

VLA UTILIZATION DECEMBER 1984

Program	Observer	Affiliation	Program title	Bands (GHz)	Obsv date	Sched hrs
AA-30	Atter, H.D. Reynolds, S.P.	Michigan, U of NRAO/CV	Mapping and polarimetry of 3058.	20	21	9.5
AA-38	Axon, D.J. Unger, S.W. Pedlar, A.	NRAU, UK NRAU, UK NRAU, UK	The double radio source in the Seyfert galaxy NGC 5252.	1.3, 2, 6 and 20	14	3
AA-39	Antonucci, R. Livestad, J.	NRAO/CV JPL	Radio structure of 01 287.	2 and 6	30	11
AB-129	Burke, B.F. Hewitt, J.N. Roberts, D.H.	MIT/Cattech MIT Brandeis U	Monitoring time variations in 0957+561.	6	12	1.9
AB-167	Bignelli, R.C. Sequist, E.R.	NRAO/VLA Toronto U, CANADA	Monitoring SNR in the galaxy NGC 4449.	6 and 20	12	1
AB-289	Birkinshaw, M. Davies, R.L.	Cambridge U, UK KPN0	Structures of radio sources associated with bright elliptical galaxies with known stellar dynamics.	6	14	18.5
AB-307	Benn, C.R. Wall, J.V. Grueff, G. Vigotti, M.	Cambridge U, UK RCO, UK Bologna, ITALY Bologna, ITALY	5C12 sources.	6 and 20	7	6
AB-310	Browne, I. Murphy, D. Perley, R.	Cattech/NRAU, UK NRAU, UK NRAO/VLA	Extended structure around core-dominated quasars.	20	23	24
AB-311	Burns, J.O. Eilek, J.A. Christiansen, W.A.	New Mexico, U of NMIIT North Carolina, U of	A quantitative investigation of turbulence in the radio galaxy 0816+526.	2 and 6	27, 28	24
AC-104	Cornwell, T. van Breugel, W. Ekers, R.D. Smart, L.	NRAO/VLA UC, Berkeley NRAO/VLA Illinois, U of	The db system NGC 4782/4783.	6 and 20	26	8
AC-114	Clark, B.G. Perley, R.A.	NRAO/VLA NRAO/VLA	High resolution source structure survey.	2 and 6	11, 27	6.5
AC-116	Churchwell, E. Abbott, D. Bieging, J.	Wisconsin, U of Colorado, U of UC, Berkeley	Monitoring a new class of stellar nonthermal emitters.	2, 6 and 20	21	7
AD-94	de Pater, I. Weiler, K.W. Fanti, R. Fanti, C.	NSF Bologna, ITALY Bologna, ITALY	Monitoring polarization characteristics in variable radio sources.	2, 6 and 20	12, 16, 21	6.5
AD-119	Duric, N. Sequist, E.R. Crane, P.C. Bignelli, R.C. Davis, L.E.	Toronto U, CANADA Toronto U, CANADA NRAO/VLA NRAO/VLA KPN0	Edge-on spiral galaxy NGC 3079.	6 and 20	12	12
AD-145	Duric, N. Sequist, E.R. Crane, P.C. Davis, L.E.	Toronto U, CANADA Toronto U, CANADA NRAO/VLA KPN0	Scaled array observations of the spiral galaxy NGC 4736.	20	20	8.5
AE-39	Evans, N.J. Levrault, R. Beckwith, S. Skrutskie, M.	Texas, U of Texas, U of Cornell U Cornell U	Pre-Main-Sequence stars driving molecular outflows.	6	13	16.5
AF-91	Fanti, C. Fanti, R. Parma, P. de Ruiter, H.	Bologna, ITALY Bologna, ITALY NRAO/VLA-Bologna, ITALY NRAO/VLA-Bologna, ITALY	A selection of radio galaxies from the B2 catalog.	6 and 20	1	19.5
AF-93	Fix, J.D. Mutel, R.L.	Iowa, U of Iowa, U of	Time variations in maps of hydroxyl masers.	18 line	31	10

VLA UTILIZATION DECEMBER 1984 (Cont.)

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AF-94	Fix, J.D. Neff, J.S.	Iowa, U of Iowa, U of	Sizes and temperatures of asteroids.	2	15	12
AF-97	Fomalont, E.B. Geldzahler, B.J.	Nobeyama, JAPAN-NRAO/VLA NRL	Sco X-1.	6 and 20	16	9
AF-98	Fomalont, E.B. Goss, W.M. Lyne, A.G. Manchester, R.N.	Nobeyama, JAPAN-NRAO/VLA Groningen U, NETH NRAU, UK CSIRO, AUST	Pulsar positions and proper motions.	20 line	22	24.5
AG-116	Gibson, D.M. Priedhorsky, W.C.	NMIMT LANL	A search for 300 day periodicity in Cyg X-1.	2, 6 and 20	14	1.5
AG-163	Goss, W.M. Ekers, R.D. Sramek, R.A. Branch, D. Cowan, J.	Groningen U, NETH NRAO/VLA NRAO/VLA Oklahoma, U of Oklahoma, U of	A search for very young supernova remnants in our Galaxy.	20	7,24	7
AG-166	Gregory, P.C.	BC, U of, CANADA	Observational test of a jet model for SNR G109.1-1.0.	6 and 20	30	9
AG-167	Gregory, P.C. Taylor, A.R.	BC, U of, CANADA Toronto U, CANADA	"Short-term" variable sources.	6 and 20	31	4
AH-143	Hummel, E. van der Hulst, J.M. Sramek, R.A.	MPIR, FRG NRAU, NETH NRAO/VLA	Monitoring central radio sources to search for supernovae.	6	17	1
AH-167	Hewitt, J.N. Bennett, C.L. Burke, B.F. Lawrence, C.R.	MIT MIT/Caltech Caltech Princeton	Search for gravitational lenses.	6	8,16	48
AH-170	Hintzen, P. Owen, F.	NASA-GSFC NRAO/VLA	Distorted radio QSOs.	6 and 20	16	4
AH-173	Hogg, D.E.	NRAO/CV	Emission-line galaxy He 2-10.	2, 6 and 20	5	4
AH-176	Hughes, V.A. McLean, B.J.	Queen's U, CANADA STScI	Globular cluster object M3A.	2	2	2.9
AJ-104	Johnston, K. Florkowski, D. Wade, C. Gatewood, G. de Veigt, C. Shao, M.	NRL USNO NRAO/VLA Pittsburgh, U of Hamburger Sternwarte, FRG NRL	Precise optical/radio positions of the stars Algol, HR1099 and UX Ari.	6	5,7,20	28.5 w/Baselines
AJ-115	Jackson, J.M. Barrett, A.H. Ho, P.T.P.	MIT MIT Harvard U	Continuum survey of starburst galaxies detected in CO.	6	22	9
AK-113	Kwok, S.	Calgary, U of, CANADA	Radio survey of compact planetary nebulae.	2 and 6	26,29	13.5
AL-78	Lang, K.R. Willson, R.F.	Tufts U Tufts U	Joint VLA - I.U.E. observations of flare stars.	20	9	6.5
AL-90	Lawrence, C.R. Hewitt, J.N. Bennett, C.L. Burke, B.F. Turner, E.L.	Caltech MIT MIT MIT/Caltech Princeton	Observations of gravitational lens 2016+112.	6, 18 and 20	9,10	20
AM-133	Menon, T.K.	BC, U of, CANADA	Radio sources in compact groups of galaxies.	6	10,11	12
AN-29	Norris, R.P. Forster, J.R. Baan, W.A.	CSIRO, AUSTRALIA CSIRO, AUSTRALIA Arecibo obs	Active galactic nucleus IC4553.	1.3, 2 and 6	3	13 w/VMS8

VLA UTILIZATION DECEMBER 1984 (Cont.)

AO-47	O'Dea, C. Owen, F.	NRAO/CV NRAO/VLA	Constraints on the properties of bent beams.	20	6	3
AO-53	O'Dea, C. Patnaik, A. Gopal-Krishna	NRAO/CV TIFR, INDIA TIFR, INDIA	GHz peaked spectrum sources.	1.3, 6 and 20	29	18
AP-90	Parma, P. Fanti, R. Lari, C. Fomalont, E.	NRAO/VLA-Bologna, ITALY Bologna, ITALY Bologna, ITALY Nobeyama, JAPAN-NRAO/VLA NRAO/VLA	The unusual morphology of NGC 326.	18 and 20	2	12 w/VM58
AS-79	Ekers, R.D. Spangler, S. Cotton, W.	Iowa, U of NRAO/CV Iowa, U of	Monitoring low frequency variables.	1.3, 2, 6 and 20	2, 11 w/VM58	7.5
AS-183	Allendorf, S. Swarup, G.	Iowa, U of TIFR, INDIA	QSOs with absorption lines.	6	14	1
AT-53	Taylor, A.R. Sequist, E.R. Kenyon, S.J.	Toronto U, CANADA Toronto U, CANADA CFA	The symbiotic star H1-36.	2, 6 and 20	14, 15	8
AW-48	Wade, C.M. Johnston, K.J. Seidelmann, P.K.	NRAO/VLA NRL USNO USNO	Astrometric observations of minor planets.	2 and 6	6, 28	20.5
AW-122	Kaplan, G.H. Wehrie, A.E. Morris, M.	UCLA UCLA UCLA	Vertical radio structure in the nuclei of normal spiral galaxies.	2 and 6	5, 8, 10	13
VC-35	Cotton, W.D. Owen, F.N.	NRAO/CV NRAO/VLA	Inverse Compton estimates.	18 cm phased array VLB	1	12.0
VM-58	Mutel, R.L. Muxlow, T. Phillips, R.B.	Iowa, U of NRAO, UK Haystack Obs	Compact double quasars.	18 cm single antenna VLB	2, 3 w/AN29, AP90 AST9	20.6
VS-41	Spangler, S.R. Morris, D. Mutel, R. Benson, J. Cordes, J.	Iowa, U of Iowa, U of Iowa, U of NRAO/CV Cornell U	Scattering diameters near galactic SNR.	18 cm phased array VLB	3	24.2
NRAO staff		Sch. Maint.	Electronics, etc Software Total			48.6 27.0 75.6
		Sch. Test/Cal.	Pointing, Baselines, Startup, Move/operations General Tests Total			43.9 51.0 94.9
		Holiday	Christmas, Shutdown			36.5

The average downtime for the month of December, 1984 was approximately 5.6 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 95.1 percent (707.5 hours) of the time: 72.8 percent (542.0 hours) to astronomical programs, 12.1 percent (89.9 hours) to scheduled test/calibration, and the remaining 10.2 percent (75.6 hours) went to scheduled maintenance.

The total number of programs run for the month of November, 1984 was 48.

The following independent proposals shared simultaneous observing: (25.6 hrs Total Simultaneous Observing)

AS79 /VM58	1.0
AP90 /VM58	11.6
AN29 /VM/58	8.0
AJ104/Baselines	5.0

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VLA UTILIZATION ON NOVEMBER 1984

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AB-129	B. Burke J. Hewitt D. Roberts	MIT MIT Brandeis	Monitoring time variations in 0957+561.	6	16	2
AB-182	J. Burns T. Balonek E. Hummel	New Mexico U of Williams College MPIR, FRG	Monitoring the cores of extended radio sources and spiral galaxies.	2, 6 and 20	10, 20	5
AB-276	C. Bennett C. Lawrence J. Hewitt B. Burke E. Turner	MIT Caltech MIT MIT Princeton	Variability monitoring of the new gravitational lens 2016+112.	2, 6	15	3
AB-305	D. Branch J. Cowan B. Campbell	Oklahoma U of Oklahoma U of Arizona U of	Search for 20cm emission from the Type I supernova 1972e in NGC5253.	20	17, 18	12
AC-110	J. Cordes D. Heeschen J. Simonetti	Cornell NRAO/CV Cornell/NRAO/CV	Search for 20cm emission from the extraordinary supernova 1961V in NGC1058.	1.3, 2 and 6	23	9
AC-111	D. Branch J. Cowan	Oklahoma U of Oklahoma U of	Search for flickering in extragalactic sources.	20	1, 2	36
AC-112	J. Cordes D. Heeschen J. Simonetti	Cornell NRAO/CV Cornell/NRAO/CV	Search for 20cm emission from the extraordinary supernova 1961V in NGC1058.	20	15	12
AC-113	B. Cooke M. Turner I. McHardy T. Pomran	Leicester U, UK Leicester U, UK Leicester U, UK Birmingham U, UK	Search for radio emission from the Galactic X-ray source GX 349+2.	20	13, 15-18	9.5
AC-115	S. Catalano D. Gibson M. Rodono	Catania, ITALY Catania, ITALY Catania, ITALY	Flux and luminosity limited surveys of Algol binaries.	6	3, 9, 12	33.0
AC-116	E. Churchwell D. Abbott	Wisconsin U of Colorado U of	Stellar non-thermal emitters.	2, 6 and 20	27 w/VE8	6
AD-141	J. Bieging S. Drake J. Linsky	UC Berkeley Colorado U of Colorado U of	Chromospheric radio emission and temperatures in nearby cool giant stars.	2, 6	5, 17, 18	30.5
AD-151	S. Drake D. Gibson J. Linsky	Colorado U of Colorado U of Colorado U of	Radio survey of long-period RS CVn binaries.	6	1, 2, 3, 6 w/Move Ops	26
AF-91	C. Fanti R. Fanti P. Parma H. de Ruiter	Bologna U, ITALY Bologna U, ITALY NRAO/VLA/Bologna, ITALY NRAO/VLA/Bologna, ITALY	A selection of radio galaxies from the B2 Catalog.	6, 20	28, 30	7
AG-116	D. Gibson W. Priedhorsky B. Geldzahler	Colorado U of NRAO/VLA NRAO/VLA	Search for 300 day periodicity in Cyg X-1.	2, 6 and 20	10	1
AG-145	P. Schwartz D. Gary J. Linsky	NRL Caltech Colorado U of	Simultaneous multifrequency observations of Blazars.	1.3, 2, 6, 20 and 90	16, 17	8
AG-160	B. Halsch M. Goss R. Ekers R. Sramek D. Branch J. Cowan	Lockheed/Palo Alto Groningen U, NETH NRAO/VLA NRAO/VLA Oklahoma U of Oklahoma U of	Coordinated microwave, X-ray, optical and ultraviolet observations of the eclipsing binary YY Gem.	2, 6 and 20	12, 13, 14	39
AG-163	M. Goss R. Ekers R. Sramek D. Branch J. Cowan	Groningen U, NETH NRAO/VLA NRAO/VLA Oklahoma U of Oklahoma U of	Search for very young SNR in our galaxy.	20	29, 30	8.6
AG-164	A. Gover J. Hutchings R. Hjellming K. Johnston	Victoria U, CANADA DAO, CANADA NRAO/VLA NRL	Low redshift quasars.	1.3, 2	24	18
AH-172	R. Hjellming K. Johnston	DAO, CANADA NRAO/VLA NRL	SS433.	2, 6	30	11

VLA UTILIZATION NOVEMBER 1984 (Cont.)

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AH-179	R. Hjelming	NRAO/VLA	Nova Vulpeculae 1984.	2 and 6	4	2.5
AJ-117	G. Hennessy	NRAO/VLA	The spatial distribution of 2cm emission from 1 Ceres.	2	25,26	22
	K. Johnston	NRL				
	C. Wade	NRAO/VLA				
	P. Seidelman	USNO				
	G. Kaplan	USNO				
	W. Webster	NASA/GSFC				
	R. Hobbs	CIA, Inc.				
AK-103	S. Kulkarni	UC Berkeley	Absorption distances to low-latitude variable sources.	21 line	11,16,17	24
	C. Heiles	UC Berkeley			20,21	24
	J. van Gorkom	NRAO/VLA				w/AT54
AL-78	K. Lang	Tufts U	Joint VLA - I.U.E. observations of flare stars.	20	7-10	17.5
	R. Willson	Tufts U				w/Move Ops
AM-124	I. McHardy	Leicester U, UK	Monitoring OVVs.	2, 6 and	4,5	7.5
	R. Warwick	Leicester U, UK				w/AST9
	A. Smith	ESTEC, NETH				
AM-130	J. Machalski	NRAO/CV/Jagiellonian U, POLAND	Possible primordial clusters.	20	26	8
	J. Condon	NRAO/CV				
AM-135	R. Mutel	Iowa U of	Monitoring radio activity in RS CVn binaries I: Correlation with period.	2, 6 and 20	4,11,18	14
AM-136	J. Mutel	Iowa U of	Radio activity in RS CVn binaries	6	3,21	13
	J. Lestrade	B. des Longitudes, FRANCE	II: Investigation of short-period systems.			w/Move Ops
AO-47	C. O'Dea	NRAO/CV	Constraints on the properties of bent beams.	20	27	9
	F. Owen	NRAO/VLA				w/VVD1(EVN84-35)
AP-89	L. Padrielli	Bologna, ITALY	25 compact quasars selected from the B2 catalogue.	6, 20	25	12
	A. Rogora	Bologna, ITALY				
	H. de Ruiter	NRAO/VLA/Bologna, ITALY				
AR-102	L. Rudnick	Minnesota U of	Nuclei of extended extragalactic sources.	2, 6 and 20	10,12	5
	T. Jones	Minnesota U of				
	J. Pedelty	Minnesota U of				
AS-79	S. Spangler	Iowa U of	Monitoring low frequency variables.	1.3, 2, 6 and 20	4,5	7.5
	W. Cotton	NRAO/CV				w/AM124
	S. Allendorf	Iowa U of				
AS-80	R. Sramek	NRAO/VLA	Monitoring supernovae SNT1980 in NGC6946 and SNT1979c in M100.	6, 20	16,21	4
	J. van der Hulst	NFRA, NETH				
	K. Weiler	NSF				
AS-206	R. Snell	Massachusetts U of	Radio jets associated with LT551 IRS-5.	20	24	6
	J. Bally	Bell Labs				
	P. Schwartz	NRL				
AS-209	E. Seagrist	Toronto U, CANADA	Radio emission from symbiotic stars.	6	10,11,12	16
	A. Taylor	Toronto U, CANADA				
AT-54	A. Taylor	Toronto U, CANADA	Absorption distances to galactic plane variables.	21 line	11,16,17, 24	24
	E. Seagrist	Toronto U, CANADA			20,21	w/AK103
AT-55	A. Taylor	Toronto U, CANADA	Radio spectra of symbiotic stars.	1.3, 2, 6 and 20	8,9	16
	E. Seagrist	Toronto U, CANADA				
	S. Kenyon	CFA				
AU-20	J. Uvestad	NRAO/CV	Seyfert 1.9 galaxies.	6, 20	27,30	8.5
	A. Wilson	Maryland U of				w/VE8
AV-96	J. van der Hulst	NFRA, NETH	Monitoring radio supernova in NGC4258.	6, 20	16	2
	R. Sramek	NRAO/VLA				
	K. Weiler	NSF				

VLA UTILIZATION NOVEMBER 1984 (Cont.)

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AW-78	J. Wardle R. Laing	Brandeis U NRAO/CV	Monitoring variability of the central components of extended radio sources.	2, 6	10, 19	8
AW-116	T. Wilson K. Johnston P. Jewell C. Walmsley K. Menten	MFIR, FRG NRL MFIR, FRG MFIR, FRG MFIR, FRG	A newly discovered methanol maser line.	1.3 line	1	4
AW-120	W. Webster Jr. R. Hobbs P. Lowman	NASA/GSFC CTA, INC. NASA/GSFC	Microwave spectra of the major asteroids.	2, 20	5, 10 w/Move Ops	17.5
VD-1 (EVN84-35)	P. Diamond	VPI & SU MPIR, FRG		18 VLB	27	2 w/A047
VE-8	A. Eckart A. Witzel K. Johnston	MPIR, FRG MPIR, FRG NRL	BL Lac object 0716+71.	18 VLB	27	12.5 w/AC116, AU20, test
VS-40	R. Schilizzi K. Johnston R. Laing R. Hunstead H. Murdoch NRAO staff	NFRA, NETH NRL RGO, UK Sydney U of, AUST Sydney U of, AUST Sch. Maint.	Superluminal candidate 0215+015.	18 phased array VLB	28	8.8
			Electronics, etc Software Total			44.4 27.0 71.4
		Sch. Test/Cal.	Pointing, Baselines, Startup, Move/operations General Tests Total			111.2 43.9 155.1
		Holiday	Thanksgiving			26

The average downtime for the month of November, 1984 was approximately 10.14 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  
Operational antennas 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 (694.0 hours) of the time: 70.0 percent (503.7 hours) to astronomical programs, 16.5 percent (118.9 hours) to scheduled test/calibration, and the remaining 9.9 percent (71.4 hours) went to scheduled maintenance.

The total number of programs run for the month of November, 1984 was 44.

The following independent proposals shared simultaneous observing: (80.4 hrs Total Simultaneous Observing)

AK103/AT54	24.0	AL78 /Move/Ops	3.1
AD151/Move/Ops	6.0	AG160/Move/Ops	4.0
AM136/Move/Ops	4.0	A047 /VD1 (EVN84-35)	2.0
AM124/AST9	7.5	AC116/VE8	5.7
AM120/Move/Ops	7.6	AU20 /VE8	5.0
AD141/Move/Ops	4.1	Test /VE8	1.8
AT55 /Move/Ops	5.6		





VLA UTILIZATION OCTOBER 1984

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AA-36	R. Antonucci	NRAO/CV	IRAS extreme infrared galaxies.	6	1	3
	E. Olszewski	DAO, CANADA				
AB-298	F. Briggs	Pittsburgh U of	HI observations of interacting dwarf galaxies UGC 11771/1176.	21 line	26	12
AB-299	F. Briggs	Pittsburgh U of	Extended HI distribution around NGC628.	21 line	27,28	24
AB-300	F. Briggs	Pittsburgh U of	Extended HI near NGC 2146.	21 line	25,26,29	10.5
AB-303	R. Becker	UC, Davis	Supernova remnants far inside the Solar Circle.	20	7,9	9
	D. Helfand	Columbia U			with VL 32	
AB-309	G. Bothun	Caltech	HI in extremely low surface brightness and gas rich dwarf galaxies.	21 line	27,28	18
	E. Skillman	Washington U of				
AC-101	J. Gondon	NRAO/CV	Survey of bright spiral galaxies.	20	20	13
AC-105	R. Cameron	VLA/Mt Stromlo, AUSTR	Jet radio sources in southern clusters.	6	7	1
	G. Bicknell	Mt Stromlo, AUSTR			with VL32	
	R. Ekers	NRAO/VLA				
AC-106	R. Crutcher	Illinois U of	Mapping of magnetic fields in molecular clouds.	18 line	22,29	23
	C. Heiles	UC, Berkeley				
	M. Stevens	UC, Berkeley				
	W. Goss	Groningen U, NETH				
	T. Troland	Kentucky U of				
	I. Kazes	Obs. de Paris, FRANCE				
AD-151	S. Drake	Colorado U of	Radio survey of long-period RS CVn binaries.	6	31	4
	D. Gibson	NMIMT			with Move/Ops	
	J. Linsky	Colorado U of				
AE-38	A. Eckart	MPiR, FRG	Quasar 1928+73.	1.3, 2, 6 and 20	6	12.5
	A. Witzel	MPiR, FRG			with VU 14	
	K. Johnston	NRL				
	R. Simon	NRL				
AF-90	M. Fich	Washington U of	Galactic Plane continuum sources.	2	19	10
AF-96	D. Florkowski	USNO	A ring around RY Sctul.	6 and 20	17	9
AF-100	G. Fuller	UC, Berkeley	Ionized helium in Galactic HI regions.	6 line	2	12
	C. Heiles	UC, Berkeley			w/VG34&VAH32	
AG-116	D. Gibson	NMIMT	Search for a 300 day periodicity in CV9 X-1.	2, 6, 20	1	1
	W. Priedhorsky	LANL				
AG-157	D. Gibson	NMIMT	Radio, UV, and X-ray observations of the limb crossing of an active region on Sigma Gemlnorum.	2, 6, 20	1-6	11
	T. Ayres	Colorado U of			VL32, VM61, VAH30	11
AG-165	D. Green	Cambridge U, UK	HI absorption toward a probable young galactic SNR.	20 line	18	1
	A. Downes	Cambridge U, UK				
AG-168	J. Garcia-Barreto	UNAM, MEXICO	Search for continuum radiation from the nuclei and bars of SB galaxies.	6, 20	5	4
	P. Plimms	UNAM, MEXICO			w/VL32 & VM61	
AG-169	G. Garay	ESO, FRG	Radio recombination lines from planetary nebulae.	2, 6 line	3,4	8
	L. Rodriguez	UNAM, MEXICO			w/VG34 & VJ33	
AH-163	W. Hermsen	MPiR, FRG	Hot ammonia sources in Orion, the (8,7) transition.	1.3 line	3	8
	T. Wilson	MPiR, FRG			w/VAH32 and VL34	
	C. Walmsley	MPiR, FRG				
	C. Henkel	MPiR, FRG				
AH-168	K. Johnston	NRL	Comparison of HI spin temperatures and H2 rotational temperatures.	21 line	25	18
	C. Heiles	UC, Berkeley				
	S. Kulkarni	UC, Berkeley				
AJ-116	J. Jackson	MIT	Ammonia near Sgr A West	1.3 line	26,27, 28	12
	A. Barrett	MIT				
	P. Ho	CFA				
	S. Dymes	MIT				
AK-118	M. Kutner	RPI	H2CO emission as a probe of high density clumping in molecular clouds.	6 line	15	6.5
	N. Evans II	Texas U of				

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Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AL-88	L. Little S. Davies W. Dent N. Matthews G. White	Kent U of, UK Kent U of, UK Kent U of, UK Kent U of, UK Queen Mary Coll., UK	Ammonia maps of massive molecular cloud cores.	1.3 line	1	2.0
AL-89	S. Lakshmi Gopal-Krishna A. Singal K. Joshi	IISC/TIFR, INDIA TIFR, INDIA TIFR, INDIA TIFR, INDIA	Three extended radio sources in chains of galaxies.	6, 20	13 with VP62	7.5
AL-91	G. Lake R. Schommer J. van Gorkom	Bell Labs Rutgers U NRAO/VLA	Rotation curves of dwarf galaxies - exploring the phase-density of dark matter.	21 line	16,22	10
AM-132	U. Mebold P. Kalberla	Bonn U, FRG Bonn U, FRG	High velocity cloud interacting with Galactic gas.	21 line	10,13 with VP58	14.2
AM-134	S. Mufson M. McCullough J. Dickel	Indiana U of Indiana U of Illinois U of	Large and small scale radio structure in SNR IC443.	20	18,19	6.5
AM-135	R. Mutel J. Lestrade	Iowa U of B. d. Longitudes, FRANCE	Radio activity in RS CVn binaries: correlation with period.	2, 6, 20	30	6.5
AO-56	R. Olowin T. Herzog	Oklahoma U of Oklahoma U of	Search for radio variability in white dwarf pulsar AE Agr.	6	w/move./Ops 29	6
AR-113	G. Robertson D. Harris	AAO, AUST CFA	Abell 84.	6, 20	7	2
AR-114	L. Rodriguez J. Canto S. Curjel	UNAM, MEXICO UNAM, MEXICO UNAM, MEXICO	Search for faint, extended continuum emission in regions of molecular outflows without associated point sources.	6	with VL32 2,3,5,6 w/VC34, VJ33, VM61	20.5
AR-115	L. Rudnick J. Pedeltz	Minnesota, U of Minnesota, U of	Equal linear resolution study of extragalactic radio source luminosity effects.	2, 6	4 w/VC34	18
AS-156	M. Stevens C. Heiles	UC, Berkeley UC, Berkeley	OH mapping of Orion B.	18 line	24	11
AS-200	S. Simkin H. Su J. van Gorkom	Michigan State U Purple Mt. Obs., CHINA NRAO/VLA	HI observations of Seyferts of different morphological type.	21 line	6,8 w/VM61 and VAH30	16
AS-203	S. Schneider E. Salpeter Y. Terzian	Cornell U Cornell U Cornell U	HI study of the intergalactic cloud in Leo.	21 line	19,20,21	28.5
AS-210	W. Sullivan III	Washington U of	Sizes and offsets of the HI distribution in the central spiral galaxies of the Coma cluster.	21 line	10,14,15 w/VP58 and VP62	27.2
AT-56	L. Tacconi J. Young	Massachusetts U of Massachusetts U of	Cycling of the ISM in the luminous Scd galaxy NGC6946.	21 line	21	10
AW-116	T. Wilson K. Johnston P. Jewell C. Waimley K. Menten	MPIR, FRG MPIR, FRG MPIR, FRG MPIR, FRG MPIR, FRG	A newly discovered methanol maser line.	1.3 line	29,31	8
AW-118	J. Wink	MPIR, FRG	Helium Stromgren spheres.	2 cm line	5 w/VL32	4
AW-121	R. Walker J. Benson	NRAO/CV NRAO/CV	3C120.	line	20	11
AZ-24	X. Zheng P. Ho J. Moran	Nanking U, CHINA CFA CFA	Clumping and rotation in the molecular cloud OMC2.	1.3 line	with VL32 21,24	11

VLA UTILIZATION OCTOBER 1984 (Cont.)

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
VA-6	W. Aierf E. Preuss K. Kellermann	MPiR, FRG MPiR, FRG NRAO/GB	3C147.	6 phased array VLB	16	13
VAH-30	A. Haschick	Haystack obs	NGC 3079.	1.3 3 antenna VLB	6 w/AS-200, tests, AG-157	7
VAH-31	T. Simon	Hawaii, U of	T Tauri.	6 phased array MK 111 VLB	12	1.1
VAH-32	R. Simon	NRL	3C446.	1.3 3 antenna VLB	2 AH163 AG157 w/AF-100	9.2
VC-33	M. Claussen K. Lo G. Heiligman M. Schnepps M. Reid	Caltech Caltech Caltech CFA CFA	Water masers in NGC 4258.	1.3 phased array w/VU14 VLB	7 11	11
VC-34	M. Cohen J. Biretta S. Unwin C. Moore A. Readhead	Caltech Caltech Caltech Caltech Caltech	Monitoring structure in 3C273, 3C279, 3C345.	1.3 3 antenna VLB	2, 3, 4 w/AF-100, AG-169, AH-163, AR-114, AR-115, AG157, Test	40
VJ-33	D. Jones	JPL	Active BL Lac A0235+164.	1.3 3 antenna VLB	3 w/AR-114, AG-169 AG157	8
VJ-34	D. Jones R. Sramek	JPL NRAO/VLA	Starburst Galaxy NGC 3690.	6 phased array MK 111 VLB	11	2.2
VL-30	J. Lestrade R. Mutel R. Preston	B. d. Longitude, FRANCE Iowa, U of JPL	Structure and motion of a stellar flare.	6 phased arr MK 111 VLB	10 with VP58	12.1
VL-32	A. Neil C. Lawrence A. Readhead R. Linfield R. Schilizzi	JPL Caltech Caltech NFERA, NETH NFERA, NETH	Maps of sources with 1.3 cm structure.	1.3 3, 1 antenna VLB	5, 7 w/tests, AB-303 AC105, AR113, AG157, AW121, AG168, pointing	20
VM-59	J. Moran L. Rodriguez	CFA UNAM, MEXICO	Search for high brightness emission from early type stars.	6 phased array MK 111 VLB	12, 16	5.9
VM-61	A. Marsher	Boston U	NRAO 140, a "Naked" core.	1.3 3 antenna VLB	5 w/AR-114, AS-200 AG-168, AG-157	10.1
VP-58	T. Pearson A. Readhead	Caltech Caltech	Second epoch observations of a complete sample.	6 1 antenna VLB	10 w/AS-210, AM-132 VW23, VL30	12
VP-62	G. Pilbratt R. Booth R. Porcas G. Nicholson	Onsala, SWEDEN Onsala, SWEDEN MPiR, FRG Hartebeesthoek, S.A.	Variations in 3C279.	6 1 antenna VLB	14 w/AS-210, AL89	11.5
VR-33	D. Roberts J. Wardle L. Brown C. Gabuzda B. Burke A. Rodgers	Brandeis U Brandeis U Brandeis U Brandeis Caltech/MIT Haystack	Linear polarization in superluminals.	6 phased array MK 111 VLB	8	29.5

VLA UTILIZATION OCTOBER 1984 (Cont.)

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
VS-40	R. Schilizzi K. Johnston R. Laing H. Murdock R. Husted	NFRA, NETH NRL RGO, UK Sydney U of, AUST Sydney U of, AUST	0215+015, a superluminal candidate BL Lac object.	6 phased array VLB	14	8.8
VT-4	A. Taylor E. Seagquist	Toronto U, CANADA Toronto U, CANADA	Rapidly varying galactic sources.	6 1 antenna MK 111 VLB	11	3.2 w/tests, baseline
VU-14	S. Unwin J. Halpern R. Walker J. Benson K. Pounds	Caltech Caltech NRAO/CV NRAO/CV Leicester U, UK	3C120.	1.3 3 antenna MK 111 VLB	6 w/AE38, VC33	8.3
VW-23	R. Walker J. Benson G. Seielstad S. Unwin	NRAO/CV NRAO/CV NRAO/CV Caltech	Monitoring structure of 3C120.	6 phased array VLB	9 w/VP58	12
VX-32	G. de Waard G. Miley R. Schilizzi	Leiden, NETH Leiden, NETH NFRA, NETH	Jets and broadline regions.	6 phased array VLB	12, 15	22.9
	NRAO staff	Sch. Maint.	Electronics, etc Software Total			56.7 32.8 89.5
		Sch. Test/Cal.	Baselines, Pointing, Startup General Tests Total			54.3 39.3 93.6

The average downtime for the month of October, 1984 was approximately 4.5 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 100.0 percent (744.0 hours) of the time: 78.1 percent (581.3 hours) to astronomical programs, 12 percent (81.5 hours) to scheduled test/calibration, and the remaining 9.9 percent (73.2 hours) went to scheduled maintenance.

The total number of programs run for the month of October, 1984 was 62.

The following independent proposals shared simultaneous observing: (137.3 hrs Total Simultaneous Observing)

AR114/VC34	6.9	AG157/VJ33	1.0	AG157/VM61	1.0	VL32 /Pointing	4.9
AG157/VC34	3.0	AG169/VJ33	3.2	AS200/VM61	2.3	VM23 /VP58	0.4
AF100/VC34	3.1	AR115/VC34	15.2	AS200/VAH30	4.7	AS210/VP58	6.5
AF100/VAH32	8.1	AM121/VL32	0.7	AG157/VAH30	1.0	AM132/VP58	5.0
AG157/VAH32	1.0	AG168/VL32	2.0	Test /VAH30	1.3	VL30 /VP58	0.1
AH163/VAH32	0.1	AG157/VL32	1.0	AE38 /VU14	7.1	VT4 /Baseline	0.5
AH163/VC34	5.9	Test /VL32	2.0	VC33 /VU14	1.2	Test /VT4	2.7
Test /VC34	2.0	AM118/VL32	3.3	AB303/VL32	3.1	AL89 /VP62	2.6
AG169/VC34	3.9	AR114/VM61	4.8	AC105/VL32	1.0	AS210/VP62	8.9
AR114/VJ33	3.8	AG168/VM61	2.0	AR113/VL32	2.0	AM135/Move/Ops	4.0
						AD151/Move/Ops	4.0

VLA UTILIZATION SEPTEMBER 1984

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs
AB-243	A. Bosma E. Athanassoula A. Rots J. van der Hulst	Leiden, NETH Besancon, FRANCE NRAO/VLA NFFRA, NETH NRAO/VLA	HI in M51.	21 cm line	15, 17	24
AB-292	P. Crane A. Barrett J. Jackson	MIT MIT CFA	HI in starburst galaxies NGC 2903 and NGC 3504.	21 cm line	20, 21	12
AB-297	L. Blitz H. Karimabadi	Maryland U of Maryland U of	Search for HI scalloping.	21 cm line	1, 2, 3	26
AC-105	R. Cameron G. Bicknell R. Ekers	NRAO/VLA Mt. Stromlo Obs. AUST. NRAO/VLA	Jet radio sources in southern clusters.	6	5	1.5
AD-94	I. de Pater K. Weiler R. Fanti C. Fanti	Calif., Berkeley NSF Bologna, ITALY Bologna, ITALY	Polarization of variable radio sources.	2, 6, and 20	24, 27, 30	5
AD-131	A. Downes D. Green	Cambridge, ENGLAND Cambridge, ENGLAND	Poorly studied large SNR.	20	8	7
AD-143	S. Drake D. Abbott	Colorado U of Colorado U of	Magnetic B, A, and F stars.	20	22, 23	6.5
AD-150	J. Linsky J. Dickey E. Salpeter	Minnesota U of Cornell NRAO/VLA	Continuum survey of the Cancer galaxy cluster.	20	10, 23	10.5
AE-36	R. Ekers T. Cornwell P. Wilkinson	NRAO/VLA NRAO/VLA NRAO/OV	Imaging DA 240 with bandwidth synthesis.	20	7	3.5
AF-85	G. Fabbiano I. Gioia E. Fomalont	CFA CFA NRAO/VLA	Complete samples of early and late type spirals. Sco X-1 flux monitoring.	6 and 20 6 and 20	7 16	18 6
AF-86	B. Geldzahler E. Fomalont	NRL NRAO/VLA	Deep survey.	6	15, 16, 17, 19, 20, 21, 25	71
AF-87	E. Fomalont K. Kellermann J. Wall	NRAO/VLA NRAO/GB RGO, ENGLAND				
AF-92	D. Weistrop E. Feigelson B. Geldzahler K. Johnston	NASA/GSFC Penn State NRL NRL	Coordinated radio, optical, UV, X-ray observations of OVV H0323+022.	2, 2, and 20	21, 22, 23, 24	9.5
AG-157	D. Gibson T. Ayres	NMIMT Colorado U of	Coordinated radio, optical and X-ray observations of Sigma Geminorum.	2, and 20	29, 30	4
AG-158	D. Gibson F. Walter	NMIMT Colorado U of	Coordinated radio, optical and UV observation of AR Lacertae.	2, and 20	1, 2, 3	53
AG-161	G. Grasdalen S. Vogel	Calif., Berkeley Calif., Berkeley	Ammonia (2,1) in L1551 IRS 5.	1.3 cm line	6	8
AH-147	L. Higgs J. Vallee	DRAO, CANADA NRC, CANADA	A remarkable arc-like structure in the galactic plane.	6 and 20	4, 9	16.1
AH-164	P. Hintzen F. Owen	NASA/GSFC NRAO/VLA	Physically large QSO radio sources.	6	29	3
AJ-112	N. Jeske C. Heiles	Calif., Berkeley Calif., Berkeley	Supershells in NGC 628.	21 cm line	26	10.5
AK-109	M. Kundu R. Shevgaonkar M. Melozzi	Maryland U of Maryland U of Maryland U of	Coordinated soft X-ray (AS&E rocket) and radio observation of a solar active region.	2	27, 28	18.5
AK-112	M. Kutner K. Mead N. Evans	Rensselaer Inst. Rensselaer Inst. Texas U of	HI regions in outer galaxy molecular clouds.	6	1	1
AL-78	K. Lang R. Willson	Tufts Tufts	Coordinated radio/IR observations of flare stars.	20	30	7

VLA UTILIZATION SEPTEMBER 1984 (Cont.)

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs
AL-83	H. Liszt B. Burton	NRAO/CV Leiden, NETH	Continuum survey near, but outside, Src A.	20	6	7
AL-88	L. Little S. Davies W. Dent N. Matthews G. White	Kent U of, ENGLAND Kent U of, ENGLAND Kent U of, ENGLAND Kent U of, ENGLAND Queen Mary College, ENGLAND	Ammonia maps of molecular cloud cores.	1.3 cm line	30	10.5
AM-121	M. Margulis C. Lada	Arizona U of Arizona U of	The A22 star forming association in M31.	20	11	8
AM-123	H. Martin B. Partridge M. Ratner	NRAO/CV Haverford CFA	Search for anisotropies in the cosmic background.	6	6, 8, 12	30
AN-27	Nguyen-Q-Rieu	Meudon, FRANCE	Ammonia and HCN in GL 2688.	1.3 cm line	22	10
AO-47	C. O'Dea F. Owen	NRAO/CV NRAO/VLA	Four narrow angle tails.	6	6, 14	4
AO-49	F. Owen C. O'Dea J. Burns L. Smarr	NRAO/VLA NRAO/CV New Mexico U of Illinois U of	Wide angle tail sources.	6	12, 13	3
AO-54	C. O'Dea F. Owen	NRAO/CV NRAO/VLA	A flat spectrum knot in NGC 1265.	1.3	15	8
AP-73	A. Pedlar R. Davies R. Perley P. Crane	Manchester, ENGLAND Manchester, ENGLAND NRAO/VLA NRAO/VLA	3C84 = NGC 1275.	20	24	6
AP-91	A. Patnaik J. van Gorkom	TIFR, INDIA NRAO/VLA	H I absorption in NGC 4782/ NGC 4783/3C278.	20 cm line	6	4
AR-110	L. Rodriguez M. Roth M. Tapia P. Persi M. Ferrari-Toniolo	UNAM, MEXICO UNAM, MEXICO UNAM, MEXICO IAS, ITALY IAS, ITALY	Monitoring flux of Cyg OB2 #5 and other OB stars with possibly variable radio fluxes.	2, 6 and 20	5, 14, 20, 21, 23, 27, 28, 29	34
AS-79	S. Spangler W. Cotton S. Allendorf	Iowa U of NRAO/CV Iowa U of	Monitoring low frequency variables.	1.3, 6 and 6	4	4
AS-188	M. Simon J. Fischer	SUNY-Stony Brook NRL	IRAS strong IR galaxies.	2	14	7
AS-206	R. Snell J. Bally P. Schwartz	Massachusetts U of Bell Labs NRL	Bipolar wind of L1551 IRS-5.	1.3, 6 and 6	11, 14	16
AV-91	W. van Breugel P. Barthel W. Jaegers	Calif, Berkeley Leiden, NETH Leiden, NETH	The giant quasar 4C34.47.	6 and 20	28	3
AV-110	J. Vallee J. Macleod N. Broten	NRC, CANADA NRC, CANADA NRC, CANADA	Faraday rotations in Abell 2319.	6 and 20	10, 13	26
AV-114	J. van Gorkom R. Laing	NRAO/VLA RCO, UK	H I in the peculiar elliptical NGC 5363.	20 cm line	7	8
AV-118	F. Viallefond G. Conte J. Lequeux	Meudon, FRANCE Marseille, FRANCE Marseille, FRANCE	H I in irregular dwarf galaxies.	20 cm line	24, 28 30	30.5
AW-118	J. Wink	MPIR, FRG	Helium Stromgren spheres.	2 cm line	23, 24, 29	19

VLA UTILIZATION SEPTEMBER 1984 (Cont.)

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs
NRAO staff		Sch. Maint.	Electronics, etc			50.0
			Software			29.0
			Total			79.0
		Sch. Test/cal.	Baselines, Pointing, Startup			36.0
			General Tests			45.9
			Total			81.9

The average downtime for the month of September, 1984 was approximately 4.5 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 100.0 percent (720.0 hours) of the time: 77.6 percent (559.1 hours) to astronomical programs, 11.4 percent (81.9 hours) to scheduled test/calibration, and the remaining 11.0 percent (79.0 hours) went to scheduled maintenance.

The total number of programs run for the month of September, 1984 was 41.

The following independent proposals shared simultaneous observing:

None

841004PDH/cm





VLA UTILIZATION AUGUST 1984

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs
AA-30	Aller, H.D. Reynolds, S.P.	Michigan U of NRAO/CV	High-resolution mapping and polarimetry of 3C58.	6	1	3.5
AA-32	Alexander, P. Scott, P.F. Pooley, G.G.	MRAO, UK MRAO, UK MRAO, UK	A search for evidence for possible re-acceleration in radio lobes.	2	4, 10, 12	6
AB-129	Burke, B.F. Hewitt, J.N. Roberts, D.H.	MIT MIT Brandeis U	Monitoring time variations in 0957+561.	6	2	3.5
AB-271	Becker, R.H. Helfand, D.J. Pye, J. Smith, A.	VPI & SU Columbia U U Leicester, UK U Leicester, UK	Galactic SNR.	6	10	9
AB-274	Baum, S. Elston, R. Januzzi, B. Nelson, E. Greidanus, H.	Maryland U of Arizona U of Harvard U New Mexico U of Leiden U, NETH	The morphology of W50.	20	12	10
AB-276	Bennett, C.L. Lawrence, C.R. Hewitt, J.N. Burke, B.F. Turner, E.	MIT Caltech MIT MIT Princeton U	Variability monitoring of the new gravitational lens 2016+112.	2 and 6	30	3
AB-279	Byrd, G.G. Sulentio, J.W. Valtonen, M.J. Haarala, S.	Alabama U of Alabama U of Turku U, FINLAND Turku U, FINLAND	Tail structure of NGC 4869.	6	17, 18	8
AB-287	Baum, S. Elston, R. Hjellming, R. Januzzi, B. Nelson, E. Greidanus, H.	Maryland U of Arizona U of NRAO/VLA Harvard U New Mexico U of Leiden U, NETH	Spectral index and depolarization of selected filaments in W50.	6	11	8
AB-294	Biegling, J. Grasdalen, G. Briggs, F.H.	Calif, Berkeley Calif, Berkeley/WYO U Pittsburgh U of	Formaldehyde absorption toward G24.5-0.2 (3C385).	6 line	27	9
AB-298	Briggs, F.H.	Pittsburgh U of	HI observation of interacting dwarf galaxies: UGC1171/1176.	21 line	24	12
AB-299	Briggs, F.H.	Pittsburgh U of	Extended HI distribution around NGC628.	21 line	26	12
AC-94	Churchwell, E. Fell, M. Massi, M.	Wisconsin U of Arcetri Obs, ITALY Arcetri Obs, ITALY	Ammonia line emission from molecular clumps embedded in the M17 HII region.	1.3 line	1	8
AD-136	Dulk, G.A. Bastian, T.S. Rottman, G. Orrali, F.O.	Colorado U of Colorado U of Colorado U of Hawaii U of	Solar transition region and corona.	6 and 20	13, 16	24
AD-139	Dickel, H.R. Goss, W.M. Fell, M. Rots, A.H.	Illinois U of Groningen U, NETH Arcetri Obs, ITALY NRAO/VLA	Formaldehyde absorption at 2 cm towards W3 and M17.	2 line	9	13
AD-142	Dickel, J. Long, K. Matsui, Y. Greisen, E.	Illinois U of Johns Hopkins U Johns Hopkins U NRAO/CV	Second epoch observations of Kepler's SNR.	6 and 20	9	4
AD-145	Duric, N. Sequist, E.R. Crane, P.C. Davis, L.E.	Toronto U, CANADA Toronto U, CANADA NRAO/VLA KPNO	Scaled array observations of the spiral galaxy NGC4736.	6 and 20	25	12

VLA UTILIZATION AUGUST 1984 (Cont.)

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs
AE-32	Ekers, R.D. Goss, W.M. van Gorkom, J.H. Schwarz, U.J.	NRAO/VLA Groningen U, NETH NRAO/VLA Groningen U, NETH	Sgr A.	6 and 20	17, 18	14
AE-34	Escalante, V. Moran, J.M. Canto, J. Rodriguez, L.F.	CFA CFA Mexico U, MEXICO Mexico U, MEXICO	Radio recombination lines from the ionized winds in MWC349 and M17IRc2.	2 line	19	15
AF-87	Fomalont, E.B. Kellermann, K.I. Wall, J.V. Weistrop, D.	NRAO/VLA NRAO/GB RCG, UK NASA/GSFC	Deep survey at 5 GHz.	6	22	10
AF-88	Forster, J.R. Whiteoak, J.B. Gardner, F.F.	CSIRO, AUST CSIRO, AUST CSIRO, AUST	Molecular structure in L1551.	6 line	11	12
AG-116	Gibson, D.M. Pridhorsky, W.C.	Colorado U/NMIMT LANL	A search for 300 day periodicity in Cyg X-1.	2, 6 and 20	15	1
AG-150	Goldstein, S.J. Greisen, E.W. Pisano, J.A.	Virginia U of NRAO/CV Virginia U of	Faraday rotation in a low-latitude field	20	25	12
AG-158	Gibson, D.M. Walter, F.M.	NMIMT Colorado U	Coordinated VLA, KPNO, IUE observations of AR Lacertae.	2, 6 and 20	31	7
AH-150	Ho, P.T.P. Haschick, A.D.	CFA Haystack Obs	NH3 line studies of OB cluster G10.6-0.4	1.3 line	2	8
AH-158	Ho, P.T.P. Rodriguez, L.F. Canto, J. Torrelles, J.M.	CFA Mexico U, MEXICO Mexico U, MEXICO Mexico U, MEXICO	Ammonia study of the small dense condensations associated with the outflow in Cepheus A.	1.3 line	3, 8, 9	10
AH-160	Hughes, V.A. McLean, B.J.	Queens U, CANADA Queens U, CANADA	Star formation in MON R2.	20	20	5
AH-162	Ho, P.T.P. Lo, K.Y.	CFA Caltech	Linear continuum structures in the Galactic Plane.	20	8	6
AH-163	Hermesen, W. Wilson, T.L. Walmsley, C.M. Henkel, C. Johnston, K.J.	MPIR, FRG MPIR, FRG MPIR, FRG MPIR, FRG NRL	The hot ammonia source in Orion.	1.3 line	5	8.5
AH-164	Hintzen, P. Owen, F.	NASA/GSFC NRAO/VLA	Physically large QSO radio sources.	6	3	4
AH-165	Haschick, A.D. Baan, W.A.	Haystack Obs Arecibo Obs, PR	Broad water vapor lines in distant galaxies.	1.3 line	23	19
AH-166	Ho, P.T.P. Turner, J.L. Martin, R.N.	CFA CFA IRAM, FRANCE	HI synthesis mapping of IC342.	21 line	4	8
AH-179	Hjelming, R. Hennesy, G.	NRAO/VLA NRAO/VLA	Nova Volpiculi	2 and 6	17, 21, & 29	3.5
AK-107	Krause, M. Beck, R. Hummel, E.	MPIR, FRG MPIR, FRG MPIR, FRG	Linearly polarized radio emission from M81.	20	27	6
AK-111	Kellermann, K.I. Sramek, R. Shaffer, D. Schmidt, M. Green, R.	NRAO/GB NRAO/VLA Interferometrics, Inc. Caltech KPNO	PG quasars.	6	14, 26	5
AK-112	Kutner, M.L. Mead, K.N. Evans, N.J.	RPI RPI Texas U of	HI regions in outer galaxy molecular clouds.	6	29	5

VLA UTILIZATION AUGUST 1984 (Cont.)

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs
AL-86	Lestrade, J.-F. Mutel, R.L. Niell, A.E. Preston, R.A.	Paris Obs, FRANCE Iowa U of JPL JPL	Search for position calibrators around 6 radio stars.	6 and 18	5	3
AL-87	Lane, A.P. Reynolds, S.P.	NRAO/CV NRAO/CV	Extended continuum emission from Herbig-Haro objects.	6 and 20	12, 16	10
AM-127	Myers, P.C. Reid, M.J. Benson, P.J.	CFA CFA Wellesley College	NH3 observations of dense gas near low-mass stars.	1.3 line	7, 9, 14	29.5
AM-129	Miley, G.K. de Grijp, R.	STScI/Leiden U, NETH Leiden U, NETH	Survey of infrared nonthermal candidates	6	16, 17	12.5
AM-137	Mutel, R.L.	Iowa, U of	Coordinated VLA Exosat observations of RS CVn stars.	2 and 6	13	3
AO-49	Owen, F.N. O'Dea, C. Burns, J.O. Smarr, L.	NRAO/VLA NRAO/CV New Mexico U of Illinois U of	Wide angle tail sources.	6	5	4.5
AP-71	Perley, R.A. Dreher, J.W.	NRAO/VLA MIT	Cygnus A.	2	28	9.1
AP-86	Palmer, P. Davidson, J. Stark, A.	Chicago U of Chicago U of Bell Labs	Search for continuum emission associated with certain far-infrared sources.	2	15, 23, 31	6
AP-87	Palmer, P. Davidson, J. Hildebrand, R.	Chicago U of Chicago U of Chicago U of	Search for ammonia structures in 2 dark nebulae with intriguing far-infrared characteristics.	1.3 line	19	12
AP-88	Palmer, P. Harris, A. Townes, C.H. Sutton, E.	Chicago U of Calif, Berkeley Calif, Berkeley Caltech	The (2,2) line of NH3 in B335.	1.3 line	20	12
AR-112	Reid, M. Moran, J.	CFA CFA	Recombination line in G34.3+0.6.	1.3 and 2 line	13	6
AS-79	Spangler, S. Cotton, W. Allendorf, S.	Iowa U of NRAO/CV Iowa U of	Monitoring low frequency variables.	1.3, 2, 6 and 20	24	4
AS-80	Sramek, R.A. van der Hulst, J.M. Weiler, K.W.	NRAO/VLA NRA, NETH NSF	Monitoring supernovae SN1980 in NGC6946 and SN1979c in M100.	6 and 20	6, 12	4
AS-173	Smith, A. Jones, L.	Leicester U, UK Leicester U, UK	SNR W44.	20	7	8
AS-192	Schwartz, P.R. Shivanandan, K. Albert, C.E.	NRL NRL USNA	FIRSSSE and IRAS Galactic sources.	6 and 20	30	10
AS-199	Sukumar, S. Velusamy, T.	TIFR, INDIA TIFR, INDIA	Thirteen nearby spiral galaxies.	6 and 20	29, 31	11
AS-200	Stimpkin, S.M. Su, H.J. van Gorkom, J.H.	Michigan State U Purple Mtn Obs, CHINA NRAO/VLA	HI observations of Seyferts of different morphological type.	21 line	16	4.5
AS-202	Schechter, P. van Gorkom, J. Steinman-Cameron, T.	Mt Wilson-Las Campanas NRAO/VLA Mt Wilson-Las Campanas	HI in SO galaxies with polar rings.	21 line	2	8
AS-204	Schwartz, P.R.	NRL	Sharp ionization rims.	2 and 6	30, 31	6
AS-205	Seauquist, E.R. Bode, M.F. Frail, D.	Toronto U, CANADA LANL/Manchester U, UK Toronto U, CANADA	Radio shell of GK Per.	6	14	10
AS-207	Skillman, E.D. Terlevich, R. van Woerden, H. Aparicio, A.	Washington U of RGO, UK Groningen U, NETH RGO, UK	HI synthesis of the dwarf-irregular galaxy Sextans A.	21 line	3, 4	10

VLA UTILIZATION AUGUST 1984 (Cont.)

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv Date	Sched Hrs
AV-96	Van der Hulst, J.M. Sramek, R.A. Weiler, K.W.	NFRA, NETH NRAO/VLA NSF	Monitoring a radio supernova in NGC4258.	6 and 20	12	2
AV-105	Van Gorkom, J.H. Hunt, G.C. Patnaik, A.R. Salter, C.J. Shaver, P.A.	NRAO/VLA NRAO/VLA TIFR, INDIA NRAO/Tucson ESO, FRG	Six non-thermal, Galactic radio sources. 2, 6 and 20	2, 6 and 20	26	4
AV-111	Vanden Bout, P. Goss, W.M.	Texas U of Groningen U, NETH	HI in Galactic molecular clouds.		21 line	6
AV-113	Van Gorkom, J.H. Goss, W.M.	NRAO/VLA Groningen U, NETH	Helium recombination lines in Sgr A West.		2 line	5,23
AV-114	Van Gorkom, J.H. Lainq, R.A.	NRAO/VLA RGO, UK	HI emission in NGC5363.		21 line	30
AV-115	Van Moorsel, G.A.	NRAO/CV	HI observations of a subfield of the NGC97 group.		21 line	18
AW-114	Madiak, E.J. Rood, R.T. Wilson, T.L. Batrla, W.	Virginia U of Virginia U of MPIR, FRG NRAO/CV	6 cm Formaldehyde towards W49.		6 line	3
AW-119	White, G.J. Phillips, J.P. Summer Students NRAO staff	London U, UK London U, UK NRAO/VLA	Survey of bipolar nebulae.		2 and 6	3,4
		Sched. Maint.	Electronics etc. Software			11
		Sched. Test/Cal.	Pointing, baselines, startup, move/operations General tests Standard field			62.3 27.3 42.2 39.6 12.0 93.8

The average downtime for the month of August, 1984 was approximately 4.2 percent.

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

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 100.0 percent (744.0 hours) of the time: 75.8 percent (564.1 hours) to astronomical programs, 12.1 percent (90.3 hours) to scheduled test/calibration, and the remaining 12.1 percent (89.6 hours) went to scheduled maintenance.

The total number of programs run for the month of August, 1984 was 65.

The following independent proposals shared simultaneous observing:

AA-30/Baselines 3.5

840925PDH/bmg

VLA UTILIZATION JULY 1984

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AA-35	Armstrong, J.T. Jackson, J.M. Barrett, A.H.	NRAO/CV MIT MIT	Search for recombination lines in the Sgr A molecular cloud.	2 line	15	8
AA-37	Ho, P.T.P. Appleton, P.N. Sparks, W. B. Wilkinson, A. Pedlar, A.	Harvard U Manchester U, ENGLAND Sussex U, ENGLAND NRAO/CV NRAL, ENGLAND	HI observations of NGC5898/5903.	21 line	13,14	12
AB-254	Becker, R.H. Helfand, D.J.	VPI & SU Columbia U	Supernova remnants far inside the Solar Circle.	20	18,21	8.1
AB-270	Becker, R.H. Helfand, D.J.	VPI & SU Columbia U	Neutral hydrogen absorption measurements to estimate distances to 28 Galactic SNR.	21 line	23,25,26	15
AB-276	Bennett, C.L. Lawrence, C.R. Hewitt, J.N. Burke, B.F.	MIT Caltech MIT MIT	Variability monitoring of the new gravitational lens 2016+112.	2 and 6	16	4
AB-280	Barrett, A.H. Jackson, J.M. Ho, P.T.P. Häschick, A.D.	MIT MIT CFA Haystack Obs	Ammonia in NGC6334.	1.3 line	16,19	16
AB-290	Bennett, C.L. Hewitt, J.N. Mahoney, J. Langston, A. Burke, B.F.	MIT MIT MIT MIT MIT	Extremely variable objects from the MG survey	6	22,24,27	13.5
AB-291	Brown, R.L.	NRAO/TUC	Carbon II recombination lines toward the Rho Ophiuchi dark cloud.	6 line	9	7
AB-295	Brown, R.L. Chin, G. Hollis, J.M.	NRAO/TUC NASA-GSFC NASA-GSFC	An Attempt to detect mass loss from Alpha Lyrae.	6	1	8
AB-296	Barrett, A.H. Jackson, J.M. Stutzki, J. Olberg, M. Winnewisser, G.	MIT MIT MIT Cologne U, FRG Cologne U, FRG	Ammonia(1,1) emission from the western lobe of S106.	1.3 line	28	8.5
AB-301	Lamb, D.O. Bookbinder, J.A.	Harvard U CFA	Search for radio emission from DQ Her stars.	6 and 20	26	9
AB-302	Lamb, D.O. Churchwell, E. Felli, M. Massi, M.	Harvard U CFA Wisconsin U of Arcetri Obs, ITALY	Search for radio emission from magnetic A-type stars in close binaries.	2, 6 and 20	22,23,24 27,29,31	19.3
AC-94	Churchwell, E. Felli, M. Massi, M.	Wisconsin U of Arcetri Obs, ITALY	Ammonia line emission from molecular clumps embedded in the M17 Hill region.	1.3 line	31	4
AC-100	Carignan, C.	Groningen U, NETHERLANDS	Basic halo parameters in pure disk galaxies.	21 line	4,5,10	25
AC-101	Gondon, J.J.	NRAO/CV	Survey of bright spiral galaxies.	20	13	10
AC-105	Cameron, R. Bicknell, G. Ekers, R.D.	VLA/Mt Stromlo, AUSTRALIA Mt Stromlo Obs, AUSTRALIA NRAO/VLA	Survey of bright spiral galaxies. VLA/Mt Stromlo Jet radio sources in southern clusters.	6	6,7,8	22.5
AC-107	Cordes, J. Spangler, S. de Pater, I. Weiler, K.W. Fanti, R. Fanti, C.	Cornell U Iowa U of UC, Berkeley NSF Bologna U, ITALY Bologna U, ITALY	Search for point sources behind the supernova remnant CTA 1.	6 and 20	15,24	9
AD-94	de Pater, I. Weiler, K.W. Fanti, R. Fanti, C.	UC, Berkeley NSF Bologna U, ITALY Bologna U, ITALY	Polarization characteristics in variable radio sources.	2, 6 and 20	2,8,9	5
AD-114	Dulk, G.A. Bastian, T.S. Stee, O.B.	Colorado U of Colorado U of CSIRO, AUSTRALIA	Flare stars in stellar clusters.	6 and 20	2,4	12 w/AG158

VLA UTILIZATION JULY 1984 (Cont.)

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AD-134	Dettman, R.J. Hummel, E. Wielbinski, R	MP1FR, FRG MP1FR, FRG MP1FR, FRG	H I and radio continuum emission of the Magellanic irregular NGC55.	21 line and 6	20-23	16.5
AD-135	Drake, S.A. Simon, T. Linsky, J.L.	Colorado U of Hawaii U of Colorado U of	Radio survey of barium stars and related systems.	6	1	5.5
AD-139	Dickel, H.R. Goss, W.M. Felli, M. Rots, A.H.	Illinois U of VLA/Groningen U, NETH Arcetri Obs, ITALY NRAO/VLA	Formaldehyde absorption towards W3 and M17.	2 line	10	8
AD-140	Downes, A.J.B. Gull, S.F. Tan, S.	NRAO, ENGLAND NRAO, ENGLAND NRAO, ENGLAND	First epoch observations of the young SNR G11.2-0.3.	6 and 20	4	4.5
AD-143	Drake, S.A. Abbott, D.C. Linsky, J.L.	Colorado U of Colorado U of Colorado U of	Are the magnetic B, A, and F stars a new class of radio stars?	2 and 6	1,2	14
AE-31	Ekers, R.D. Goss, W.M.	NRAO/VLA VLA/Groningen U, NETH	NGC5419 (1401-33)	20	7	6.5
AE-33	Encrenaz, P. Nyman, L-A Stark, A.	Obs de Meudon, FRANCE Onsala Space, Obs, SWEDEN Bell Telephone Labs	Fragmentation in interstellar clouds: ammonia absorption towards Cas A.	1.3 line	15	3.5
AE-35	Ekers, R.D. van Gorkom, J.H. Goss, W.M. Schwarz, U.J.	NRAO/VLA NRAO/VLA VLA/Groningen U, NETH Groningen U, NETHERLANDS	H76 alpha recombination line observations of the Sgr A East compact H II regions.	2 line	11	5
AE-36	Ekers, R.D. Cornwell, T. Wilkinson, P.	NRAO/VLA NRAO/VLA NRAO/CV	Imaging DA240 with bandwidth synthesis.	20	2	8
AG-116	Gibson, D.M. Priedhorsky, W.C.	Colorado U of/NMIMT LANL	Search for 300 day periodicity in Cyg X-1.	2, 6 and 20	3,17,30	3.5
AG-141	Gottesman, S.T. Ball, J.R. Hunter, J.H. Huntley, J.M.	Florida U of Florida U of Florida U of Bell Labs, Whippany	H I observations of the barred spiral NGC1300.	21 line	9,12	14.3
AG-145	Geldzahler, B Schwartz, P.	NRL	Simultaneous multifrequency observations of Blazars.	1.3, 2, 6, and 20	25,29	6
AG-156	Gary, D.E. Hurford, G.J. Zirin, H	Caltech Caltech Caltech	Coordinated radio, optical, Xray observations of solar filaments and prominences.	1.3, 2, 6 and 20	16,20	24
AG-158	Gibson, D.M. Walter, F.M.	Colorado U of/NMIMT Colorado U of	Coordinated radio and EXOSAT, observations of AR Lacertae.	2,6 and 20	3	16 w/AD114
AG-159	Gopal-Krishna Lakshmi, S. Singal, A.K. Joshi, M.N.	TIFR, INDIA IISc/TIFR, INDIA TIFR, INDIA TIFR, INDIA	Two Extended radio sources in chains of galaxies.	6 and 20	10,14	6
AH-164	Hintzen, P. Owen, F.N.	NASA-Goddard NRAO/VLA	Physically large QSO radio sources.	6	29	3
AK-106	Killeen, N. Bicknell, G Ekers, R.D.	Me Stromlo Obs/AUSTRALIA Me Stromlo Obs/AUSTRALIA NRAO/VLA	Jet source PKS0131-36 in lenticular galaxy NGC612.	6 and 20	21,25	4.6
AK-107	Krause, M. Beck, R. Hummel, E.	MP1FR, FRG MP1FR, FRG MP1FR, FRG	Linearly polarized radio emission from	20	29	6
AK-110	Kim, K. Kronberg, P.P. Dewdney, P.E. Landecker, T.L.	Toronto U, CANADA Toronto U, CANADA DRAO, CANADA DRAO, CANADA	Polarization observation of radio halos in the Abell clusters.	20	30	12

VLA UTILIZATION JULY 1984 (Cont.)

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AL-84	Lakshmi, S. Gopal-Krishna Bagri, D.S.	TIFR, INDIA TIFR, INDIA VLA/TIFR, INDIA	Selecting calibrators for the OSRT.	6 and 20	28	16
AL-85	Swarup, G. Lang, K.R.	Tufts U Tufts U	Simultaneous VLA-SMM II-Ratan observations of solar active regions.	2, 6 and 20	8, 14, 15 22, 23	37
AL-86	Willson, R.F. Lestrade, J-F. Mutel, R.L. Niell, A.E.	JPL/Paris Obs, FRANCE Iowa U JPL	Search for position calibrators around 6 radio stars.	6 and 18	27	6
AM-124	Preston, R.A. McHardy, I.M. Warwick, R.S.	JPL Leicester U, UK Leicester U, UK BSTEC, NETH	Monitoring OVVS	2, 6 and 20	12, 13	7.5 w/AM79
AP-73	Smith, A. Perley, R. Pedlar, A. Davies, R.	NRAO/VLA Manchester U, UK Manchester U, UK Manchester U, UK	Extended structure in NGC 1275.	20	7	5
AP-84	Crane, P. Pankonin, V. Whiteoak, J. Gardner, F. Goss, W.M.	NSF CSIRO, AUSTRALIA CSIRO, AUSTRALIA VLA/Groningen U, NETH Groningen U, NETHERLANDS	H76, He76 alpha observations of SgrB2.	2 line	5	8
AR-111	Roelfsema, P. Reid, M.J. Moran, J.M.	CFA CFA CFA	Do compact HII regions expand?	1.3 and 2 line	29	12
AS-79	Spangler, S. Cotton, W.	Iowa U of NRAO/CV	Monitoring low frequency variables.	1.3, 2, 6 and 20	12, 13	7.5 w/AM124
AS-202	Allendorf, S. van Gorkom, J.H. Steinman-Cameron, T.	Iowa U of Mt Wilson/Las Campanas NRAO/VLA	HI in SO galaxies with polar rings.	21 line	12, 14	9
AV-100	Schechter, P. van Breugel, W. Fomalont, E.B.	UC Berkeley UC Berkeley NRAO/VLA	Fine structure in Fornax A.	6 and 20	7, 8	10.5
AV-112	Ekers, R.D. van Breugel, W.	NRAO/VLA UC Berkeley	Extended radio galaxies.	6, 20	29, 31	12
AW-113	Wadiak, E.J. Rood, R.T. Wilson, T.L.	Virginia U of Virginia U of MPIFR, FRG	Formaldehyde emission in Rho Oph B.	2 line	8	8
AW-117	Batrla, W. Wilson, T.L. Walmisley, C.M.	NRAO/CV MPIFR, FRG MPIFR, FRG	2cm formaldehyde in Orion.	2 line	31	8
AY-5	Johnston, K.J. Henkel, C. Yusef-Zadah, F.	NRL MPIFR, FRG Columbia U of UCLA	Recombination line emission from the Galactic Center.	6 line	21, 22	14
AY-6	Morris, M. van Gorkom, J.H. Yusef-Zadah, F. Morris, M. Chance, D.	NRAO/VLA Columbia U of UCLA UCLA Columbia U of	The polarized region of the Arc.	2 and 6	20	8
	Students				13	3

VLA UTILIZATION JULY 1984 (Cont.)

NRAO staff	Sched. Maint.	Electronics etc.	
		Software	52.0
		Pointing, baselines, startup, move/operations	41.6
		General tests	68.5
			51.1
			<u>23.6</u>
			119.6

The average downtime for the month of July, 1984 was approximately 3.40 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 100.0 percent (744.0 hours) of the time: 72.7 percent (540.8 hours) to astronomical programs, 14.7 percent (109.6 hours) to scheduled test/calibration, and the remaining 12.6 percent (93.6 hours) went to scheduled maintenance.

The total number of programs run for the month of July, 1984 was 54.

The following independent proposals shared simultaneous observing:

AG-158/AD-114	6.0
AM-124/AS-79	7.5
AG-158/Baselines	5.0
AG-158/Pointing	5.0

840823PDH/ap



VLA UTILIZATION JUNE 1984

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AB-129	Burke, B.F. Hewitt, J.N. Roberts, D.H.	MIT MIT Brandeis	Monitoring lensed quasar 0957+561.	2 and 6	22	3
AB-182	Burns, J.O. Balonek, T.J. Hummel, E.	New Mexico U of Williams College MPIR, FRG	Monitoring the cores of extended radio sources and spiral galaxies.	2, 6 and 21	25	5
AB-255	Begeleman, M. Burns, J.O. Owen, F.N.	Colorado U of New Mexico U of NRAO/VLA	Candidate magnetically confined jets.	6	23	12
AB-284	Baan, W.A. Haschick, A.D. Jackson, J.	Arecibo Obs Haystack Obs MIT	Water vapour in N3690.	1.3 line	9	9
AB-288	Bookbinder, J. Schmitt, J. Golub, L.	Harvard U Harvard U CFA	Search for quiescent radio emission from M dwarfs with detected X-ray emission.	6	28	12
AC-99	Carignan, C. Freeman, K. Christiansen, W.A.	Groningen U, NETH Mt Stromlo Obs, AUST North Carolina U of	Mass distribution in the dwarf irregular DDO 155.	20 line	7, 16	24.3
AC-103	Foltz, C. Williams, R.	Illinois U of ESO, FRG	Search for radio emission from elliptical galaxies with shells.	6 and 20	10, 22, 25	26 w/AW110
AD-114	Dulk, G.A. Bastian, T.S. Slee, O.B.	Colorado U of Colorado U of CSIRO, AUST	Flare stars in stellar clusters.	6 and 20	9, 12	5
AD-122	Davies, R.D. Rots, A. Appleton, P.N. Kinman, T.D.	Jodrell Bank, UK NRAO/VLA Manchester U, UK KPN0	Neutral hydrogen in dwarf galaxies.	21 line	17, 18	24
AD-135	Drake, S.A. Simon, T. Linsky, J.L.	Colorado U of Hawaii U of Colorado U of	Survey of barium stars and related systems.	6	30	12.4
AD-136	Dulk, G.A. Bastian, T.S. Rottman, G. Orrall, F.O.	Colorado U of Colorado U of Colorado U of Hawaii U of	Solar transition region and corona.	6 and 20	19, 21	24
AF-80	Forster, J.R. Caswell, J.L. Gibson, D.M.	CSIRO, AUST DRAO/CSIRO, AUST Colorado U of/NMIMT	Positions of H2O masers (for comparison with OH).	1.3 line	18, 20	20
AG-116	Priedhorsky, W.C. Gottesman, S.T. Ball, J.R. Hunter, J.H. Huntley, J.M.	LANL Florida U of Florida U of Florida U of Bell Labs	Search for a 300 day periodicity in Cy9 X-1.	2, 6 and 20	2, 17, 26	3
AG-141			HI observation of the barred spiral NGC 1073.	21 line	24	8
AG-142	Giola, I. Maccacaro, T. Maccagni, D. Stocke, J.	CFA CFA IDFC Milan, ITALY Arizona U of	A complete sample of X-ray selected BL Lacs.	1.3, 2, 6 and 20	26, 29	12
AH-151	Ho, P.T.P. Haschick, A.D. Klein, R.I.	Harvard U Haystack Obs Calif, Berkeley	Low level continuum emission associated with OB clusters.	6 and 20	12	8
AH-153	Hummel, E. Kotanyi, C.G.	MPIR, FRG NRAO/VLA	The central radio sources in NGC4636 and NGC4710.	6	6	2
AH-156	Haschick, A.D. Baan, W.A.	Haystack Obs Arecibo Obs	HI absorption in quasar/galaxy pairs.	21 line	3	10
AH-157	Hewitt, J.N. Burke, B.F.	MIT MIT	Radio emission associated with optically discovered gravitational lens systems.	6	3	6.5
AH-159	Ho, P.T.P. Turner, J.L.	Harvard U Calif, Berkeley	Possible jets in the nucleus of M81 (NGC 3031).	2	19	2

VLA UTILIZATION JUNE 1984 (Cont.)

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AJ-87	Johnson, D.W. Gottesman, S.T.	Battelle Obs Florida U of	Neutral hydrogen observations of dwarf elliptical NGC 205.	21 line	23	13
AJ-102	Jaegers, W.J. Van der Laan, H. Sanders, R.H. Bridle, A.H. Fomalont, E.B.	Leiden U, NETH Leiden U, NETH Groningen U, NETH NRAO/CV NRAO/VLA	The 3C130 sources.	6	11	8
AJ-110	Jeske, N. Heiles, C.	Calif, Berkeley Calif, Berkeley	HI mapping of supershells in NGC7741.	21 line	8	10.5
AK-101	Klein, U.	MPIR, FRG	Radio morphology of blue compact dwarf galaxies.	6 and 20	1	3
AL-80	Lang, K.R. Willson, R.F.	Tufts U Tufts U	High energy solar jets.	2	4	8
AM-119	Molnar, L. Reid, M. Grindlay, J.	Harvard U CFA CFA	Radio period of Cygnus X-3.	1.3, 2, 6 and 20	10, 11, 13, 15	44
AN-26	Nash, A.G. Churchwell, E.	Wisconsin U of Wisconsin U of	Absorption of OH, H2CO and NH3 toward extragalactic sources.	1.3, 6, 18 line	16	4
AO-33	Ondrechen, M.P. Van der Hulst, J.M.	Minnesota U of NRA, NETH	Barred spiral galaxy NGC 1097.	6	3	6
AO-47	O'Dea, C. Owen, F.	NRAO/CV NRAO/VLA	Constraints on the properties of bent beams.	20	9	2
AP-79	Padrielli, L. Rogora, A. de Ruiter, H.	Bologna U, ITALY Bologna U, ITALY VLA/Bologna U, ITALY	A complete sample of quasars selected from the B2 Catalog.	6	8, 24	17
AP-80	Palmer, P. Rubin, R.	Chicago U of NASA Ames/UCLA	He and H line observations of K3-50A.	2 line	21	14
AP-82	Palmer, P. Matsakis, D. Townes, C.H. Hjalmarson, A. Cheung, A.C. Van Gorkom, J.	Chicago U of USNO Calif, Berkeley Onsaja Obs, SWEDEN Calif, Davis NRAO/VLA	OH absorption in DR21.	18 line	24	4
AP-83	Palmer, P. Rubin, R.	Chicago U of NASA-Ames	Formamide in the Galactic Center.	19 line	19	8.5
AR-104	Rengarajan, T. Ho, P.	CFA/Tata Inst, INDIA Harvard U	OB clusters in luminous far-IR complexes	2 and 6	9, 22	4
AR-108	Rudnick, L. Pedelty, J.A.	Minnesota U of Minnesota U of	Search for electron scattering around 3C295.	6	17	12
AR-109	Rudnick, L.	Minnesota U of	The double axis (?) in 4C39.11.	6	16	1
AS-79	Spangler, S. Cotton, W. Allendorf, S.	Iowa U of NRAO/CV Iowa U of	Monitoring low frequency variables.	1.3, 2, 6 and 20	8	3.5
AS-188	Simon, M. Fischer, J.	SUNY Stony Brook NRL	Star formation in galaxies with high IR emission.	6	9, 10	9
AS-189	Strom, R.G.	NRA, NETH	The flat spectrum component in CTB 80.	2 and 6	4	9
AS-196	Skillman, E. Anderson, S. Margon, B.	Washington U of Washington U of Washington U of	The trivariate luminosity function for faint optically selected QSOs.	6	14	25
AS-197	Skillman, E. Hodge, P.	Washington U of Washington U of	NGC 3239; The genesis of a spiral arm?	21 line	14	8
AS-198	Stinebring, D.R. Ekers, R.D. Retallack, D.S.	NRAO/CV NRAO/VLA NRAO/VLA	Search for Galactic Variables.	20	24	7

VLA UTILIZATION JUNE 1984 (Cont.)

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AV-88	van Breugel, W. Foley, T. Miley, G. Heckman, T. Ulrich, M.-H.	Calif, Berkeley Leiden U, NETH STScI/Leiden U Maryland U of ESO, FRG	Equatorial survey of radio galaxies.	20	4	22
AV-102	van Breugel, W. Heckman, T. Miley, G. Ulrich, M.	Calif, Berkeley Maryland U of Leiden U, NETH ESO, FRG	Minkowski's Object, working surface of a jet?	6 and 20	2	8
AV-105	van Gorkom, J. Hunt, G. Patnaik, A. Salter, C. Shaver, P.	NRAO/VLA NRAO/VLA TIFR, INDIA NRAO/Tucson ESO, FRG	Six non-thermal galactic radio sources.	2, 6 and 20	5	6.5
AW-78	Wardle, J.F.C. Laing, R.A.	Brandeis U NRAO/CV	Monitoring the central components of extended radio sources.	2 and 6	25	8
AW-110	Wilkinson, A.W. Kotanyi, C. Broome, I.	NRAO/CV NRAO/VLA Caltech	Elliptical galaxies with shells.	20	10, 22, 25	26 w/AC103
AW-111	Webster, W.J. Hobbs, R.W. Lowman, P.D.	NASA/GSFC CTA Inc. NASA/GSFC	Asteroid 704 Interamnia.	2	27, 28	18.5
AW-112	Wynn-Williams, C.G. Impey, C.D. Becklin, E.E.	Hawaii U of Caltech Hawaii U of MIT	Survey of ellipticals with non-stellar infrared emission.	6	2	12.5
VB-56	Barthel, N.	MIT	SNT1979c in M100.	18 phased array MK III VLB	1, 5	6.8
VG-41	Gorenstein, M.V. Shapiro, I.I. Bennett, C.L. Bonometti, R.J. Burke, B.F. Hewitt, J.N. Lawrence, C.R. Marcaide, J.M.	CFA CFA MIT MIT MIT MIT Caltech MPIR, FRG	Lensed quasar 2016+112A, B, C.	18 phased array MK III VLB	1	10.5
		Summer students NRAO staff	Sched. Maint. Electronics etc. Software	18, 20, 21	3	
			Sched. Test/Cal. Pointing, baselines, startup, move/operations Calibration General tests	57.0 40.1 97.1 49.0 12.0 17.4 78.4		



VLA UTILIZATION - MAY 1984

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv date	Sched hrs
AA-32	P. Alexander P. Scott G. Pooley	MRAO, UK MRAO, UK MRAO, UK	A search for evidence for possible re-acceleration in radio lobes.	6	10	2
AB-253	V. Borjakooff R. Bucherli F. Fauci	NAIC, Cornell U IFCI, Palermo, ITALY Palermo U, ITALY	Structure search around the millisecond binary pulsar P1953+29.	18 and 20	11	6
AB-264	M. Bode E. Seaquist W. Priedhorsky A. Evans	LANL Toronto U of, CANADA LANL Keele U of, UK	Radio survey of classical novae.	6	12, 17	12.5
AB-275	C. Beichman C. Wynn-Williams E. Becklin G. Neugebauer J. Houck C. Persson	JPL Hawaii, U of Hawaii, U of Caltech Cornell U JPL	Observations of IRAS galaxies.	2, 6 and 20	1, 6, 7	32
AB-276	C. Bennett C. Lawrence J. Hewitt B. Burke E. Turner	MIT Caltech MIT MIT Princeton	Variability monitoring of the new gravitational lens 2016+112.	2 and 6	8	3
AB-282	C. Benn J. Wall G. GruEFF M. Vigotti	Leiden U, NETH RGO, UK Bologna U, ITALY Bologna U, ITALY	Observations of further 5C12 sources.	6	7, 8, 9, 13 17, 20, 21	54.2
AB-283	B. Burke G. Langston	MIT MIT	A study of extended radio sources from the MG survey.	6 and 20	11, 14	10.5
AB-285	A. Bosma E. Athanassoula J. Boulesteix M. Duvai Y. Georgelin M. Marcelin G. Monnet	Marseille Obs, FRANCE Marseille Obs, FRANCE Marseille Obs, FRANCE Marseille Obs, FRANCE Marseille Obs, FRANCE Marseille Obs, FRANCE Marseille Obs, FRANCE	A 21-cm line study of the barred spiral galaxy NGC 3351.	21 line	10	10.5
AB-286	A. Brown R. Mundt S. Drake F. Waller	Colorado U of MPIA, FRG Colorado U of Colorado U of	Jets in star-formation regions.	6	3, 5	9
AC-104	T. Cornwell W. van Breugel R. Ekers L. Smarr	NRAO/VLA Calif, Berkeley NRAO/VLA Illinois U of	Radio emission from the dB system NGC 4782/NGC 4783.	6	2	5
AD-129	J. Dreher K. Johnston W. Welch	MIT NRL Calif, Berkeley	W49.	6 and 20	3	9
AD-133	H. Dickel W. Goss A. Rots	Illinois U of VLA/Groningen U, NETH NRAO/VLA	2cm formaldehyde toward W49A.	2 line	12	11
AD-137	A. Dupree B. Burke J. Hewitt	CFA MIT MIT	Vela X-1.	6 and 18	3, 5	8.5
AD-138	V. Dhawan B. Burke J. Hewitt	MIT MIT MIT	Wide-separation double sources.	6	6, 8	11.5
AE-32	R. Ekers W. Goss J. van Gorkom U. Schwarz	NRAO/VLA VLA/Groningen U, NETH NRAO/VLA Groningen U, NETH	Sgr A.	20	30	7 w/VR29 & baseline

VLA UTILIZATION MAY 1984 (Cont.)

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv date	Sched hrs
AF-78	C. Fantl R. Fantl P. Parma H. de Ruiter	Bologna U, ITALY Bologna U, ITALY Bologna U, ITALY Bologna U, ITALY	Extended low luminosity B2 radio galaxies.	20	14	16
AG-116	D. Gibson W. Priedhorsky	Colarado U of LANL	A search for 300 day periodicity in Cyg X-1.	2, 6 and 20	1, 6, 20 29	4.5
AG-146	D. Green S. Gull	MRAO, UK MRAO, UK	A search for young Galactic supernova remnants.	6	20, 26	8
AG-148	D. Garry G. Hurford H. Zirin	Caltech Caltech Caltech	Solar observations during the partial eclipse of 30 May, 1984.	1.3, 2, 6 and 20	30	13 w/VR29
AG-151	A. Gower J. Hutchings	Victoria U, CANADA DAO, CANADA	Low redshift quasars.	20	1	10.5
AG-154	R. Gaume R. Mutei	Iowa U of Iowa U of	An investigation of OH emission toward star formation regions.	2	17	6
AG-155	R. Gaume R. Mutei	Iowa U of Iowa U of	An investigation of the 1720 MHz hydroxyl emission toward 4 supernova remnants.	18 line and 2	18, 27	5 w/VB46
AH-134	L. Higgs T. Landecker	DRAO, CANADA DRAO, CANADA	Spectral-index mapping of gamma-Cygni nebula.	6	22	6
AH-158	P. Ho L. Rodriguez J. Canto J. Torrelles	CFA UNAM, MEXICO UNAM, MEXICO UNAM, MEXICO	Ammonia study of the small dense condensations associated with the outflow in Cepheus A.	1.3 line and 1.3, 2.6	27	12.5 w/VP58 & VB46
AJ-101	W. Jaffe T. Owen J. Caldwell	STSci SUNY SUNY	Thermal radiation from Titan.	2	31	0.5
AJ-104	K. Johnston D. Fjordowski C. Wade G. Gatewood C. de Veigt M. Shao	NRL USNO NRAO/VLA Pittsburgh U of Hamburger Stern., FRG NRL	Precise optical/radio positions of the stars Algol, HR1099 and UX Ari.	6	20	5
AJ-105	N. Jeske M. Davis M. Stevens	Calif, Berkeley Calif, Berkeley Calif, Berkeley	Mapping ring galaxies.	2	24, 30	21
AJ-106	N. Jeske M. Davis M. Stevens	Calif, Berkeley Calif, Berkeley Calif, Berkeley	A survey of ring galaxies.	20	13	8
AJ-108	W. Jaffe G. Gavazzi E. Valentini	STSI Milan, ITALY ESO, FRG	Coma supercluster survey.	20	25, 28, 29	18.7 w/VP58 & VR29
AK-102	M. Kundu E. Schmahl R. Shevgaonkar	Maryland U of Maryland U of Maryland U of	Solar filaments.	2, 6 and 20	18, 19	25.5
AL-83	H. Liszt W. Burton	NRAO/CV Leiden U, NETH	Survey of the Galactic Center, outside Sgr A.	20	18	7
AO-48	F. Owen J. Burns R. White	NRAO/VLA New Mexico U of Comp Sci Corp	Abell clusters of galaxies.	20	4	24
AP-79	L. Padrielli A. Rogora H. de Ruiter	Bologna U, ITALY Bologna U, ITALY Bologna U, ITALY	A complete sample of quasars selected from the B2 catalogue.	6	27	13
AR-97	L. Rodriguez J. Garcia-Barreto N. Calvet G. Garay	UNAM, MEXICO UNAM, MEXICO CIDA, VENEZUELA Chile U, CHILE	The optically obscured cores of the young planetary nebulae NGC6302 and NGC 7027.	2 line	22	6

VLA UTILIZATION MAY 1984 (Cont.)

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv date	Sched hrs
AR-104	T. Rengarajan	CFA/TIFR, INDIA	OB clusters in luminous far-IR complexes	2 and 6	11, 14	4
AR-105	P. Ho	CFA	HI absorption in the direction of Orion A.	21 line	12	10
AR-107	D. Retallack	NRAO/VLA	Recombination lines in planetary VLA/Groningen U, NETH	2 line	7	8
AS-79	P. Roelfsema	Groningen U, NETH	NGC 7027.	1.3, 2, 6 and 20	29	4
AS-80	M. Goss	VLA/Groningen U, NETH	Monitoring low frequency variables.	6 and 20	11, 12	4
AS-195	C. Bignell	NRAO/VLA	Monitoring supernovae SN1980k in NGC 6946 and SN1979c in M100.	6	21	3
AS-198	S. Spangler	Iowa U of	Hubble V.	20	20	7
AV-95	W. Cotton	NRAO/CV	Search for Galactic variables.	6 line	4	8
AV-99	R. Sramek	NRAO/VLA	Formaldehyde observations of the S88 molecular cloud.	6 and 20	22	6
AV-104	J. Vallee	HIA, CANADA	Sharpless 121.	6	11	6
AV-106	L. Higgs	DRAO, CANADA	The 'jet' in the Crab Nebula.	20 line	1	0.4
AV-108	T. Velusamy	TIFR, INDIA	HI in galaxy pairs: NGC 3718.	6, 18 and 20	31	6
AV-109	G. van Moorsel	NRAO/CV	Tycho's SNR.	6 and 20	30	6
AM-101	W. van Breugel	Illinois U of	Small diameter sources within CT880.	2 and 6	2	4
AM-104	J. Dickel	NRA, NETH	Polarisation and spectral study of the peculiar radio structure in QSO 1828+48 (3C380).	20	22, 25, 26	30.5
AM-105	R. Sramek	Penn State U	Quasar survey fields.	6 and 20	9	3
AM-107	R. Warwick	Leicester U, UK	Early type galaxies NGC4636 and NGC4649.	20 line	10	8
AM-109	V. Stanger	Leicester U, UK	Neutral circumnebular gas in planetary.	2 and 6	16, 20	4
VB-46	J. Wootten	NRAO/CV	X-ray clusters of galaxies.	6	27	11.8
VB-54	F. Bruhweiler	Catholic U	Low-frequency variable quasar NRAO140.	1 antenna	24	6.5
VB-56	R. Clegg	U College London, UK	Sources near Sgr A.	6	24	6.5
VD-4	R. Willson	Tufts U	SN1979c in M100.	18	31	7.5
	J. Broderick	VPI&SU	phased array	6	28	13
	A. Marscher	Boston U	MK 111 VLB	6	28	13
	D. C. Backer	Calif, Berkeley	phased array	6	28	13
	R. A. Sramek	NRAO/VLA	phased array	6	28	13
	N. Bartel	MIT	phased array	6	28	13
	P. Diamond	Onsala, SWEDEN	3C133, the "Flip-flop" galaxy.	6	28	13
	D. Robson	NRAL, UK	VLB	6	28	13

VLA UTILIZATION MAY 1984 (Cont.)

Program	Observer	Affiliation	Program Title	Bands (cm)	Obsv date	Sched hrs
VG-41	M. Gorenstein	CFA	Lensed quasar 2016+112A, B, C.	18	31	1.5
	I. Shapiro	CFA		phased array		
	C. Bennett	MIT		MK 111 VLB		
	R. Bonometti	MIT				
	B. Burke	MIT				
	J. Hewitt	MIT				
	C. Lawrence	Caltech				
	J. Marcaide	MPiR, FRG				
VP-54	I. Pauliny-Toth	MPiR, FRG	2134+004.	6	24	10.5
	R. Porcas	MPiR, FRG		1 antenna		w/AJ105
	K. Kellermann	NRAO/GB		VLB		tests
	R. Nicolson	NiTR, S.AFRICA				
VP-55	R. Porcas	MPiR, FRG	Very weak quasar cores.	6	23	13
	F. Owen	NRAO/VLA		phased array		
				MK 111 VLB		
VP-58	T. Pearson	Caltech	Complete sample of QSO.	6	22, 24-27	55
	A. Readhead	Caltech		1 antenna		w/AW104
				VLB		AJ105/VB54
						AJ108, VM23
						AP79, VDL, test
VR-29	R. Rusk	Toronto U, CANADA	Highly polarized, compact radio sources.	18	29	30
	E. Seaquist	Toronto U, CANADA		1 antenna		w/AE32, startup
	J. Yen	Toronto U, CANADA		VLB		AJ105, AJ108
						AG148, AV109
VM-23	R. Walker	NRAO/CV	Monitoring of 3C120.	6	26	12.5
	J. Benson	NRAO/CV		phased array		w/VP58
	G. Seielstad	NRAO/GB		VLB		
	S. Unwin	Caltech				
	NRAO staff					
		SCH. MAINT.:	Electronics, etc			58.6
		(87.6)	Software			29.0
		SCH. TEST/CAL.	Pointing, baselines, startup			57.1
		(91.6)	General tests			34.5

The average downtime for the month of May, 1984 was approximately 4.99 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 100.0 percent (744.0 hours) of the time: 77.7 percent (578.2 hours) to astronomical programs, 10.5 percent (78.2 hours) to scheduled test/calibration, and the remaining 11.8 percent (87.6 hours) went to scheduled maintenance.

The total number of programs run for the month of May, 1984 was 62.

The following independent proposals shared simultaneous observing:

AS-80/Baseline	2.0	VD-4/VP-58	0.2	AJ-105/VR-29	3.0
AH-134/AV-99	6.0	Test/VP-54	3.3	AE-32/VR-29	1.9
AW-104/VP-58	24.5	AJ-105/VP-54	7.2	AE-32/Baseline	1.7
AJ-105/VP-58	9.5	AH-158/VB-46	8.6	AV-108/Baseline	3.3
VB-54/VP-58	0.5	AG-155/VB-46	1.0		
AJ-108/VP-58	7.0	AP-79/VB-46	2.2		
VM-23/VP-58	0.4	Startup/VR-29	1.6		
AH-158/VP-58	2.1	AJ-108/VR-29	4.5		
AP-79/VP-58	9.3	AV-109/VR-29	6.0		
Test/V	1.5	AG-148/VR-29	13.0		



VLA UTILIZATION APRIL 1984

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AA-29	D. C. Abbott J. H. Bieging E. B. Churchwell	Colorado U of California U of Wisconsin U of Michigan U of NRAO/CV	A distance-limited survey of a complete sample of OB stars.	6	4	14 w/vm-53
AA-30	H. D. Aller S. P. Reynolds	Cambridge, UK Cambridge, UK	Mapping and polarimetry of 3C58.	6 and 20	30	10
AA-32	P. F. Scott G. G. Pooley	Cambridge, UK Cambridge, UK	A search for evidence for possible re-acceleration in radio lobes.	6	19,24	2
AA-33	R. J. Allen P. D. Atherton R. P. J. Tilanus	Groningen U, NETH Groningen U, NETH Groningen U, NETH	Star formation in the spiral arms of M83	21 line	2	6 w/vb-52
AA-34	D. J. Axon S. W. Unger A. Pedlar	Manchester, UK Manchester, UK Manchester, UK	The newly discovered Seyfert galaxy NGC 5252.	6 and 20	9	1
AB-129	B. F. Burke J. N. Hewitt D. H. Roberts	MIT MIT Brandeis U	Monitoring time variations in 0957+561.	6	21	3
AB-223	A. Bosma E. Athanassoula	Marseille, FRANCE Marseille, FRANCE	The Sc galaxy NGC 2090.	21 line	1	5.5 w/vb-52
AB-257	J. O. Burns D. Clarke E. D. Feigelson E. J. Schreier	New Mexico U of New Mexico U of Penn. State U STSI	The jet in Centaurus A.	2	24	5
AB-271	R. H. Becker D. J. Helfand J. Pye A. Smith	VPI & SU Columbia U Leicester U, UK Leicester U, UK	Multi-frequency observations of Galactic SNR.	20	26	9.5
AB-277	I. W. A. Browne D. Shone D. Walsh L. Rudnick	Caitech Manchester U, UK Manchester U, UK Minnesota, U of	The extended structure associated with the jet in 0800+608.	20	30	2
AB-281	J. P. Basart M. D. Andrews R. C. Lamb	Iowa State U Iowa State U Iowa State U	Loop structure in W28.	6	14	6
AB-286	A. Brown R. Mundt S. A. Drake F. M. Walter	Colorado U of MPI Heidelberg, FRG Colorado U of Colorado U of Maryland U of Arizona U of NRAO/VLA Harvard U New Mexico U of Leiden U, NETH	Jets in star formation regions.	6	30	2
AB-287	S. Baum R. Eiston R. Hjellming B. Jannuzi E. Nelson H. Greidanus	Arizona U of Arizona U of NRAO/VLA Harvard U New Mexico U of Leiden U, NETH	Spectral index and depolarization information on selected filaments in W50.	20	22	8
AC-102	S. Catalano M. Rodono D. M. Gibson	Catania U, ITALY Catania U, ITALY Colorado U of / NMLMT	The Coroneae of active late-type giants.	2	1,2	15 w/vb-52, vm-23
AC-105	R. Cameron G. Bicknell R. D. Ekers	VLA/Mt Stromlo, AUSTR Mt Stromlo, AUSTR NRAO/VLA	Jet radio sources in southern clusters.	6, 18, and 21	1,2	14 w/vb-52, vm-23
AD-94	I. de Pater K. W. Weiler R. Fanti C. Fanti R. Eiston	Calif, Berkeley NSF Bologna U, ITALY Bologna U, ITALY Arizona U of	Monitoring polarization characteristics in variable radio sources.	2, 6 and 20	4,7	5.5 w/vm-53
AE-30	R. Eiston	Arizona U of	3 interacting galaxies with extended radio emission.	6	27	10

VLA UTILIZATION APRIL 1984 (Cont.)

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AF-74	L. Ferretti G. Giovannini L. Gregorini	Bologna U, ITALY Bologna U, ITALY Bologna U, ITALY	The new wide angle tail galaxy in A115.	6	12	1
AF-79	L. Ferretti G. Giovannini L. Gregorini L. Padrielli	Bologna U, ITALY Bologna U, ITALY Bologna U, ITALY Bologna U, ITALY	3C28.	6	24	1
AF-82	M. Fich	Washington U of	Galactic Plane continuum sources.	2 and 6	8	13.5
AF-83	M. Fich D. van Buren	Washington U of Colorado U of	HI shells around HI1 regions.	21 line	9,10	11
AG-145	B. Geldzahler P. Schwartz	NRL	Simultaneous multifrequency observations of Blazars.	1.3, 2, 6 and 20	13,18	8
AH-152	E. Hummel W. C. Keel	MPfFR, FRG KPNO	The active central region of the spiral galaxy NGC 2655.	6	13	1
AH-161	G. Helou E. E. Salpeter G. L. Hoffman	Caltech Cornell U Lafayette College	HI mapping of a dwarf irregular galaxy.	21 line	29	11
AJ-111	K. Johnston S. Odenwald H. Kuhr	NRL NRL Arizona U of	Extended emission in 58 extragalactic radio sources.	6	11	13
AK-101	U. Klein	MPfFR, FRG	Radio morphology of blue compact dwarf galaxies.	6 and 20	24	3
AK-104	M. L. Kutner K. N. Mead N. J. Evans	RPI RPI Texas, U of	HI1 regions in outer galaxy molecular clouds.	20	12	2.5
AM-117	H. L. Marshall	STSI	A complete sample of optically selected quasars.	6 and 20	14,20	10.1
AM-118	K. J. Mitchell L. Takalo	VPI & SU Penn State U	Variability of faint radio quasars.	20	15	6
AM-120	K. J. Mitchell J. J. Condon	VPI & SU NRAO/CV	A second deep survey at 1465 MHz.	20	12,16	24
AN-25	L. Noreau P. P. Kronberg F. Bertola G. Galletta D. Bettoni	Toronto U, CANADA Toronto U, CANADA Padua U, ITALY Padua U, ITALY Padua U, ITALY	HI observations of NGC 3432.	20 line	8	9
AO-44	S. Odenwald K. Johnston H. Smith P. Schwartz	NRL NRL NRL NRL	Survey of far infrared sources near the Galactic Center.	6 and 20	10	7
AO-47	C. O'Dea F. Owen	NRAO/CV NRAO/VLA	Constraints on the properties of bent beams.	20	13	4
AP-71	R. A. Perley J. W. Dreher	NRAO/VLA MIT	Cygnus A.	2 and 6	15	8.5
AP-73	A. Pedlar R. D. Davies R. A. Perley P. Crane	Manchester U, UK Manchester U, UK NRAO/VLA NRAO/VLA	Extended structure in NGC 1275.	20.	16	9
AP-76	S. Pottasch C. Bignelli	Groningen U, NETH NRAO/VLA	Identification of IRAS sources in 2 selected regions close to the Galactic Plane.	6	23,24,27	19.6
AP-77	A. R. Patnaik C. R. Subrahmanya D. G. Banhatti	TIFR, INDIA TIFR, INDIA TIFR, INDIA	Further observations of 7 extragalactic radio sources.	6	22	14
AP-81	P. Palmer F. F. Gardner J. B. Whiteoak	Chicago U of CSIRO, AUSTR CSIRO, AUSTR	Excited state OH.	6 line	29	12

VLA UTILIZATION APRIL 1984 (Cont.)

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AR-106	P. R. Roelfsema W. M. Goss D. Retallack	Groningen U, NETH VLA/Groningen U, NETH NRAO/VLA	Radio recombination line observations of W3.	2 line	27	10
AS-79	S. Spangler W. Cotton A. Allendorf	Iowa U of NRAO/CV Iowa U of	Monitoring low frequency variables.	1.3, 2, 6 and 20	21, 25	7.5
AS-80	R. A. Sramek J. M. van der Hulst K. W. Weiler	NRAO/VLA NFRA, NETH NSF	Monitoring supernovae SN1980k in NGC 6946 and SN1979c in M100.	6 and 20	21	2
AS-191	S. R. Spangler S. T. Myers J. J. Pooge	Iowa U of Iowa U of Iowa U of	Radio galaxies 3C166 and 3C411.	2	28	24
AS-192	P. R. Schwartz K. Shivanandan C. E. Alibert	NRL NRL USNA	FIRSSSE and IRAS Galactic sources.	6 and 20	13	11
AS-193	W. Sanders R. Sramek E. Fomalont	New Mexico State NRAO/VLA NRAO/VLA	Search for radio emission from Hyades cluster members.	6	9, 12, 15	21
AS-198	D. E. Stinebring R. D. Ekers D. S. Retallack	NRAO/CV NRAO/VLA NRAO/VLA	Search for Galactic variables.	20	16	7
AS-200	S. M. Simkin H. J. Su J. H. van Gorkom	Michigan State U Purple Mt Obs, CHINA NRAO/VLA	HI observations of Seyferts of different morphological type: MK 348.	21 line	14	8
AT-47	A. R. Taylor E. R. Seagquist T. X. Thuan	Toronto U, CANADA Toronto U, CANADA Virginia U of	Neutral hydrogen mapping of the peculiar edge-on galaxy NGC 3079.	21 line	19	12
AT-49	H. H. Loose A. R. Taylor E. R. Seagquist	Gottigen U, FRG Toronto U, CANADA Toronto U, CANADA	HI distribution and kinematics of blue compact dwarf galaxies: MK 71.	21 line	23	12
AT-51	A. R. Taylor E. R. Seagquist A. R. Taylor	Toronto U, CANADA Toronto U, CANADA Toronto U, CANADA	A deep radio survey in the Galactic Plane.	21 line	21	9
AT-52	A. R. Taylor E. R. Seagquist S. Unger	Toronto U, CANADA Toronto U, CANADA Manchester U, UK	HI absorption distances for Galactic Plane radio variables.	21 line	2, 6	10.9
AU-17	A. Pedlar W. van Breugel P. Barthel	Manchester U, UK Calif, Berkeley Leiden U, NETH	SO galaxy NGC 1218 (3C78).	6	7	1
AV-91	W. van Breugel P. Barthel W. Jagers	Calif, Berkeley Leiden U, NETH Leiden U, NETH	The giant quasar 4C34.47.	6 and 20	9, 11	7.5
AV-96	J. M. van der Hulst J. A. Sramek K. W. Weiler	NFRA, NETH NRAO/VLA NSF	Monitoring radio supernova in NGC 4258.	6 and 20	10	2.51
AV-103	J. H. van Gorkom G. K. Miley T. Heckman B. Balick W. van Breugel	NRAO/VLA Leiden U, NETH Maryland U of Washington U of Calif, Berkeley	Search for redshifted CO absorption in 2000-330.	1.3 line	19, 20	14
AV-106	G. van Moorsel R. C. Walker J. M. Benson	NRAO/CV NRAO/CV NRAO/CV	HI in galaxy pairs: NGC 3718.	20 line	13, 30	7.4
AW-92	R. C. Walker J. M. Benson B. A. Williams	NRAO/CV NRAO/CV NRAO/CV	The jet in 3C120.	2 and 6	20	10
AW-106	B. A. Williams R. L. Brown A. Wootten	NRAO/CV NRAO/CV NRAO/CV	HI observations of the double galaxy UGC 6081.	21 line	26	12
AW-107	F. Bruhweiler R. Clegg N. Bartel	NRAO/CV Catholic U U College, UK MIT	Neutral circumnebular gas in planetaries	21 line	1	2.5
VAH-27	N. Bartel	MIT	SN 1979c.	6 VLB	2	2.5 w/VW-23

VLA UTILIZATION APRIL 1984 (Cont.)

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
VB-52	J. A. Biretta M. H. Cohen S. C. Unwin	Caltech Caltech Caltech	Evolution of 3C273, 3C279, 3C345.	6 1 antenna VLB	1	21 w/AA33 AB223 AC102, AC105 AM107
VM-53	A. P. Marscher J. J. Broderick N. Bartel L. Padrielli J. Romney	Boston U VPI & SU CFA Bologna U, ITALY MPIFR, FRG	Low frequency variable NRAO 140.	18 1 antenna VLB	4	11.3 w/AA29, AD94, tests, move
VS-35	R. Schilizzi G. K. Miley P. D. Barthel	NFRA, NETH Leiden U of, NETH Leiden U of, NETH	3C236.	18 phased array VLB	7	13.9
VS-36	R. E. Spencer M. Reid	MRAO, UK CFA	3C274.	18 phased array VLB	5	12
VM-23	R. C. Walker J. M. Benson G. A. Seielstad S. C. Unwin	NRAO/CV NRAO/CV NRAO/GB Caltech	Monitoring 3C120.	6 1 antenna VLB	2	12 w/AC102 AC105, AT52, VAH-27
VM-30	P. N. Wilkinson R. Simon A. C. S. Readhead M. Chowh	NRAO/CV NRL Caltech Caltech	3C48.	18 phased array VLB	5	10.9
VM-31	R. C. Walker J. M. Benson G. A. Seielstad S. C. Unwin R. Booth NRAO staff	NRAO/CV NRAO/CV NRAO/GB Caltech Onsala, SWEDEN	3C120.	18 phased array VLB	6	12.1 49.0 28.0 56.1 37.5

The average downtime for the month of April, 1984 was approximately 7.74 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 100.0 percent (720.0 hours) of the time; 76.9 percent (553.6 hours) to astronomical programs and the remaining 23.1 percent (166.4 hours) went to tests.

The following independent proposals shared simultaneous observing:

AM-107/VB-52	2.5	AT-52/VM-23	6.0
AC-102/VB-52	5.0	VAH-27/VM-23	0.6
AC-105/VB-52	5.5	AA-29/VM-53	6.1
AB-223/VB-52	2.0	AD-94/VM-53	1.0
AA-33/VB-52	6.0	Test/VM-53	3.5
AC-105/VM-23	2.4	Move/VM-53	0.7
AC-102/VM-23	3.0		

VLA UTILIZATION MARCH 1984

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AA-28	Abbott, D.C. Lamers, H.J.C.L.M. Biegling, J.H. Churchwell, E. Messelius, P.R. Olmon, F.M.	Colorado U of A I Utrecht, NETH UC, Berkeley Wisconsin U of Groningen U, NETH Leiden U, NETH	OB stars identified from IRAS and ground based infrared surveys.	2, 6 and 20	4, 9, 6	17
AA-31	Armstrong, J.T. Ho, P.T.P. Barrett, A.H. Jackson, J.M.	NRAO/CV Harvard U MIT MIT	Continuum sources in the SgrA molecular cloud.	20	15	8
AA-33	Allen, R.J. Atherton, P.D. Tilanus, R.P.J.	Groningen U, NETH Groningen U, NETH Groningen U, NETH	Star formation regions in M83.	21 line	17, 20	12
AB-182	Burns, J.O. Balonek, T.J. Hummel, E.	New Mexico U of Williams College MPIFR, FRG	Monitoring the cores of extended radio sources and spiral galaxies.	2, 6 and 20	1	6.5
AB-223	Bosma, A. Athanasoulia, E.	Marseille, FRANCE Marseille, FRANCE	The Sc galaxy NGC2090.	21 line	18	6.5
AB-254	Becker, R.H. Helfand, D.J.	Virginia Tech Columbia U	Supernova remnants far inside the solar circle.	20	11	9
AB-273	Branch, D. Cowan, J.J.	Oklahoma U of Oklahoma U of	Spectral index measurements of probable SNR in M83.	6	12	6.5
AB-276	Bennett, C.L. Lawrence, C.R. Hewitt, J.N. Burke, B.F. Turner, E.	MIT Caltech MIT MIT MIT	Variability monitoring of the new gravitational lens 2016+112.	2 and 6	5	3
AC-91	Cordes, J. Weisberg, J. Hankins, T.	Cornell U Princeton U Dartmouth	Pulsar dynamic spectra and waveforms.	21 line	12-15	18.5
AC-93	Chanmugam, G. Dulk, G.A. Bastlan, T.	Louisiana State U Colorado U of Colorado U of	Magnetic white dwarfs in binaries.	2, 6 and 20	7	21
AC-97	Crane, P.C. Haschick, A.D. Baah, W.A.	NRAO/VLA MIT Arecibo	High velocity HI clouds in 3C178/NGC2377.	21 line	1, 4, 14	10.5
AC-105	Cameron, R. Bicknell, G. Ekers, R.D.	Mt Stromlo, AUST Mt Stromlo, AUST NRAO/VLA	Jet radio sources in southern clusters: 0449-17.	6, 18 and 20	19, 22, 26 30, 31 and V852	25.5 w/VP46 and V852
AD-96	Danziger, J. W.M. Goss Ekers, R.D.	ESO FRG VLA/Groningen U, NETH NRAO/VLA	PKS0521-36, a BL Lac object with optical jets.	6	12	3
AD-100	de Pater, I. Ip, M.-H.	UC, Berkeley MPIA, FRG	Radio source occultations by comet Crommelin.	6, 18 and 20	12, 31	12 w/V852
AD-114	Dulk, G.A. Bastian, T.S. Slee, O.B.	Colorado U of Colorado U of Radiophysicis, AUST	Flare stars in stellar clusters.	6 and 20	27	7 w/VP46 and VP58
AD-117	Drake, S.A. Linsky, J.L.	Colorado U of Colorado U of	Radio spectral indices for the giants alpha Her and beta Gem.	1.3, 2, 6 and 20	2	12
AD-126	Drake, S.A. Linsky, J.L.	Colorado U of Colorado U of	Mass loss rates from red giants and supergiants.	6	11	19
AD-132	Drake, S.A. Linsky, J.L.	Colorado U of Colorado U of	Long period RS CVn binaries.	2 and 6	22, 23	15
AE-29	Eltzner, M. Drake, S.A. Linsky, J.L.	Kentucky U of Colorado U of Colorado U of	Search for warm chromospheric plasma in S10 maser stars.	6	16, 17	17

VLA UTILIZATION MARCH 1984 (Cont.)

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AF-76	Feigelson, E.D.	Penn. State U	Monitoring the enigmatic object H0323-022.	1.3, 2, 6 and 20	17, 19	2
AG-105	Gardner, F.F. Whiteoak, J.B. Palmer, P.	Radiophysics, AUST Radiophysics, AUST Chicago U of	Excited OH towards Sgr B2 and W49.	6 line	22, 23	15
AG-116	Gibson, D.M. Priedhorsky, W.C.	Colorado U of/NMIMT LANL	A search for a 300 day periodicity in Cyg X-1.	2, 6 and 20	27	1
AG-126	Gardner, F.F. Whiteoak, J.B. Pankonin, V.	Radiophysics, AUST Radiophysics, AUST NSF	2cm continuum and H2CO transition towards Sgr B2.	2 line	16	8
AG-139	Gibson, D.M. Gary, D.E.	Colorado U of/NMIMT Caltech	Coordinated radio, optical and UV observations of three active stars.	2, 6 and 20	26, 27, 28	33
AG-152	Gaume, R. Mutel, R. Fix, J.	Iowa U of Iowa U of Iowa U of	Map of water vapor masers toward G351.8-0.5.	1.3 line	25	3.5
AJ-107	Jeske, N. Helles, C.	UC Berkeley UC Berkeley	HI mapping of a supershell in NGC55.	21 line	23	6
AL-75	Lang, K.R. Willson, R.F. Pallavicini, R.	Tufts U Tufts U Arcetri Obs, ITALY	Thermal gyroresonance vs. non-thermal radio emission from active solar type stars.	2, 6 and 20	3, 8	12
AM-91	Meisenheimer, K. Roesser, H.-J. Hawkins, M.R.S.	MPIA, FRG Arizona U of/MPIA, FRG Royal Obs, U.K.	Sources from optical polarization studies.	2, 6 and 20	3	5
AM-97	Mutel, R. Le Strade, J.F.	Iowa U of JPL/Paris Obs, FRANCE	Search for VLBI calibrator sources near radio stars.	6 and 20	5	2
AM-113	Miller, L. Hawkins, M.R.S.	Royal Obs, U.K. Royal Obs, U.K.	A new sample of optically-selected QSOs.	6	12, 16-20	32
AP-75	Palmer, P. de Pater, I. Wade, C. Schneewerk, M. Snyder, L. Altenhoff, W.	Chicago U of UC Berkeley NRAO/VLA Illinois U of Illinois U of/MPIR, FRG MPIR, FRG	Search for continuum emission from comet Crommelin.	2	9	8
AR-100	Reynolds, S.P. Gilmore, D.M.	NRAO/CV Massachusetts U of	Filamentary structure in SN1006.	18 and 22	19, 20	8
AR-101	Rudnick, L. Sitko, M.	Minnesota U of Minnesota U of	Radio spectra of non-polarized extragalactic variables.	2, 6 and 20	2	2
AS-79	Spangler, S. Cotton, W. Allendorf, S.	Iowa U of NRAO/CV Iowa U of	Monitoring low frequency variables.	1.3, 2, 6 and 20	1, 7	4.5
AS-80	Sramek, R.A. van der Hulst, J.M. Weiler, K.W.	NRAO/VLA NRA, NETH NSF	Monitoring supernova SN1980k in NGC6946 and SN1979c in M100.	6 and 20	4, 7, 8	11
AS-184	Sadler, E.M. Kotanyi, C. Jenkins, C.R.	ESO, FRG NRAO/VLA RGO, ENGLAND	Survey of a complete sample of southern E and SO galaxies.	6	10	23
AV-86	van Breugel, W. Heckman, T. Miley, G. Ulrich, M.-H.	UC, Berkeley Maryland U of Leiden U, NETH ESO, FRG	Two classical doubles with optical line emission along the radio axes.	20	16	7
AV-100	van Breugel, W. Fomalont, E. Ekers, R.D.	UC, Berkeley NRAO/VLA NRAO/VLA	Fine structure in Fornax A.	20	17	5
AW-48	Made, C.M. Johnston, K.J. Seidelmann, P.K. Kaplan, G.H.	NRAO/VLA NRL USNO USNO	Astrometric observations of minor planets.	2 and 6	2	9.5

VLA UTILIZATION MARCH 1984 (Cont.)

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AW-78	Wardle, J.F.C. Lainq, R.A.	Brandeis U RGO, ENGLAND	Monitoring variability of the central components of extended radio sources.	2 and 6	1	8.5
AW-95	Winnberg, A. Baud, B. Habling, H.J. Olnon, F.M. Matthews, H.E.	Onsala, SWEDEN Groningen U, NETH Leiden U, NETH Leiden U, NETH NRC, CANADA	Survey for OH/IR stars close to the Galactic Center.	18 line	3-5	24
AW-107	Wootten, A. Bruhweiler, F. Clegg, R.	NRAO/CV Catholic U U College, UK Columbia U UCLA	Neutral circumnebular gas in planetaries	21 line	31	2.5
AY-4	Yusef-Zadeh, F. Morris, M. Chance, D.	Columbia U UCLA Columbia U	The Galactic Center Region.	6 and 20	31	8 w/VB52
VB-52	Biretta, J.A. Cohen, M.H. Unwin, S.C.	Caltech Caltech Caltech	Evolution of 3C273, 3C279, and 3C345.	1 antenna VLB	AD106, AV4, AM107	19 w/AC105, AM107 baselines
VB-54	Backer, D.C. Sramek, R.	U of CA, Berkeley NRAO/VLA	Compact sources near Sgr A.	6 phased array MK III VLB	24, 25	6.75
VC-31	Gondon, J.J. Broderick, J.J.	NRAO/CV VPI & SU	A jet with "known" orientation in space:	6 phased array VLB	24	10
VL-28	Le Strade, J.-F. Mutel, R.L. Phillips, R.B. Niell, A.E. Preston, R.A. Johnston, K.J., Doiron, D.	JPL Iowa U of Haystack JPL JPL NRL Iowa U of	Astrometric observations of radio stars.	6 phased array MK III VLB	24	3.5
VP-46	Pearson, T.J. Readhead, A.C.S.	Caltech Caltech	Second epoch observations of a complete sample.	1 antenna VLB	AD114, AG116, AG139, Ant PM, Test	26, 27 34.5 VR27, AG139, Ant PM, Test
VP-55	Porcas, R.W. Owen, F.N.	MPiR, FRG NRAO/VLA	Very weak quasar cores.	6 phased array MK III VLB	29	12.5
VP-58	Pearson, T.J. Readhead, A.C.S.	Caltech Caltech	Second epoch observations of a complete sample.	6 1 antenna VLB	27, 28 w/Startup, AD114, AG139, Ant PM	21
VR-27	Roberts, D.H. Wardle, J.F.C. Brown, L.F. Gabuzda, D.C. Potash, R.I. Burke, B.F. Rogers, A.E.E.	Brandeis U Brandeis U Brandeis U Brandeis U Brandeis U MIT Haystack	Linear polarization survey of extragalactic radio sources.	6 phased array MK III VLB	25	28.5
VM-32	de Haard, G.J. Miley, G.K. Schilizzi, R.T. NRAO staff	Leiden U, NETH Leiden U, NETH NRA, NETH	Jet interaction with the broad line region in active nuclei.	6 phased array VLB	28, 30	23.5
			Electronics, Ant. PM, etc			45.5
			Software			41.0
			Pointing, baselines, startup, delays, move/operations			65.0
			General tests			45.0

The average downtime for the month of March, 1984 was approximately 4.96 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 100.0 percent (744.0 hours) of the time: 75.9 percent (564.4 hours) to astronomical programs and the remaining 24.1 percent (179.6 hours) went to tests.

The following independent proposals shared simultaneous observing:

VR-27/VP-46	0.3
AC-105/VP-46	3.0
AG-139/VP-46	26.8
AG-116/VP-46	1.0
AD-114/VP-46	0.2
AD-114/VP-58	6.8
AG-139/VP-58	5.5
Test/VP-46	3.0
AntPM/VP-46	0.2
AntPM/VP-58	6.3
StrUp/VP-58	2.4
AC-105/VB-52	3.1
Vb-52/BaseLines	5.0
AY-4/VB-52	4.4
AD-100/VB-52	4.0
AW-107/VB-52	2.5

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VLA UTILIZATION FEBRUARY 1984

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AB-129	B.F. Burke J.N. Hewitt D.H. Roberts	MIT MIT Brandeis	Monitoring time variations in 0957+561.	2 and 6	10	3
AB-167	R.C. Bignelli E.R. Seagquist	NRAO/VLA Toronto U, CANADA	Monitoring of the SNR in the galaxy NGC4449.	6 and 20	9	1
AB-257	J.O. Burns D. Clarke E.D. Feigelson E.J. Schreier	New Mexico U of New Mexico U of Penn. State U STSI	The jet in Centaurus A.	2	12	5
AB-269	J.P. Basart J.O. Burns D.S. DeYoung	Iowa State U New Mexico U of KPNO	Classical doubles with strong cores.	6	17,18	16
AB-275	C. Beichman C.G. WynneWilliams E.E. Becklin G. Neugebauer	JPL Hawaii U of Hawaii U of Caltech	Extreme infrared bright galaxies detected by IRAS.	6 and 20	5	12 w/VB-53
AB-277	I.W.A. Browne D. Shane D. Walsh L. Rudnick	Caltech Manchester U, ENGLAND Manchester U, ENGLAND Minnesota U of	Extended structure associated with the jet in 0800+608.	20	10	2
AC-81	M.J. Claussen K.Y. Lo J. van Gorkom	Caltech Caltech NRAO/VLA	Monitoring the flux of the compact source at the Galactic Center.	1.3, 2 and 6	26	2
AC-95	B.G. Clark	NRAO/VLA	Search for a stellar wind from Sirius.	6	8	2
AC-96	J.J. Condon P. Coleman	NRAO/CV Pittsburgh U of/NRAO	Angularsize distribution of sources fainter than S=1 mJy at 20cm.	20	1,3	24
AD-86	H.R. Dickel A.F. Lubnow W.M. Goss A.H. Rots	Illinois U of Illinois U of NRAO/Groningen U, NETH NRAO/VLA	The 2cm H2CO absorption toward W 3(OH).	2 line	19	8
AD-100	I. de Pater W.H. Ip	UC, Berkeley MPIfA, FRG	Radio source occultations by Comet Crommelin	6 and 20	27	10
AD-111	I. de Pater S. Guikis T. Owen H. Smith	UC, Berkeley JPL New York State U Texas U of	Uranus.	1.3 and 2	13	8
AD-112	I. de Pater	UC, Berkeley	Jupiter patrol.	2, 6 and 20	24	7.5
AD-124	I. de Pater W.H. Ip F.P. Schloerb	UC, Berkeley MPIfA, FRG Mass. U of	Radio sources occulted by comets.	20	11,24	9
AD-125	J.R. Dickel S. D'Odorico A. Silverman	Illinois U of ESO, FRG Illinois U of	SNR in IC613, NGC6822, NGC185.	6 and 20	4	14.5 w/VJ-28
AD-128	J.W. Dreher W.J. Welch	MIT UC, Berkeley	W43 and W51.	6	6	9
AE-28	V. Escalante P.T.P. Ho A. Haschick L.F. Rodriguez	Harvard U Harvard U Haystack Obs Mexico U, MEXICO	Accurate positions of H2O masers associated with young objects.	1.3 line	23	4
AE-30	R. Elston	Arizona U of	3 interacting galaxies with extended radio emission.	20	8	8.5
AE-31	R.D. Ekers W.M. Goss	NRAO/VLA NRAO/Groningen U, NETH	NGC5419 (1401-33).	2, 6 and 20	26	4 w/test

VLA UTILIZATION FEBRUARY 1984 (cont.)

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AF-74	L. Ferretti G. Giovannini L. Gregorini	Bologna U, ITALY Bologna U, ITALY Bologna U, ITALY	The new wide angle tail galaxy in A115.	20	14	1
AF-76	E.D. Feigelson	Penn. State U	Monitoring the enigmatic object H0323022.	1.3, 2, 6 and 20	7, 8	2.5
AF-77	E.D. Feigelson J.W. Dreher	Penn. State U MIT	Hercules A	6	19	7.5
AG-116	D.M. Gibson W.C. Priedhorsky	JILA/ NMIIT LANL	Search for a 300 day periodicity in Cyg X1.	2, 6 and 20	13	1
AG-125	B. Geldzahler B. Rust	NRL NBS	Possible Complementary QSOs	6	26	1.5
AH-119	J.M. Hollis A. Michalitsianos M. Kafatos	NASAGSFC NASAGSFC George Mason U	Temporal variations of R Aquarii radio jet.	2, 6 and 20	3	8.5 w/vm-29
AH-128	P.T.P. Ho T. Rengarajan	CFA CFA/ Tata Inst, INDIA	Thermal emission from luminous infrared sources.	1.3, 2	1, 10, 16 11 w/vm-47	16
AH-135	V.A. Hughes E.K. Hummel P.C. Crane	Queen's U, CANADA MPIFR, FRG NRAO/VLA	Star forming regions. Extended emission near compact core sources in spiral galaxies: NGC5635 and NGC6500.	6 and 20 6 and 20	12 27	3 3
AH-150	P.T.P. Ho A.D. Haschick	CFA Haystack Obs	NH3 line studies of OB cluster G10.60-4.	1.3 line	23	8
AH-153	E. Hummel C.G. Kotanyi	MPIFR, FRG NRAO/VLA	The central radio sources in NGC4636 and NGC4710.	20	16	2
AH-154	S.R. Habbal G.L. Withbroe M.R. Kundu R.K. Shevgaonkar	CFA CFA Maryland U of Maryland U of	Coronal bright point emission	6 and 20	9, 11, 12 w/AK81, AM111	31
AJ-101	W. Jaffe T. Owen J. Caldwell	STSCI NYSU, Stonybrook NYSU, Stonybrook	Thermal radiation from Titan.	2	10, 18	20
AJ-105	N. Jeske M. Davis M. Stevens	U.C. Berkeley U.C. Berkeley U.C. Berkeley	Ring galaxies.	6	26	16
AK-81	M.R. Kundu R. Shevgaonkar E.J. Schmalz	Maryland U of Maryland U of Maryland U of	Solar flares and active regions.	2 and 6	9, 11, 12 w/AH154, AM111	31
AK-90	P. Kronberg R. Sramek	Toronto U, CANADA NRAO/VLA	Monitoring variable sources in M82.	2, 6 and 20	15	4
AK-100	S. Kulikarni A. Purvis W.M. Goss J. van Gorkom	U.C. Berkeley Cambridge U, ENGLAND NRAO/ Groningen U, NETH NRAO/VLA	Search for millisecond pulsar candidates.	20	27	5
AK-101	U. Klein	MPIFR, FRG	Radio morphology of blue compact dwarf galaxies.	6 and 20	20	3.5
AL-74	D.F. Lester H.L. Dinerstein	IRTF/ Hawaii U of Texas U of Austin	Hydrogen poor planetary nebulae: Abell 30.	6	18	8
AL-75	K.R. Lang R.F. Wilson R. Pallavicini	Tufts U Tufts U Arcetri Obs, ITALY	Thermal gyroresonance vs. nonthermal radio emission from active solar type stars.	2, 6 and 20	1	7.5 w/vm-47
AM-67	D.L. Meier M.H. Ulrich R.A. Preston A.E. Mehrle	JPL ESO, FRG JPL UC, Los Angeles	The central regions of extended radio galaxies.	2	5, 6, 22	14
AM-104	M. Malkan G. Kojian V.Yu. Terbizh D. Dickinson I. Bicaay	Caltech U. Wisconsin Eau Claire Shternberg S. A. I., USSR ITEK, Palo Alto Stanford U	A complete sample of Markarian and Arakelian radio galaxies.	6	14	12

VLA UTILIZATION FEBRUARY 1984 (cont.)

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AM-110	D.C. Murphy	MIT	Mainline OH maser survey of the Galactic Plane.	18 line	25	6
AM-111	P.T.P. Ho	Harvard U	Solar chromospheric Network elements	2 and 6	9, 11, 12	31
AM-112	J.T. Marriska	NRL				
	R.F. Stein	Michigan U of CFA				12, w/AH-154, AK-81
	G.L. Withbroe					
	M.R. Kundu	Maryland U of Maryland U of				
	P. Shevgaonkar					
AM-114	A. Michard	Leicester U, ENGLAND	Simultaneous radio, infrared, optical and X-ray monitoring of X-ray selected active galaxies.	1.3, 2, 6 and 20	1.5 w/VM-27 & VJ-28	13
	I. Smith	ESTEC, THE NETHERLANDS				
	R. Perley	NRAO/VLA	Filamentary structure in IC443 and W44.	18	25	12
AM-115	S.L. Mufson	Indiana U of Indiana U of				
	M. McCollough	Illinois U of				
	J. Dicke					
	D.O. Muhleman	Caltech	Astrometric and physical observations of the Galilean satellites, II.	2 and 6	14, 15	14
	G.L. Berge	Caltech				
	D.J. Rudy	Caltech				
AN-24	A. Niell	JPL				
AO-47	J. Nousek	Penn. State U	E2000+233: a new SNR?	6 and 20	25	2
	C.O'Dea	NRAO/VLA	Constraints on the properties of bent beams.	6	1.3, 3, 7	13.5
	F. Owen	NRAO/VLA				w/VB-44, VB-53, & VM-29
AO-49	F. Owen	NRAO/VLA	Wide angle tail sources.	6	16	15
	C. O'Dea	NRAO/VLA				
	J. Burns	New Mexico U of				
	L. Smarr	Illinois U of				
AP-74	B.A. Peterson	ANU, AUSTRALIA	Complete QSO sample.	20	23	8
AR-103	R. Rusk	Toronto U, CANADA	Brightness and polarization structure of sources with highly polarized compact cores.	6 and 20	24, 25	11
	E. Seaquist	Toronto U, CANADA				
	A. Yen	Toronto U, CANADA				
AS-79	S. Spangler	Iowa U of	Monitoring low frequency variables.	1.3, 2, 6 and 20	29	4
	W. Cotton	NRAO/CV				
	S. Allendorft	Iowa U of				
AS-80	R.A. Stramk	NRAO/VLA	Monitoring supernova SN1980 in NGC6946 and SN1979 in M100.	6 and 20	12, 19	7.5
	J.M. van der Hulst	NFRA, THE NETHERLANDS				
	K.W. Meiler	NSF				
AS-174	J. Simonetti	Cornell U	Faraday rotation through the molecular cloud L1551.	6 and 20	13	9
	J. Cordes	Cornell U				
	S. Beckwith	Cornell U				
AS-176	I. Wasserman	Cornell U	Faraday rotation through the molecular cloud near Cep A.	6 and 20	6	7
	J. Simonetti	Cornell U				
	J. Cordes	Cornell U				
	S. Beckwith	Cornell U				
	I. Wasserman	Cornell U				
AS-179	J.T. Stocke	Arizona U of	Search for environment effects on luminous radio galaxies.	6 and 20	2	15
	W.A. Christiansen	N. Carolina U of				w/VJ-32 & VB-53
	C.B. Foltz	Illinois U of				
AS-190	J.H.H.M. Schmitt	Harvard College Obs.	Identification of radio sources in the Pleiades Cluster.	20	14	2
	J. Bookbinder	Harvard College Obs.				
	L. Golub	CFA				
AT-41	B.E. Turner	NRAO/CV	Molecular jets from ultracompact thermal shell sources.	18 line	20	10
	H.A. Wootten	NRAO/CV				
AT-46	J.L. Turner	UC, Berkeley	High velocity water masers toward W3(OH).	1.3 line	11	2
	W.J. Welch	UC, Berkeley				
AT-48	A.R. Taylor	Toronto U, CANADA	A radio jet in the symbiotic star SS 96.	2	2	4.5
	E.R. Seaquist	Toronto U, CANADA				w/VB-44

VLA UTILIZATION FEBRUARY 1984 (cont.)

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AV-20	J.S. Ulvestad A.S. Wilson	NRAO/CV Maryland U of Texas, Austin	Seyfert 1.9 galaxies.	20	19,20	6
AV-95	P. Vanden Bout	U Texas, Austin	6cm H2CO observations of the S88 molecular cloud.	6 line	7	8
AV-96	J.M. van der Hulst R.A. Sramek K.W. Weiler	NFRA, THE NETHERLANDS NRAO/VLA NSF	Monitoring radio supernova in NGC4258.	6 and 20	13	2
AV-104	T. Velusamy	TIFR, INDIA	The 'jet' in the Crab Nebula.	20	9	6
AW-98	J.B. Whiteoak F.F. Gardner	CSIRO, AUSTRALIA CSIRO, AUSTRALIA	Mechanisms for populating the lambdadoublet groundstate energy levels of OH in l.s. molecular clouds.	18 line	28	11
AW-108	A.E. Mehrle M. Morris	UC, Los Angeles UC, Los Angeles	Vertical radio structure in the nuclei of normal spiral galaxies.	2	15,19	4.5
VB-44	J.A. Biretta M.H. Cohen S.C. Unwin	Cal Tech Cal Tech Cal Tech	3C273	1.3cm antenna VLA	1 AO-47, AT-48	16.5 W/AC-96, AD-125
VB-53	L. Baath R. Booth D. Jones A.C.S. Readhead	Chalmers U, SWEDEN Onsala Space Obs, SWEDEN Caltech Caltech	BL Lac objects M421 and 0735+178.	1.3 antenna VLB	5 W/AB-275, AS-179, AO-47 & test	17 7
VJ-28	D.L. Jones J.M. Wrobel A.E. Mehrle S.C. Unwin	Caltech Caltech UC, Los Angeles Caltech	NGC4278.	1.3 antenna MK 111 VLB	4 W/AM-112 & AD-125	7
VJ-32	D.L. Jones	Caltech	Subparsec radio structure of NGC1052.	1.3 antenna VLB	2 W/AS-179 & test	8.5 179
VM-47	R. L. Moore	Caltech	3C345	1.3 antenna VLB	1 W/AH-128, AL-75 & AM-112	14.5 10.5
VM-29	J.M. Wrobel T.J. Pearson A.C.S. Readhead NRAO staff	Caltech Caltech Caltech	Very compact VLBI Survey Sources. Electronics, etc Software Pointing, Baselines, Startup Standard Field observation General tests	1.3 antenna VLB	3 W/AH-119, AO-47, AC-96	30.0 42.7 12.0 45.0

The average downtime for the month of February, 1984 was approximately 6.97 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 100.0 percent (696.0 hours) of the time: 75.3 percent (524.1 hours) to astronomical programs and the remaining 24.7 percent (171.9 hours) went to tests.

The following independent proposals shared simultaneous observing:

AL-75/VM-47	6.5
AM-112/VM-47	4.0
AH-128/VM-47	4.0
AO-47/VB-44	1.4
AC-96/VB-44	12.0
AT-48/VB-44	3.1
Test/VJ-32	5.4
AS-179/VJ-32	3.1
AS-179/VB-53	11.3
AO-47/VB-53	0.7
AO-47/VM-29	1.8
AH-119/VM-29	8.5
AC-96/VM-29	0.2
AD-125/VJ-28	0.2
AM-112/VJ-28	6.8
Test/VB-53	0.2
AB-275/VB-53	4.8
AH-154/AK-81/AM-111	31.0
AM-67/ESP	2.0
AE-31/test	1.0



VLA UTILIZATION JANUARY 1984

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AA-30	H.D. Alier S.P. Reynolds	Michigan U of NRAO/CV	Mapping and polarimetry of 3C 58.	6 and 20	13,14	15
AB-243	A. Bosma E. Athanassoula A.H. Rots J.M. van der Hulst P.C. Crane	Leiden U, NETH Obs. Besancon, FRANCE NRAO/VLA NRA, NETH NRAO/VLA	H I in the grand design spiral galaxy M51 (NGC 5194).	20 line	2	12
AB-266	J. Bailly N.D. Kylafis	Bell Labs IAS-Princeton	Magnetic fields in molecular clouds.	6 line	9,16	15
AB-276	C.L. Bennett C.R. Lawrence J.N. Hewitt B.F. Burke	MIT Caltech MIT MIT	Variability monitoring of the new gravitational lens 2016+112.	2 and 6	31	3
AB-278	E. Turner B.F. Burke C.L. Bennett J.N. Hewitt	Princeton U MIT MIT MIT	Spectral indices and polarizations of sources from the MIT 5 GHz Survey.	2 and 6	21	20 w/AH155
AC-81	C.R. Lawrence M.J. Claussen K.Y. Lo	Caltech Caltech NRAO/VLA	Time monitoring of the flux of the compact source at the Galactic Center.	1.3, 2 and 6	8	1.5
AD-90	J.M. Dickey R. Perley	Minnesota U of NRAO/VLA	Continuum survey of the first quadrant of the Galactic Plane.	20	3	6
AD-94	I. de Pater K.W. Weiler R. Fanti C. Fanti	Calif U of-B NSF Bologna U, ITALY Bologna U, ITALY	Polarization characteristics in variable radio sources.	2, 6 and 20	3,13	6
AD-100	I. de Pater W-H. Ip	Calif U of-B MPIA, FRG	Radio source occultations by Comet Crommelin.	6 and 20	22	7
AD-113	I. de Pater J.R. Dickel	Calif U of-B Illinois U of	Planetary atmosphere: Saturn.	6	31	5.5
AD-114	G.A. Duik T.S. Bastian O.B. Slee	U of CO U of CO CSIRO	Flare stars in stellar clusters.	6 and 20	23	11
AF-76	E.D. Feigelson	Penn State U	Monitoring the enigmatic object H0323-022.	1.3, 2, 6 and 20	1	3.5
AG-115	G. Garay L.F. Rodriguez J. van Gorkom	Chile, U of, CHILE Mexico U, MEXICO NRAO/VLA	Two compact HII regions with very large radio recombination line widths.	1.3 and 2 line	7	11
AG-116	D.M. Gibson W.C. Priedhorsky	Colorado U of/NMIMT LANL	A search for 300 day periodicity in Cyg X-1.	2, 6 and 20	13	1
AG-136	E. Greisen H. Liszt	NRAO/CV NRAO/CV	Galactic HI absorption toward extragalactic continuum sources.	20 line	28	14
AG-143	G. Giovannini L. Feretti	Bologna U, ITALY Bologna U, ITALY	Nearby elliptical galaxies.	6 and 20	26,28	15
AG-144	W.M. Goss S. Guilloteau A. Baudry	VLA/Groningen U, NETH Grenoble, FRANCE Obs. Bordeaux, FRANCE	2cm formaldehyde in G10.6-0.4	2 line	10	8.5
AH-100	T. Heckman B. Balick W. van Breugel G. Miley J. Dickey	Maryland U of Washington U of U of CA, Berkeley Leiden U, NETH Minn. U of	HI in absorption and emission in NGC3801 = 4C17.52.	21 line	8	10
AH-134	L.A. Higgs T.L. Landecker	DRAO, CANADA DRAO, CANADA	Spectral-index mapping of -Cygni nebula.	20	19,20	16 w/AH147
AH-147	L.A. Higgs J.P. Vallée	DRAO, CANADA HIA, CANADA	A remarkable arc-like source in the Galactic Plane.	6 and 20	19,20	16 w/AH134

VLA UTILIZATION JANUARY 1984 (Cont.)

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AH-149	P.A. Hintzen	NASA/GSFC	Physically large QSO radio sources.	6	22	11
AH-152	F. Owen	NRAO/VLA				
AH-155	E. Hummel	MPIR, FRG	The active central region of the spiral galaxy NGC2655.	6 and 20	6	2
	W.C. Keel	KPNO	Two frequency observations of gravitational lens candidates.	2 and 6	21	20 w/AB278
	J.N. Hewitt	MIT				
	B.F. Burke	MIT				
	C.R. Lawrence	Caltech				
	C.L. Bennett	MIT				
	E. Turner	Princeton U				
AK-86	W.C. Keel	KPNO	Galaxies with optically-selected jets.	6 and 20	20	12
AK-90	P. Kronberg	Toronto U of, CANADA	Monitoring variable sources in M82.	2, 6 and 20	8	4
	R. Sramek	NRAO/VLA				
AL-68	K.R. Lang	Tufts U	Coronal loops - magnetic structure, cyclotron lines and the triggering and evolution of bursts.	20	28, 29	20
	R.F. Willson	Tufts U				
AL-75	K.R. Lang	Tufts U	Thermal gyroresonance vs. non-thermal radio emission from active solar type stars.	2, 6 and 20	12, 14	9.5
	R.F. Willson	Tufts U				
AL-77	R. Pallavicini	Arcetri Obs., ITALY	X-ray selected Abell clusters.	20	15	16
	C.J. Lonsdale	Penn S U				
AM-71	I.F. Mirabel	Puerto Rico U of	H I absorption and emission in highly inclined active galaxies.	20 line	3, 4	19.5
	A.S. Wilson	Maryland U of				
AM-106	D. Muhleman	Caltech	Titan microwave spectrum.	1.3, 2 and 6	16, 17	20.5
	G. Berge	Caltech				
AM-108	T.K. Menon	U of B.C., CANADA	Radio sources in compact groups of galaxies.	6 and 20	26	18.5
AO-45	S. Odenwald	NRL	The SNR-HII region association IC-433/S-249.	2 and 6	10, 11	9.5
	K.J. Johnston	NRL				
AO-49	F. Owen	NRAO/VLA	Wide angle tail sources.	6	2	4
	C. O'Dea	NRAO/VLA				
	J. Burns	New Mexico U of				
	L. Smart	Illinois U of				
AP-65	M.M. Phillips	CTIO, CHILE	The Seyfert galaxy NGC5728.	6 and 20	14	6
	J.A. Baldwin	CTIO, CHILE				
	A.S. Wilson	Maryland U of				
	A.J. Turtle	Sydney U, AUSTRALIA				
AP-71	R.A. Perley	NRAO/VLA	Cygnus A.	2 and 6	14, 23	19
	J.W. Dreher	MIT				
AP-74	B.A. Peterson	Mt. Stromlo, AUSTRALIA	Complete QSO samples.	20	6, 10	7
AP-75	P. Palmer	Chicago U of	Search for OH emission from comet Crommelin.	18 cm line	27	10
	I. de Pater	Calif U of-B				
	C. Wade	NRAO/VLA				
	M. Schenewerk	Illinois U of				
	L. Snyder	Illinois U/MPIR, FRG				
	W. Altenhoff	MPIR, FRG				
AR-96	L.F. Rodriguez	Mexico U, MEXICO	Spectral indices of compact radio sources associated with energetic outflows.	1.3, 2 and 6	6, 9	13
	J. Cantó	Mexico U, MEXICO				
	J. Moran	CFA				
	G. Garay	Chile, U of, CHILE				
AS-79	S. Spangler	Iowa U of	Low frequency variables	1.3, 2, 6 and 20	8, 9, 26	11
	W. Cotton	NRAO/CV				
	S. Allendorf	Iowa U of				
AS-80	R.A. Sramek	NRAO/VLA	Monitoring supernovae SNT980 in NGC6946	6 and 20	7, 9	6
	J.M. van der Hulst	NFRA, NETH	and SNT979c in M100.			
	K.W. Weiler	NSF				
AS-166	J.W. Sulentic	Alabama U of	Mapping of NGC4319 and Markarian 205.	20	19	9
	G. Byrd	Alabama U of				
	M. Valtonen	Alabama U/Turku U, FINLAND				
	S. Haaraala	Turku U, FINLAND				



VLA UTILIZATION JANUARY 1984 (Cont.)

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AS-178	E.R. Seaquist M.B. Bell	Toronto U of, CANADA NRC, CANADA	Recombination lines in Mkr668 (=00208) cm line	2 and 6	12, 13	17
AS-179	J.T. Stocke W.A. Christiansen C.B. Foltz	Arizona U of North Carolina U of Illinois U of	A search for environment effects on luminous radio galaxies.	6 and 20	30	7
AS-187	E.R. Seaquist A.R. Taylor	Toronto U of, CANADA Toronto U of, CANADA	OH in symbiotic stars.	18 cm line	31	6
AS-189	R.G. Strom	NFRA, NETH	The flat spectrum component in CTB 80.	2, 6 and 20	21	12
AU-17	S. Unger A. Pedlar	NRAL, ENGLAND NRAL, ENGLAND	The SO galaxy NGC1218 (3C78).	20	29	1
AU-19	S. Unger A. Pedlar	NRAL, ENGLAND NRAL, ENGLAND	NGC6500 and NGC5506.	20	2	2
AV-84	W. van Breugel R. Strom J. Dinkel	Calif, U of/Berkeley NFRA, NETH Illinois U of	Radio polarimetry of Tycho A.	6 and 20	5, 6	24
AV-86	W. van Breugel T. Heckman G. Milley	Calif, U of/Berkeley Maryland U of Leiden U, NETH	Optical line emission along the radio axes of two classical doubles.	20	15	5
AV-91	M.-H. Ulrich W. van Breugel P. Barthel	ESO, FRG Calif, U of/Berkeley Leiden U, NETH	The giant quasar 4C34.47	20	20	4
AV-102	W. van Breugel T. Heckman G. Milley	Calif, U of/Berkeley Maryland U of Leiden U, NETH	Minkowski's Object, working surface of a jet?	6 and 20	8	8.5
AW-48	M.-H. Ulrich C.M. Wade K.J. Johnston P.K. Seidelmann	ESO, FRG NRAO/VLA NRL USNO USNO	Astrometric observations of minor planets.	2 and 6	7	10
AW-85	G.H. Kaplan A.S. Wilson	Maryland U of NRAO/CV	The magnetic field in the nuclear regions of NGC1068 (3C71).	2	12	8
AW-105	R.S. Warwick V. Stanger J. Schwarz	Leicester U, ENGLAND Leicester U, ENGLAND CFA	The early type galaxies NGC4636 and NGC4649.	20	24	3
VL-29	C. R. Lawrence	Caltech	Quasar survey.	1.3 antenna VLB	30	24
NRAO staff				Electronics, etc		64.0
				Software		44.8
				Pointing, baselines, startup		49.0
				General tests		54.2
				New Year's Day		16.0
						30
						W/start up
						AS179, AD113
						AB276, AS187

The average downtime for the month of January, 1984 was approximately 2.80 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 NY antenna-hours operation.

The array was scheduled for 97.8 percent (728.0 hours) of the time; 69.7 percent (518.5 hours) to astronomical programs and the remaining 28.1 percent (209.5 hours) went to tests.

The following independent proposals shared simultaneous observing:

AH-134/AH-147	16.0
AB-278/AH-155	20.0
Startup/VL-29	2.5
AS-179/VL-29	7.0
AD-113/VL-29	5.5
AB-276/VL-29	3.0
AS-187/VL-29	6.0

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