20	8
AG-89	Mass outflow in the W51-IRS2 region.	V	J. A. Eileck	NMIMT	6 and 20	9
AH-75	Recombination line studies of G10.6-0.4	V	F. N. Owen	NRAO/VLA	6 and 20	8
AH-79	Elliptical galaxy NGC 4472.	V	C. P. O'Dea	NRAO/VLA/U of MA	2, 6 and 20	7
		V	J. O. Burns	U of MN	6 and 20	9
		V	R. D. Ekers	NRAO/VLA	2, 6 and 20	7
		V	G. Bicknell	Mt. Stromlo, AUSTRALIA	6 and 20	9
		V	N. Killeen	MIT	6 and 20	9
		V	E. D. Feigelson	CFA	6 and 20	8
		V	E. J. Schriber	CFA	6 and 20	8
		V	D. E. Harris	CFA	6 and 20	8
		V	E. D. Feigelson	MIT	6 and 20	8
		V	G. W. Clark	MIT	6 and 20	8
		V	J. W. Dreher	MIT	6 and 20	8
		V	S. T. Gottesman	U of FL	21 cm line	9
		V	J. R. Ball	U of FL	21 cm line	9
		V	J. H. Hunter	U of FL	21 cm line	9
		V	J. M. Huntly	Bell Labs	21 cm line	9
		V	S. T. Gottesman	U of FL	21 cm line	8
		V	T. G. Hawarden	RO, SCOTLAND	21 cm line	8
		V	G. Garay	CFA	18 cm line	20
		V	M. Reid	CFA	18 cm line	20
		V	J. M. Moran	CFA	18 cm line	20
		V	P. T. P. Ho	U of CA, Berkeley	1.3 cm line	5
		V	R. Genzel	U of CA, Berkeley	1.3 cm line	5
		V	P. T. P. Ho	U of CA, Berkeley	1.3 cm line	5
		V	A. D. Haschick	U of CA, Berkeley	2 and 6 cm line	7
		R	J. H. van Gorkom	Haystack Obs	2 and 6 cm line	7
		R	E. Hummel	NRAO/VLA	2 and 6 cm line	7
		V	C. G. Kotanyi	U of NH	6 and 20	6
		R	R. A. Laing	Groningen, NETHERLANDS	6 and 20	6
		R	R. A. Laing	NRAO/CV	6 and 20	6

Program	Program Title	S	VLA UTILIZATION REPORT	JANUARY 1982 (cont.)	Observer	Institution	Bands	Scheduled
AH-87	Nuclei and disks of Sbc galaxies.	V			E. Hummel	U of MN	6 and 20	81.5
		V			R. D. Davies	Jodrell Bank, ENGLAND		
		V			A. Pedlar	Jodrell Bank, ENGLAND		
		V			J. M. van der Hulst	U of MN		
		V			W. F. Golisch	U of MN		
AK-47	Monitoring of AFGL 618.	V			S. Kwok	NRC, CANADA	1.3, 2, 6 and 20	1.5
		P			R. C. Bignell	NRAO/VLA		
AK-57	Southern radio galaxy PKS 0131-36 (NGC 612).	V			N. E. B. Killeen	Mt Stromlo, AUSTRALIA	6, 18 and 20	5
		P			R. D. Ekers	NRAO/VLA		
		V			G. V. Bicknell	Mt. Stromlo, AUSTRALIA		
AK-61	Radio disks in Virgo cluster spirals.	V			C. G. Kotanyi	U of Groningen, NETHERLANDS	6 and 20	3
		V			E. Hummel	U of MN		
		R			J. H. van Gorkom	NRAO/VLA		
AK-62	Low luminosity radio galaxy PKS 0336-35.	V			N. E. B. Killeen	Mt. Stromlo, AUSTRALIA	6 and 20	3
		P			R. D. Ekers	NRAO/VLA		
		V			G. V. Bicknell	Mt. Stromlo, AUSTRALIA		
AL-38	Kepler's SNR.	V			K. S. Long	Columbia U	6 and 20	7
		V			J. R. Dickel	U of IL		
		R			E. W. Greisen	NRAO/CV		
AL-39	HI in four faint dwarf galaxies.	V			K. Y. Lo	Caltech	21 cm line	14
		V			W. L. W. Sargent	Caltech		
		V			K. Young	Caltech		
AM-39	Monitoring polarization of BL Lac objects.	V			L. Molnar	CFA	2 and 6	6.7
		V			M. Reid	CFA		
		P			R. C. Bignell	NRAO/VLA		
AM-43	Faint extragalactic X-ray sources	V			T. Maccacaro	CFA	20	2.5
		V			I. Gioia	CFA		
		V			E. D. Feigelson	MIT		
		V			J. Kriss	MIT		
AM-47	Search for an HI shell around a carbon star.	V			T. K. Menon	U of BC, CANADA	21 cm line	4
		V			H. B. Richer	U of BC, CANADA		
AO-25	HI in the spiral galaxy M83 - NGC 5236.	V			M. Ondrechen	U of MN	21 cm line	9
		V			J. M. van der Hulst	U of MN		
AO-29	Central component of 3C61.1.	R			F. N. Owen	NRAO/VLA	1.3 and 6	6
		V			J. J. Puschell	UCSD		
AO-30	"Weak" flat spectrum objects.	R			F. N. Owen	NRAO/VLA	2, 6 and 21	15
		R			J. J. Condon	NRAO/CV		
		V			L. Ledden	VPI		
AO-31	Narrow angle tailed radio sources.	S			C. P. O'Dea	NRAO/VLA/U of MA	20	7
		R			F. N. Owen	NRAO/VLA		
AP-46	A large unbiased sample from the B3 survey.	R			R. A. Perley	NRAO/VLA	20	28
		P			B. G. Clark	NRAO/VLA		
		P			R. D. Ekers	NRAO/VLA		
		V			A. H. Bridle	Queen's U, CANADA		
		V			J. O. Burns	U of MN		
		V			G. Greuff	Bologna, ITALY		
		V			J. N. Douglas	U of TX		
AP-54	Serendipitous X-Ray objects.	V			R. M. Price	U of MN	6 and 20	14
AR-57	3C273 "satellite source".	V			W. Reich	MIP, GERMANY	6 and 20	5
		V			P. K. Kronberg	U of Toronto, CANADA		
AS-79	Multifrequency monitoring of low-frequency variables.	R			S. R. Spangler	NRAO/VLA	1.3, 2, 6 and 21	6.7
		R			W. D. Cotton	NRAO/CV		
AS-80	Supernova in M100 and NCG 6946.	R			R. A. Sramek	NRAO/VLA	6 and 20	4
		V			J. M. van der Hulst	U of MN		
		V			K. W. Weiler	NSF		
AS-104	Neutral hydrogen in IRR I galaxies.	V			E. Skillman	U of WA	21 cm line	16
		V			B. Balick	U of WA		

VLA UTILIZATION REPORT JANUARY 1982 (cont.)

Program	Program Title	\$	Observer	Institution	Bands	Scheduled
AS-113	Stimulated recombination lines in M82 and MGC 253.	R	E. R. Seaquist	NRAO/VLA	6 and 21	19.5
		V	M. B. Bell	NRC, CANADA		
		P	R. C. Bignell	NRAO/VLA		
AS-116	Search for radio lobes in edge-on spiral galaxies.	V	M. Shapiro	NRL	6 and 20	12.5
		V	K. J. Johnston	NRL		
		P	R. D. Ekers	NRAO/VLA		
		V	R. Sancisi	Groningen, NETHERLANDS		
AT-22	NH in small clouds discovered north of the KL nebula in Orion.	V	C. H. Townes	U of CA, Berkeley	1.3 cm line	22
		V	D. N. Matsakis	USNO		
		V	P. Palmer	U of Chicago		
AT-23	OH absorption in late-type spiral galaxies.	P	A. Harris	U of CA, Berkeley	18 cm line	39.5
		V	B. E. Turner	NRAO/CV		
		V	T. M. Bania	Boston U		
		V	L. J. Rickard	Howard U		
AU-9	Survey of binary, tertiary X-ray emitting rich clusters of galaxies.	V	M. P. Ulmer	Northwestern U		8
		V	R. J. Hanisch	U of MD		
AV-58	H I emission from Centaurus A.	V	J. M. van der Huist	U of MN	20 cm line	6
		V	A. D. Haschick	Haystack Obs		
		R	A. D. Tubbs	NRAO/CV		
AV-61	Recombination lines in the galactic center.	R	J. H. van Gorkom	NRAO/VLA	2 cm line	14
		V	U. J. Schwarz	U of Groningen, NETHERLANDS		
AV-67	Kinematics of the barred spiral NGC 1365.	V	J. D. Bregman	U of Groningen, NETHERLANDS	21 cm line	8.5
		V	J. M. van der Huist	U of MN		
AV-68	Gum nebula.	V	M. P. Ondrechen	U of MN		
		V	J. P. Vallee	NRC, CANADA	2, 6 and 20	4.5
		P	R. C. Bignell	NRAO/VLA		
AM-60	Survey of high galaxy density poor clusters.	V	R. A. White	NASA/GSFC	20	23.5
		V	J. O. Burns	U of NM		
		R	F. N. Owen	NRAO/VLA		
AM-64	Radio emission of Beta Lyrae.	P	C. M. Wade	NRAO/VLA	1.3, 2 and 6	4

The average downtime for the month of January, 1982 was approximately 8.00 percent.

$$\text{Average downtime of operational antennas} = \frac{\text{Total number of antenna-hours of operational antennas lost due to hardware and software failures during scheduled observing}}{\text{Total number of antenna-hours of operational antennas scheduled}} \times 100$$

where "antenna-hours" definition is: An array consisting of N antennas operating for Y hours is defined to have YN antenna-hours operation.

The array was scheduled for 98 percent (730 hours) of the time: 76.2 percent (556.5 hours) to astronomical programs and the remaining 23.7 percent (173.5 hours) went to tests.

The observatory was closed in January for 16 hours during the New Year's holidays.

The following independent proposals shared simultaneous observing:

- AM-39/AS-79 6.7