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Program	Observer	Affiliation	Program Title	Bands cm	Obsv Date	Sched hrs
AA105	Altschuler, D. Giovanardi, C. Klein, U. Wunderlich, E.	Arecibo Obs. Arcetri (Italy) Bonn (FRG) Bonn University	Low surface brightness dwarf galaxies.	20	23	8.5
AA114	Aller, H. Aller, M. Bregman, J.	Michigan Michigan Michigan	X-ray/radio variability in active galactic nuclei (with ROSAT).	2	3, 9, 16 21,26,28	6.1
AA118	Anderson, M. Katz, D. Rudnick, L.	Minnesota Minnesota Minnesota	Spectral index variations in shell supernova remnants	20	1	12.0
AA120	Andre, P. Feigelson, E. Leous, J. Montmerle, T.	NRAO-Tucson Penn State Univ. Penn State Univ. C.E.N. (Saclay)	Possible dust emission of young stellar objects.	6	15, 16	6.0
AA121	Aschwanden, M. Bastian, T. Kiplinger, A.	NASA-GSFC NRAO-VLA Colorado	A study of solar microflares.	20, 90	21	6.0
AB414	Becker, R. White, R.	Calif.-Davis STScI	Monitoring radio stars HD193793 and P Cygni.	2, 6	3	1.5
AB456	Burke, B. Hewitt, J. Roberts, D.H.	MIT Haystack Brandeis	Monitoring Lens 0957+561	6	13	2.0
AB573	Becker, R. Helfand, D. White, R.	Calif.-Davis Columbia STScI	A sample of O-stars from a survey of galactic plane.	6	7, 8, 9	30.0
AB579	Bookbinder, J. Linsky, J. Brown, A. Fleming, T. Bromage, G.	CfA Colorado Colorado MPIfEP (Garching) Rutherford (London)	Monitoring M dwarfs during the ROSAT all-sky survey.	3.8,6,20 line	15,22,29	17.0
AC259	Carilli, C. Perley, R. Dreher, J.	NRAO-VLA NRAO-VLA NASA-Ames	Cygnus A.	1.3	22, 23	24.0
AC277	Caganoff, S. Ford, H.	Johns Hopkins Johns Hopkins	Polarimetry of the emission line loops in NGC 3079.	3.8, 6	8	11.0
AC278	Carilli, C. Ho, P.	NRAO-VLA Harvard	Two nuclear starburst galaxies.	3.8,6,20	30	7.0
AC279	Carilli, C. van Gorkom, J.	NRAO-VLA Columbia	HI observations of two quasar-galaxy pairs.	20 line	20	10.5
AC287	Clancy, R. Muhleman, D. Grossman, A.	Colorado Caltech Caltech	Mars water vapor.	1.3 line	3, 6	24.0
AE075	Eder, J. Haynes, M.	CIW/DTM Cornell	HI in the gas-rich SO galaxies, UGC 2367 and UGC 5419.	20 line	7	14.0
AF195	Feigelson, E. Hertz, P. Brinkmann, W. Wielebinski, R.	Penn State NRL MPIfEP MPIfR	Survey of north Ecliptic pole region in support of ROSAT mission.	20	30	15.5
AH295	Habing, H. Goss, W. Winnberg, A. van Langevelde, H.	Leiden (Neth) NRAO-VLA Onsala (Sweden) Leiden (Neth)	Monitoring OH/IR stars at the galactic center.	20 line	18	2.0
AH367	Hummel, E. Pedlar, A. Davies, R.	NRAL (Jodrell Bank) NRAL (Jodrell Bank) NRAL (Jodrell Bank)	The B-field structure in NGC 3310.	3.8, 6	11	8.5 w/AH368
AH368	Hummel, E. Gotz, G. Beck, R.	Manchester MPIR MPIR	Cosmic ray propagation and B-field structure in edge-on galaxies.	20	11	8.5 w/AH367
AH401	Hoffman, G. Salpeter, E. Condon, J. Dickey, J.	Lafayette College Cornell NRAO-CV Minnesota	Positions & spectral indices of sources from a 12 sq degree survey.	6	1	8.5
AH407	Ho, P. Ishiguro, M. Kawabe, R. Okumura, S. Turner, J.	Harvard Nobeyama (Japan) Nobeyama (Japan) Nobeyama (Japan) UCLA	Synchrotron emission in four nearby normal spiral galaxies.	20	13, 17	18.6
AH413	Habbal, S. Gonzalez, R. Harvey, K.	CfA CfA Solar Physics Research	Time-varying phenomena on the sun during the ESP-91 campaign.	3.8,6,20	26, 29	16.5
AH415	Hankins, T. Kobulnicky, H. McKinnon, M. Rankin, J.	NMIMT/NRAO-VLA Iowa/NRAO NMIMT Vermont	P-band polarimetry of PSR1702-19.	90	6	3.1
AH417	Hibbard, J. van Gorkom, J.	Columbia Columbia	Interacting and merging galaxies.	20 line	2	9.0
AH418	Hoffman, G.L. Salpeter, E. Condon, J. Dickey, J.	Lafayette Cornell NRAO-CV Minnesota	Survey of a rich supercluster.	20	15	8.0
AJ191	Jauncey, D. Jones, D. Meier, D. Murphy, D. Preston, R.	CSIRO (Sydney) JPL JPL JPL JPL	Monitoring possible Einstein ring 1830-211.	3.6	11	1.0
AJ196	Johnston, H. Kulkarni, S. Phinney, E.	Caltech Caltech Caltech	The luminosity function of globular cluster pulsars.	20	2	8.0

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Program	Observer	Affiliation	Program Title	Bands cm	Obsv Date	Sched hrs
AK259	Kiplinger, A. Dulk, G. Belkora, L. Lin, R. Bastian, T.	Colorado Colorado Colorado Calif., Berkeley NRAO-VLA	Fine structures in solar flares.	2, 3.8, 6	24, 30	12.0
AK260	Kogut, A. Petuchowski, S. Bennett, C. Smoot, G.	NASA-GFSC/NRC NASA-GSFC NASA-GSFC Calif., Berkeley	Formaldehyde mapping of M82.	6 line	6	6.0
AL232	Langston, G.	NRL	K-band bright compact sources.	1.3	18	12.5
AM297	Murphy, D. Perley, R.	JPL NRAO-VLA	Where is the counter jet in 3C273?	20	6	4.0
AM309	Marscher, A. Bania, T.	Boston Univ. Boston Univ.	Molecular absorption toward extragalactic continuum sources.	1.3,6,20 line	10	11.1
AM310	Malkan, M. Baganoff, F.	UCLA UCLA	Variability of northern ecliptic pole active galactic nuclei.	2,3.8,6	1, 8, 16 26, 28	5.0
AM313	McKinnon, M.	NMIMT	A search for pulsar mode-switching.	20	9	4.0
AO087	Owen, F. Eilek, J. Cornwell, T.	NRAO-VLA NMIMT NRAO-VLA	Observations of M87.	90	26	4.0
AP183	Pedlar, A. Axon, D.J. Baum, S. O'Dea, C. Unger, S.W.	NRAL (Jodrell Bank) NRAL (Jodrell Bank) Dwingeloo Dwingeloo Royal Greenwich Obs.	8.4 and 5 GHz observations of NGC 4151.	3.6, 6	7	2.0
AP196	Puche, D. Brinks, E. Westpfahl, D.	NRAO-VLA NRAO-VLA NMIMT	Structure of the ISM in nearby dwarf galaxies.	20 line	2	6.0
AP200	Phookun, B. Mundy, L.	Maryland Maryland	NGC4027 and NGC4378: HI observations of one-armed spiral galaxies.	20 line	13	8.0
AR230	Rawlings, S. Alexander, P. Eales, S.	MRAO (Manchester) MRAO (Manchester) Toronto (Canada)	Radiogalaxy 6C1232+39 at z=3.22.	2	3	9.1
AR231	Reid, M. Menten, K.	CfA CfA	"Light curves" for Mira variables.	3.8	2, 24	6.0
AR234	Rhee, G.	New Mexico State	NATs in rich clusters: the shape of galaxy orbits.	20	14	12.5
AS333	Sramek, R. Weiler, K. vanDyk, S. Panagia, N.	NRAO-VLA NRL NRL STScI	Statistical properties of radio supernovae	2, 6	7, 8, 14, 20	12.0
AS418	Schmahl, E. White, S. Gopalswamy, N. Kundu, M.	Maryland Maryland Maryland Maryland	Post-flare and primary energy release loops: same or different?	2,3.8,6, 20	14	9.0
AS424	Smoker, J. Hummel, E. Axon, D. Davies, R.	NRAL (Jodrell Bank) NRAL (Jodrell Bank) NRAL (Jodrell Bank) NRAL (Jodrell Bank)	The dark matter content of dwarf galaxies.	20 line	22	12.0
AT108	Terlevich, R. Brinks, E. Skillman, E. Terlevich, E.	RGO (Cambridge) NRAO-VLA Minnesota Royal Greenwich Obs.	Seyfert galaxy NGC 1068.	20 line	21	6.0
AT111	Thorsett, S. Nice, D. Stinebring, D. Taylor, J.	Princeton Princeton Princeton Princeton	The eclipsing binary millisecond pulsar in Terzan 5.	20	1	0.5 w/AT112
AT112	Thorsett, S. Stinebring, D. Taylor, J. Hankins, T.	Princeton Oberlin Princeton NRAO-VLA	Timing fast pulsars at the VLA.	20	1	0.5 w/AT111
AT113	Troland, T. Crutcher, C. Roberts, D. Goss, W.M.	Kentucky Illinois NRAO-VLA NRAO-VLA	New VLA Zeeman observations of Orion A, Orion B, and W3.	20 line	16	8.0
AT114	Taylor, A. Dougherty, S.	Calgary Calgary	Monitoring of radio variable Be stars.	3.8	28	3.0
AV182	van Gorkom, J. Bothun, G. Impey, C.	Columbia Michigan Arizona	HI imaging of low surface brightness galaxies.	20 line	28,29,30	27.5
AV184	van der Hulst, J. Bothun, G.	Westerbork (Neth) Michigan	HI imaging of low surface brightness galaxies.	20 line	10,16,17, 20	44.5
AW230	Wrobel, J. Unger, S.	NRAO-VLA RGO (Cambridge)	Monitoring of the Seyfert NGC 5548.	3.8	7	1.0
AW249	Wills, B. Shastri, P.	Texas Texas	Core variability in lobe-dominated	6	1	2.0
AW264	Wolfe, A. Oren, A. Garwood, R.	CASS-UCSD CASS-UCSD NRAO-CV	Faraday rotation in QSOs.	20	11	12.6
AZ044	Zhao, J. Ekers, R. Goss, W. Lo, K. Narayan, R.	New Mexico AT (Australia) NRAO-VLA Illinois Steward	Flux density variations caused by RISS in Sgr A.	3.8,6,20	11, 18, 28	3.5
AZ046	Zwarthoed, G. Penninx, W.	Amsterdam (Neth) Amsterdam (Neth)	Four unclassified low mass x-ray binaries.	6	11, 18, 28	4.0

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Program	Observer	Affiliation	Program Title	Bands cm	Obsv Date	Sched hrs
AZ048	Zamorani, G.	Bologna (Italy)	Deep radio, optical and X-ray survey of a selected region.	20	18	9.0
	de Ruiter, H.	Bologna (Italy)				
	Parma, P.	Bologna (Italy)				
	Giacconi, R.	STScI				
	Burg, R.	STScI				
		NRAO Staff	Electronics			48.6
			Baseline/Startup/Pointing			51.5
			Move/Operations			0.0
			Software			33.6
			General Test			28.3
			Holiday/Shutdown			36.8
			Standard Field			12.0

901204PDH/wt

The average downtime for the month of December 1990 was approximately 4.7%.

The array was scheduled 95.1% (709.3 hours) of the time: 71.7% (535.2 hours) to astronomical programs, 12.3% (91.8 hours) to scheduled test/calibration, and the remaining 11.0% (82.2 hours) went to scheduled maintenance.

The array was in the C configuration from December 1 through December 31.

The total number of programs run for the month of December, 1990 was 57.

The following independent proposals shared simultaneous observing time (9.0 hours total simultaneous observing):

Projects	Hours
AH367/AH368	8.5
AT111/AT112	0.5

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Program	Observer	Affiliation	Program Title	Bands cm	Obsv Date	Sched hrs
AA103	Andernach, H.	INPE, Brazil	Tailed radio galaxies 3C40 and NGC 7385.	6, 20, 90	18	4.0
AA108	Anderson, M. Rudnick, L. Perley, R.	Minnesota Minnesota NRAO-VLA	The time evolution of SNR Cassiopeia A.	6, 20	26	9.0
AA114	Aller, H. Aller, M. Bregman, J.	Michigan Michigan Michigan	X-ray/radio variability in active galactic nuclei (with ROSAT).	2	3, 9, 14 23, 27 w/GW1, GW2	5.6
AB414	Becker, R. White, R.	Calif.-Davis STScI	Monitoring radio stars HD193793 and P Cygni.	2, 6	18	1.8
AB456	Burke, B. Hewitt, J. Roberts, D.	MIT Haystack Brandeis	Monitoring Lens 0957+561.	6	1	3.0
AB525	Braun, R. van Gorkom, J. Walterbos, R. Kennicutt, R. Norman, C.	Dwingeloo (Neth) Columbia Calif.-Berkeley Steward Obs. STScI	The interstellar media of nearby galaxies.	20 line	29	12.0
AB552	Beckman, J. Cepa, J. Shaw, M. Pedlar, A. Vila, B.	IAC (Spain) IAC (Spain) Manchester NRAL (Jodrell Bank) NRAL (Jodrell Bank)	Triggering by density waves in grand design spiral galaxies.	20 line	27	11.9
AB555	Blommaert, J. van Langevelde, H. Habing, H.	Leiden (Neth) Leiden (Neth) Leiden (Neth)	Low luminosity OH/IR stars in the galactic disk.	20 line	8	8.0 w/GW1
AB565	Bell, M. Broten, N. Seaquist, E.	NRC/HIA (Canada) NRC/HIA (Canada) Toronto (Can)	Detection of the H166 alpha line in absorption in 3C84.	20 line	19	10.3 w/GP2
AB579	Bookbinder, J. Linsky, J. Brown, A. Fleming, T. Bromage, G.	CfA Colorado Colorado MPIfEP (Garching) Rutherford (London)	Monitoring M dwarfs during the ROSAT all-sky survey.	3.8,6,20	2, 15 25	8.6 w/GV4, GJ1
AD246	Dickey, J. Kazes, I. Mirabel, I. Womble, D.	Minnesota Obs. de Paris-Meudon Saclay (France) Calif.-San Diego	02483+4302: a galaxy with a megamaser and a background quasar.	1.3, 3.8, 6 6, 20 line		10.0
AD254	Dey, A. van Breugel, W.	Calif.-Berkeley Lawrence Livermore	Radio-loud far-infrared galaxies.	6	18	8.0 w/GP2
AF196	Feretti, L. Giovannini, G. Dallacasa, D.	Bologna (Italy) Bologna (Italy) Bologna (Italy)	Radio polarization mapping of head-tail source NGC4869.	3.8,6,20	23, 26	16.1
AF197	Feretti, L. Giovannini, G.	Bologna (Italy) Bologna (Italy)	Cluster radio galaxies of small size.	6	17, 21	10.9
AH295	Habing, H. Goss, W. Winnberg, A. van Langevelde, H.	Leiden (Neth) NRAO-VLA Onsala (Sweden) Leiden (Neth)	Monitoring OH/IR stars at the galactic center.	20 line	6	2.0 w/UAH1
AH367	Hummel, E. Pedlar, A. Davies, R.	NRAL (Jodrell Bank) NRAL (Jodrell Bank) NRAL (Jodrell Bank)	The B-field structure in NGC 3310.	3.8, 6	19, 24	16.0 w/AH368, GP2
AH368	Hummel, E. Gotz, G. Beck, R.	NRAL (Jodrell Bank) MPIfR (Bonn) MPIfR (Bonn)	The cosmic ray propagation and B-field structure in edge-on galaxies.	6, 20	19, 24	16.0 w/AH367, GP2
AH417	Hibbard, J. van Gorkom, J.	Columbia Columbia	Interacting and merging galaxies.	20 line	23,25,29	27.0
AH423	Ho, P. Norton, L.	Harvard Harvard	The contracting core in W51.	1.3 line	9, 10	18.0 w/GW2, GZ2
AJ191	Jauncey, D. Jones, D. Meier, D. Murphy, D. Preston, R.	CSIRO (Sidney) JPL JPL JPL JPL	Monitoring possible Einstein ring 1830-211.	3.8	21	1.0
AJ196	Johnston, H. Kulkarni, S. Phinney, E.	Caltech Caltech Caltech	The luminosity function of globular cluster pulsars.	20	25	8.0
AK260	Kogut, A. Petuchowski, S. Bennett, C. Smoot, G.	NASA/NRC NASA/GSFC NASA/GSFC Calif.-Berkeley	Formaldehyde mapping of M82.	6 line	30	6.0
AL150	Lestrade, J.F. Preston, R.A.	JPL JPL	Statistical properties of RSCVn stars.	6	2	0.9
AL225	Li, G. Seaquist, E. Wrobel, J.	Toronto (Can) Toronto (Can) NRAO-VLA	Radio morphology of star forming SO galaxies.	3.8	21	6.0
AL235	Lizano, S. Rodriguez, L. Canto, J. Escalante, V.	UNAM (Mexico) UNAM (Mexico) UNAM (Mexico) UNAM (Mexico)	Atomic hydrogen in reflection nebulae.	20 line	1	5.0
AM310	Malkan, M. Baganoff, F.	UCLA UCLA	Variability of northern ecliptic pole active galactic nuclei.	2, 3.8, 6	3, 9, 14 23, 27	4.0 w/GW2
AM313	McKinnon, M.	NMIMT	A search for pulsar mode-switching.	20	28	4.2
AP193	Purcell, W. Ulmer, M. Yusef-Zadeh, F.	Northwestern Northwestern Northwestern	Emission around binary and millisecond pulsars.	3.8, 20	4	12.0 w/GU1
AR231	Reid, M. Menten, K.	CfA CfA	"Light curves" for Mira variables.	3.8	14, 26	6.0
AR236	Rodriguez, L. Hartmann, L.	UNAM (Mexico) CfA	Observations at 2 and 1.3 cm of detected FU Orionis stars.	1.3, 2	24	12.0

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AR237	Rodriguez, L. Anglada, G. Estalella, R.	UNAM (Mexico) Barcelona (Spain) Barcelona (Spain)	Spectral index of of IRAS16293-2422B between 2 and 1.3 cm.	1.3, 2	2	4.5 w/GV4
AR239	Rawlings, S. Eales, S.	MRAO Toronto (Can)	High redshift galaxy candidates.	3.8	7	2.2 w/GZ1
AS333	Sramek, R. Weiler, K. van der Hulst, J. Panagia, N.	NRAO-VLA NRL Westerbork (Neth) STScI	Statistical properties of radio supernovae.	2, 6	15, 30	3.5 w/GJ1
AS417	Sanders, W. Fomalont, E.	NM State NRAO-CV	VLB calibrators near bright radio stars.	20	10, 16	2.5 w/GZ2
AS425	Sramek, R. Goss, W. Cowan, J.	NRAO-VLA NRAO-VLA Oklahoma	Radio emission from supernova SN1970G	3.8	15	8.0 w/GJ1
AT111	Thorsett, S. Nice, D. Stinebring, D. Taylor, J.	Princeton Princeton Princeton Princeton	The eclipsing binary millisecond pulsar in Terzan 5.	20	30	14.5 w/AT112
AT112	Thorsett, S. Stinebring, D. Taylor, J. Hankins, T.	Princeton Princeton Princeton NRAO-VLA	Timing fast pulsars at the VLA.	20	30	14.5 w/AT111
AV179	Veale, A. Linsky, J. Brown, A. Fleming, T. Neff, J.	Colorado Colorado Colorado MPIfEP (Garching) NASA-Goddard	3-D structure of RS CVn stellar atmospheres.	3.8,6,20	9, 10 11, 12	22.2 w/GW2, GZ2, GP1
AW230	Wrobel, J. Unger, S.	NRAO-VLA RGO (Cambridge)	Monitoring of the Seyfert NGC 5548.	3.8	6	1.1 w/UAH1
AW249	Wills, B. Shastri, P.	Texas Texas	Core variability in lob-dominated quasars.	6	14, 15	4.5
AW269	Wilkinson, P. Polatidis, A. Readhead, A. Pearson, T. Xu, W.	NRAL (Manchester) NRAL (Manchester) Caltech Caltech Caltech	The Caltech-Jodrell survey of strong sources.	6	3	1.0
AW271	Wallace, B. Taylor, A. Goss, W.	Calgary Calgary NRAO-VLA	A search for new supernova remnants.	20	14	6.0 w/GW1
AW272	Williams, B. van Gorkom, J.	Delaware Columbia	HI synthesis of two compact groups.	20 line	8, 9, 10 13	25.1 w/GW1,GW2,GP1
AY035	Yin, Q. Thuan, T.	NRAO-CV Virginia	Blue compact dwarf galaxies.	6	2	6.6 w/GV4
AZ044	Zhao, J. Ekers, R. Goss, W. Lo, K. Narayan, R.	New Mexico AT (Australia) NRAO-VLA Illinois Steward	Flux density variations caused by RISS in Sgr A.	3.8,6,20	12, 19, 23	4.5 w/GP2
AZ045	Zeilinger, W. Gregorini, L.	Padua (Italy) Bologna (Italy)	Minor-axis dust-lane ellipticals.	6	4, 14	7.5 w/GU1
AZ046	Zwarthoed, G. Penninx, W.	Amsterdam (Neth) Amsterdam (Neth)	Four unclassified low mass x-ray binaries.	6	11, 21,	2.5
AZ047	Zhou, S. Evans, N. Mundy, L.	Hawaii Texas Maryland	Probing the protostellar disk in the NGC2071 star forming region.	1.3 line	27	10.0
AZ048	Zamorani, G. de Ruiter, H. Parma, P. Giacconi, R. Burg, R.	Bologna (Italy) Bologna (Italy) Bologna (Italy) STScI STScI	Deep radio, optical and X-ray survey of a selected region.	20	8	8.8 w/GZ1, GW1
GA1	Alef, W. Preus, E. Kellerman, K.I.	MPIfR MPIfR NRAO	The core of the CSS source 3C147 at 8.4 and 22 GHz.	3.6 Phased array VLBI	2	15.2 w/GV4
GC1	Cawthorne, T.V. Roberts, D.H. Wardle, J.F.C.	CfA Brandeis Brandeis	Linear polarization properties of 4C71.02, 1928+738, and 3C380.	6 cm Phased array MK III VLBI	16	24.6
GE1	Elosegui, P. Marcaide, J. Alberdi, A. Rioja, M.J. Cotton, W.D. Shapiro, I.I.	IAA IAA IAA MPIfR/IAA NRAO CfA	Detailed study of the compact structure of 3C395.	3.6 Phased array MK III VLBI	1	11.0
GG1	Giovannini, G. Comoretto, G. Feretti, L. Venturi, T. Wehrle, A.	Bologna (Italy) Arcetri (Italy) Bologna (Italy) IRA/Bologna (Italy) CIT-Pasadena	VLBI observations of the low luminosity radio galaxy NGC315.	3.6 Phased array VLBI	3	12.2
GG2	Giovannini, G. Comoretto, G. Feretti, L. Marcaide, J. Venturi, T. Wehrle, A.	Bologna (Italy) Arcetri (Italy) Bologna (Italy) IAA IRA/Bologna CIT-Pasadena	Observations of 3 extended radio galaxies with faint nuclei.	6 cm. Phased array MK III VLBI	14	8.5
GG3	Gurvits, L.I. Kardashev, N.S. Popov, M.V. Schilizzi, R.T. Barthel, P.D. Pauliny-Toth, I.I.K. Kellermann, K.I.	Lebedev (USSR) Lebedev (USSR) Lebedev (USSR) NFRA-Dwingeloo Kapteyn (Neth) MPIfR NRAO	The radio structure of quasars which are ten times younger than the universe.	6 cm. VLBI	15,19,20 Phased array +17.0 single antenna	7.1 w/GP2, AB565

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GG4	Giovannini, G. Comoretto, G. Feretti, L. Venturi, T. Vermeulen, R.C. Wehrle, A.	Bologna (Italy) Arcetri (Italy) Bologna (Italy) IRA/Bologna CIT-Pasadena CIT-Pasadena	Observations of 3 radio galaxies with strong nuclei.	6 cm. VLBI	20 Phased array single antenna	7.3 0.0
GJ1	Jones, D.L. Murphy, D.W. Preston, R.A. Meier, D.L. Jauncey, D.L. Perley, R.A. Tzioumis, A. Patnaik, A. Muxlow, T. Rao, P.	JPL JPL JPL JPL CSIRO NRAO-VLA Australia Telescope Jodrell Bank Jodrell Bank GMRT	Monitoring of a 10-Jansky Einstein ring.	6 cm. single antenna VLBI	15 w/AS425, AB579, AS333	10.2
GL1	Lestrade, J-F. Gabuzda, D.C. Preston, R.A. Phillips, R.B.	JPL JPL JPL Haystack Obs.	Phase-referenced VLBI observations of RS CVn stars.	6 cm. Phased array MK III VLBI	16	16.1
GM2	Mutel, R. Baum, S. O'Dea, C.	Iowa Dwingeloo (Neth) Dwingeloo (Neth)	Multi-frequency maps of three compact doubles.	3.6 cm. Phased array VLBI	5	24.1
GP1	Porcas, R.W. Alef, W.	MPIfR (Bonn) MPIfR (Bonn)	VLBI monitoring of OJ287 at 1.3 and 3.6 cm. (w/AW272, AV179)	1.3 3 antenna MK III VLBI	10	10.6
GP2	Pearson, T.J. Readhead, A.C.S.	Owens Valley Obs. Owens Valley Obs.	Second-epoch maps and spectra of four sources. (w/AD254,AH367,AH368,AZ044)	6, 18 cm. single antenna VLBI	18	15.2
GU1	Unwin, S.C. Wehrle, A.E. Zensus, A.	Caltech Caltech NRAO-VLA	Evolution of the parsec-scale jet in 3C345.	3.6 cm. single antenna VLBI w/tests, AZ045, AP193	4	16.3
GV3	Vermeulen, R.C. Hough, D.H. Readhead, A.C.S.	CIT Trinity CIT	Survey of very weak nuclei in double-lobed quasars: pilot observations.	3.6 cm. Phased array MK III VLBI	4	12.3
GV4	Vermeulen, R.C. Conway, J.E.	Caltech JPL	X-band phase-referencing at multi-degree separations. (w/AB579, AL150, AR237, AY035, GA1, UC1)	3.6 cm. single antenna VLBI	2	14.0
GW1	Wilkinson, P.N. Polatidis, A. Akujor, C.E.	NRAL (Jodrell Bank) NRAL (Jodrell Bank) NRAL (Jodrell Bank)	3C380: a QSO with twin active nuclei?	6, 1.35 3 antenna VLBI w/AB555, AW272, AZ048	8, 14	20.9
GW2	Wehrle, A.E. Unwin, S.C. Zensus, A. Cohen, M.H.	Caltech Caltech NRAO-VLA Caltech	Monitoring superluminal motion in 3C345.	1.3 cm. 3 antenna VLBI w/tests, AA114,AH423,AM310,AV179, AW272	9	16.3
GZ1	Zhang, Y.F. Marscher, A.P.	Boston Boston	The peaked spectrum variable source 0528+134.	1.35 cm. 3 antenna VLBI w/startup, tests, AR239, AZ048	7	11.2
GZ2	Zensus, A. Unwin, S.C.	NRAO-VLA Caltech	Imaging of 3C273 at 22 GHz. (w/AS417, AV179, GZ1)	1.3 cm. 3 antenna VLBI	16	11.4
GZ4	Zhang, F.J. Spencer, R.E. Schilizzi, R. Fanti, C. Fanti, R. van Breugel, W.J.M. Chu, H.S.	NRAL (Jodrell Bank) NRAL (Jodrell Bank) Dwingeloo (Neth) Bologna (Italy) Bologna (Italy) Lawrence Livermore	Fine structure of CSS radio source 3C286.	18 cm. Phased array VLBI	18	11.7
UC1	Conway, J.E.	Caltech	Observations of bright nuclei of powerful double-lobed radio galaxies. (w/GV4)	3.6 cm. Phased array MK III VLBI	1	8.4
UG1	Greenhill, L.J. Moran, J.M. Reid, M.J. Argon, A. Menten, K. Hirabahashi, H. Gwinn, C.R.	CfA CfA CfA CfA CfA ISAS Calif, Santa Barbara	Watermasers in M33.	1.35 cm. Phased array MK III VLBI	11, 12	35.6
UAH1	Migenes, V.	NRAL	Phase referencing. (w/AW230)	3.8 cm. single antenna VLBI	6	3.0
	NRAO Staff		Electronics			28.9
			Baseline/Startup/Pointing			33.8
			Move/Operations			2.0
			Software			20.0
			General Test			21.8
			Holiday/Shutdown			26.2
			Standard Field			0.0

901205PDH/wt

The average downtime for the month of November 1990 was approximately 8.9%.

The array was scheduled 96.4% (695.8 hours) of the time: 82.2% (593.5 hours) to astronomical programs, 7.4% (53.4 hours) to scheduled test/calibration, and the remaining 6.8% (48.9 hours) went to scheduled maintenance.

The array was in the C configuration from November 1 through November 30.

The total number of programs run for the month of November, 1990 was 72.

The following independent proposals shared simultaneous observing time (161.6 hours total simultaneous observing):

Projects	Hours	Projects	Hours
AA114/GW1	0.9	AV179/GP1	7.8
AA114/GW2	1.0	AV179/GW2	1.5
AB555/GW1	8.0	AV179/GZ2	7.2
AB565/GG3	1.8	AW230/UAH1	1.1
AB579/GJ1	3.5	AW271/GW1	6.0
AB579/GV4	1.6	AW272/GP1	2.8
AD254/GP2	5.5	AW272/GW1	2.0
AH295/UAH1	1.9	AW272/GW2	0.1
AH367/AH368	8.0	AY035/GV4	6.6
AH367/AH368	8.0	AZ044/GP2	1.5
AH367/AH368/GP2	8.0	AZ045/GU1	5.0
AH423/GW2	9.0	AZ048/GW1	4.0
AH423/GZ2	2.6	AZ048/GZ1	4.8
AL150/GV4	0.9	GA1/GV4	0.1
AM310/GW2	1.0	GG3/GP2	0.2
AP193/GU1	10.8	startup/GZ1	1.1
AR237/GV4	4.5	tests/GU1	0.5
AR239/GZ1	2.2	tests/GW2	1.8
AS333/GJ1	0.5	tests/GW2	2.0
AS417/GZ2	1.5	tests/GZ1	3.1
AS425/GJ1	6.3	UC1/GV4	0.3
AT111/AT112	14.5		

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Program	Observer	Affiliation	Program Title	Bands cm	Obsv Date	Sched hrs
AA114	Aller, H. Aller, M. Bregman, J.	Michigan Michigan Michigan	X-ray/radio variability in active galactic nuclei (with ROSAT).	2	3,6,10,15 19,22,26	7.6
AA117	Anantharamaiah, K. Goss, W. van Gorkom, J. Viallefond, F. Zhao, J.	Raman (Bangalore) NRAO-VLA Columbia Meudon (France) New Mexico	Recombination lines from extragalactic sources.	3.8 line	20, 24, 25, 29	36.0
AB414	Becker, R. White, R.	Calif.-Davis STScI	Monitoring radio stars HD193793 and P Cygni.	2, 6	1	2.0
AB456	Burke, B. Hewitt, J. Roberts, D.	MIT Haystack Brandeis	Monitoring Lens 0957+561.	6	4	2.0
AB573	Becker, R. Helfand, D. White, R.	Calif.-Davis Columbia STScI	A sample of O-stars from a survey of galactic plane.	6	2, 4, 15	18.1
AB579	Bookbinder, J. Linsky, J. Brown, A. Fleming, T. Bromage, G.	CfA Colorado Colorado MPIfEP (Garching) Rutherford (London)	Monitoring M dwarfs during the ROSAT all-sky survey.	3.8,6,20 line	1, 10 16,17,23	19.1
AB581	Baldwin, J. Wilson, A.	Cerro Tololo Maryland	The Seyfert Galaxy NGC 3393.	3.8,6,20	27	3.0
AB585	Bietenholz, M. Frail, D.	Toronto NRAO-VLA	Compact synchrotron nebula around the Vela pulsar.	20	4, 12	7.0
AB587	Burns, J. Clarke, D.	NMSU Illinois	The inner lobes and jet of Centaurus A.	3.8	27	3.5
AC270	Cowan, J. Branch, D.	Oklahoma Oklahoma	Intermediate age supernovae 1957D and 1950B in M83.	6	14	8.2
AC279	Carilli, C. van Gorkom, J.	CfA Columbia	HI observations of two quasar-galaxy pairs.	20 line	1,10,14	15.5
AC281	Condon, J. Helou, G. Sanders, D. Soifer, B.	NRAO-CV IPAC Caltech Caltech	UGC 12914/5 collision.	6,20 line	22	10.0
AC288	Crutcher, R. Troland, T.	Illinois Kentucky	Zeeman measurements of the magnetic field in S106.	20 line	27, 28	24.0
AD253	de Pater, I.	Calif.-Berkeley	Jupiter's changing atmospheric morphology.	3.8	13, 21	10.5
Adhoc	Reid, M.	CfA			20	0.2
AE064	Elias, N.	Pennsylvania	Serpentid binary star V367 Cygni.	3.8, 6	10,11,16, 18	9.3
AE070	Elmegreen, D. Brinks, E. Elmegreen, B. Kaufman, M.	Vassar NRAO-VLA Watson Research Ctr Ohio State	HI velocity field of the Ocular galaxy IC2163.	20 line	11	7.5
AF204	Fomalont, E. van Breugel, W. Ekers, R.	NRAO-CV Lawrence Livermore AT (Australia)	Fornax A: spectral index, depolarization, rotation measure.	6	1	6.5
AF206	Fruchter, A. Goss, W.	Carnegie Inst. NRAO-VLA	Globular cluster sources and diffuse emission.	20	5	6.0
AG312	Gray, A. Cram, L. Goss, W.	Univ. of Sydney Univ. of Sydney NRAO-VLA	A peculiar object near the galactic center (G359.1-0.2).	20	11	5.7
AH390	Hjellming, R. Gehrz, R. Taylor, A. Seaquist, E.	NRAO-VLA Minnesota Calgary Toronto (Can)	Resolving radio novae.	3.8,6,20	19	6.0
AH404	Hamilton, T. Helfand, D.	Columbia Columbia	The Einstein Eridanus deep survey field.	20	2, 4	13.0
AH412	Hibbard, J. van Gorkom, J. Schweizer, F.	Columbia Columbia DTM	Interacting and merging galaxies.	20 line	2,3,4,5 6, 7, 9	28.5
AH416	Harris, D. Willis, A. Dewdney, P. McHardy, I. Stern, C.	CfA DRAO (Canada) DRAO (Canada) Oxford (England) CfA	Radio halos and cluster sources.	3.8, 20	29	14.0
AI042	Impey, C. Foltz, C. Weymann, R. Hewett, P.	Arizona MMT Observatory Carnegie Observ. IoA, Cambridge (UK)	The radio properties of optically selected quasars.	3.8	25	10.0 with tests
AJ191	Jauncey, D. Jones, D. Meier, D. Murphy, D. Preston, R. Perley, R.A. Rao, P. Tzioumis, A. Muxlow, T. Patnaik, A.	CSIRO (Sidney) JPL JPL JPL JPL/Caltech NRAO-VLA Jodrell Bank Jodrell Bank Jodrell Bank Jodrell Bank	Monitoring possible Einstein ring 1830-211.	3.8	20	1.0
AJ197	Jackson, J. Rieu, N.	Boston Univ. Obs. de Paris-Meudon	Shocked SO2 in the bipolar nebula OH231.8+4.2.	1.3 line	22	8.0
AK251	Koribalski, B. Dahlem, M. Mebold, U. Klein, U.	Bonn (FRG) MPIfR (Bonn) Bonn (FRG) MPIfR (Bonn)	Peculiar filaments in the halo of NGC 1808.	20 line	13,14,15	15.5
AL150	Lestrade, J.F. Preston, R.A.	JPL/Obs. Meudon JPL	Statistical properties of RSCVn stars.	6	8,9,16	9.2

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Program	Observer	Affiliation	Program Title	Bands cm	Obsv Date	Sched hrs
AL229	La Franca, F. Cristiani, S. Gregorini, L. de Ruiter, H. Owen, F.	IRA - Bologna Padua (Italy) IRA - Bologna Osv. Ast. Bologna NRAO-VLA	A complete sample of optically selected quasars.	6	23	8.0
AL235	Lizano, S. Rodriguez, L. Canto, J. Escalante, V.	UNAM (Mexico) UNAM (Mexico) UNAM (Mexico) UNAM (Mexico)	Atomic hydrogen in reflection nebulae.	20 line	31	3.0
AM303	Malkan, M. Baganoff, F.	UCLA UCLA	Variability of north ecliptic pole active galactic nuclei.	3.8	6,12,15,20 23	5.1
AO104	Owen, F. White, R.	NRAO-VLA STScI	Completion of two radio surveys of Abell clusters.	20	21	4.0
AR221	Rodriguez, L. Moran, J. Curiel, S.	UNAM (Mexico) CfA CfA	Study of the remarkable triple source in Serpens.	2	20	5.8
AR228	Roberts, D. van Gorkom, J. Goss, M. Leahy, P.	NRAO-VLA Columbia NRAO-VLA NRAO-VLA	Recombination Line observations of Sgr A West.	3.8 line	6, 7, 13	24.0
AR231	Reid, M. Menten, K.	CfA CfA	"Light curves" for Mira variables.	3.8	7, 12	7.5
AR232	Reynolds, S.	North Carolina St.	Small-scale structure in young supernova remnants.	6, 20	21	9.0
AS333	Sramek, R.A. Weiler, K.W. van der Hulst, J.M. Panagia, N.	NRAO-VLA NRL Westerbork STScI	Statistical properties of radio supernovae.	6	10	1.4
AS406	Simpson, J. Colgan, S. Rubin, R.	NASA/Ames NASA/Ames NASA/Ames	Studies of HII regions: G1.13-0.10.	2, 6	1	1.0
AS412	Smith, E. Kassim, N.	NASA/GSFC NRL	Radio emission from interacting/merging galaxies.	6, 20	5, 6, 7	22.0
AS413	Stocke, J. Maccacaro, T. Gioia, I. Morris, S.	Colorado CfA CfA Carnegie Obs.	The Einstein extended medium sensitivity x-ray survey.	6	12,13,14	10.0
AS417	Sanders, W. Fomalont, E.	New Mexico State NRAO-CV	VLB calibrators near bright radio stars.	20	22	1.5
AS423	Skinner, S. Brown, A. Linsky, J.	Colorado Colorado Colorado	Spectral indices and variability of radio-emitting Herbig Ae/Be stars.		6	6.0
AT111	Thorsett, S. Nice, D. Stinebring, D. Taylor, J.	Princeton Princeton Princeton Princeton	The eclipsing binary millisecond pulsar in Terzan 5.	20	26	14.0 w/AT112
AT112	Thorsett, S. Stinebring, D. Taylor, J. Hankins, T.	Princeton Princeton Princeton NRAO-VLA	Timing fast pulsars at the VLA.	20	26	14.0 w/AT111
AT114	Taylor, A. Dougherty, S.	Calgary Calgary	Monitoring of radio variable Be stars.	3.8	19	3.0
AV161	Velusamy, T.	TIFR (India)	Jet, Filaments and Outer structure of the Crab Nebula at 327MHz	90	8	4.0
AV176	van Breugel, W. McCarthy, P. Kapahi, V.	Lawrence Livermore Carnegie TIFR (India)	High redshift molongio radio galaxies.	3.8,6,20	13	4.0
AV183	Viallefond, F. Downes, D. Radford, S. Solomon, P.	Meudon (France) IRAM (France) IRAM (France) Stonybrook, NY	HI-CO emission in the spiral galaxies NGC 3147 and NGC 1614.	20 line	23	10.0
AW230	Wrobel, J. Unger, S.	NRAO-VLA RGO (Cambridge)	Monitoring of the Seyfert NGC 5548.	6	16	1.5
AW249	Wills, B. Shastri, P.	Texas Texas	Core variability in lobe-dominated quasars.	6	28	10.0
AW259	Wang, Z. Kenney, J. Scoville, N.	Caltech Caltech Caltech	Strongly shocked interstellar gas in IC443.	20 line	19	3.0
AW261	Whiteoak, J. Gray, A. Cram, L. Goss, W.	Univ. of Sydney Univ. of Sydney Univ. of Sydney NRAO-VLA	High resolution imaging of a cluster near the galactic center.	20	12	5.9
AY038	Yin, Q. Heeschen, D. Saslaw, W.	NRAO-CV NRAO-CV NRAO/UVa	Spectral index of 2259+157.	6, 20	20	2.0
AZ044	Zhao, J. Ekers, R. Goss, W. Lo, K. Narayan, R.	New Mexico AT (Australia) NRAO-VLA Illinois Steward Obs.	Flux density variations caused by RISS in Sgr A.	3.8,6,20	10, 29	3.0
AZ045	Zeilinger, W. Gregorini, L.	Padua (Italy) IRA (Bologna)	Minor-axis dust-lane ellipticals.	6	10,11,12	6.3
AZ046	Zwarthoed, G. Penninx, W.	Amsterdam (Neth) Amsterdam (Neth)	Four unclassified low mass x-ray binaries.	6	10, 22	2.0
BF001	Frail, D. van Langevelde, H. Habing, H. Cordes, J.	NRAO-VLA Leiden (Neth) Leiden (Neth) Cornell	Angular broadening measurements of OH masers.	20 line	18	8.4 with move/op

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Program Observer	Affiliation	Program Title	Bands cm	Obsv Date	Sched hrs
	NRAO Staff	Electronics			82.2
		Baseline/Startup/Pointing			52.3
		Move/Operations			24.8
		Software			46.0
		General Test			56.0
		Holiday/Shutdown			0.0
		Standard Field			0.0

901107PDH/wt

The average downtime for the month of October 1990 was approximately 3.3%.

The array was scheduled 100.0% (747.1 hours) of the time: 65.6% (490.1 hours) to astronomical programs, 17.2% (128.7 hours) to scheduled test/calibration, and the remaining 17.2% (128.2 hours) went to scheduled maintenance.

The array was in the B/C configuration from October 1 through October 18.
C configuration from October 18 through October 31.

The total number of programs run for the month of October, 1990 was 59.

The following independent proposals shared simultaneous observing time (22.7 hours total simultaneous observing):

Projects	Hours
AI042/tests	6.1
AL150/tests	0.2
AT111/AT112	14.0
BF001/move/op	2.5

VLA UTILIZATION REPORT SEPTEMBER 1990

Program	Observer	Affiliation	Program Title	Bands cm	Obsv Date	Sched hrs
AA108	Anderson, M. Rudnick, L. Perley, R.	Minnesota Minnesota NRAO-VLA	The time evolution of SNR Cassiopeia A.	6, 20	14	12.0
AA112	Anantharamaiah, K. Goss, W.	Raman Inst. NRAO-VLA	Recombination lines from NGC253.	3.5 cm line	1, 2	14.0
AA114	Aller, H. Aller, M. Bregman, J.	Michigan Michigan Michigan	X-ray/radio variability in active galactic nuclei (with ROSAT).	2 w/VR51, VS86	3,5,7,10,11 16,19,21,22 25,27,29,30	13.5
AB414	Becker, R. White, R.	Calf.-Davis STScI	Monitoring radio stars HD193793 and P Cygni	2, 6	2	2.0
AB456	Burke, B. Hewitt, J. Roberts, D.	MIT Haystack Brandeis	Monitoring Lens 0957+561	6	6	2.0
AB572	Baudry, A. Brouillet, N. Klein, U. Henkel, C. Jacq, T.	Bordeaux Obs. Bordeaux/MPIfR MPIfR Bonn (FRG) MPIfR (Bonn) Bordeaux Obs.	H2O maser activity in the inner nucleus of M82.	1.3 cm line	15	5.0
AB573	Becker, R. Helfand, D. White, R.	Calif.-Davis Columbia STScI	A sample of O-stars from a survey of the galactic plane.	6	26	6.0 w/VB104
AB579	Bookbinder, J. Linsky, J. Brown, A. Fleming, T. Bromage, G.	CfA Colorado Colorado MPIfEP (Garching) Rutherford Appleton	Monitoring M dwarfs during the ROSAT all-sky survey.	3.8,6,20 line	3, 21, 26 29 w/VR51 & VB104	14.4
AC278	Carilli, C. Ho, P.	CfA Harvard	Two nuclear starburst galaxies.	20, 90	16	8.5
AC279	Carilli, C. van Gorkom, J.	CfA Columbia	HI observations of two quasar-galaxy pairs.	20 line	30	5.0
AC280	Carral, P. Keto, E.	NASA/Ames IGPP at LLNL	Recombination lines in ultracompact HII regions G34.3+0.2 and G5.8-0.4.	1.3 line	6, 15	14.5
AD188	Drake, S. Simon, T. Florkowski, D. Stencel, R. Bookbinder, J.	SASC Hawaii USNO Colorado CfA	Variability of M supergiants: alpha orionis	2, 6	2	3.0
AD254	Dey, A. van Breugel, W.	Calif.-Berkeley Lawrence Livermore	Radio-loud far-infrared galaxies.	20	10	2.5
AD255	Dressel, L. Gallagher, J.	Vanderbilt	Spectral indices of sources in blue compact galaxies.	20	11	5.0
AE064	Elias, N	Pennsylvania	Serpentid binary star V367 Cygni.	3.5	6,7,10,13, 19,21,22 w/VR51	11.0
AE067	Erickson, W. Jacobson, A.	Tasmania (Aust) Los Alamos	Ionospheric structure.	90	8, 11	1.0
AF177	Felli, M. Churchwell, E.	Arcetri (Ital) Wisconsin	Nonthermal emission from Theta Ori A.	3.5, 2	14	2.5
AF186	Fernini, I. Burns, J. Bridle, A. Perley, R.	New Mexico NMSU NRAO-CV NRAO-VLA	Jet/Counterjet ratios in RGs.	6	16	18.0
AF197	Feretti, L. Giovannini, G.	NRAO/Bologna NRAO/Bologna	Cluster radio galaxies of small size.	6, 20	1	1.0
AF203	Fomalont, E. Kellermann, K. Windhorst, R. Kristian, J.	NRAO-CV NRAO-CV Arizona State MWaLCO	Spectral indices of sources in the deep field at 1416+52.	20	2, 3	24.0
AF204	Fomalont, E. van Breugel, W. Ekers, R.	NRAO-CV Lawrence Livermore AT (Australia)	Fornax A; spectral index, depolarization, rotation measure.	6	30	6.0
AF205	Fruchter, A. Goss, W.	Carnegie Inst. NRAO-VLA	Eclipse of PSR 1957+20.	90	3, 11	6.0
AF206	Fruchter, A. Goss, W.	Carnegie Inst. NRAO-VLA	Spectral indices of globular cluster sources; detect diffuse emission.	6, 20	7, 8, 9	26.9
AH295	Habing, H. Goss, W. Winnberg, A. van Langevelde	Leiden (Neth) NRAO-VLA Onsala (Sweden) Leiden (Neth)	Monitoring OH/IR stars at the galactic center.	20 line	16	2.0
AH364	Hunt, G. Patnaik, A. Salter, C. Shaver, P.	NRAO-VLA NRAL (Manchester) TIFR (India) ESO (Munich, FRG)	High surface brightness SNRs and SNRs with "blow-outs".	90	10	7.0
AH390	Hjellming, R. Gehrz, R. Taylor, A. Seaquist, E.	NRAO-VLA Minnesota Calgary Toronto (Can)	Resolving radio novae.	3.8,6,20	20	6.0 with VR51
AH404	Hamilton, T. Helfand, D.	Columbia Columbia	The Einstein Eridanus deep survey field.	20	29	4.0
AH411	Ho, P. Haschick, A.	Harvard Haystack	The possibly collapsing core of G10.6-0.4.	1.3 line	1, 11	11.0
AJ190	Jackson, N. Browne, I. Shone, D. Clarke, D.	NRAL (Manchester) NRAL NRAL UNM	Structure and polarization of 0800+608.	3.8	1	4.0

Program	Observer	Affiliation	Program Title	Bands cm	Obsv Date	Sched hrs
AJ191	Jauncey, D. Jones, D. Meier, D. Murphy, D. Preston, R. Perley, R. Rao, P. Tzioumis,A Muxlow, T. Patnaik, A.	CSIRO (Sydney) JPL JPL JPL JPL NRAO-VLA TATA (Jodrell Bank) TATA TATA TATA	Monitoring possible Einstein ring 1830-211.	3.6	17	1.0
AK240	Kapahi, V. McCarthy, P. van Breugel, W. Subrahmanya, C. Hunstead, R.	TIFR (India) Carnegie Inst. Lawrence Livermore TIFR (India) Sydney U. (Australia)	Quasar with twin jets.	3.5, 20	27	2.0 w/VS86
AK252	Kapahi, V. Athreya, R. Subrahmanya, C. van Breugel, W. McCarthy, P.	TIFR (India) TIFR TIFR Lawrence Livermore OCIW - Pasadena	Intermediate strength unidentified Molongolo sources.	6	17	18.0
AK254	Keto, E. Proctor, D.	California California	Mass inflow onto an IR point source: G34.3+0.2.	1.3 line	4	8.0
AL150	Lestrade, J.F. Preston, R.A.	JPL JPL	Statistical properties of RSCVn stars.	6	1, 21	5.0 w/VR51
AL219	Lang, K. Leeson, W. Willson, R.	Tufts Tufts Tufts	Isolated white dwarf stars w/mega-gauss magnetic fields.	6	12, 17, 18	15.0
AM290	Menon, T.K.	U British Columbia	Sturcture of interacting galaxies.	6	11, 17	2.5
AM297	Murphy, D. Perley, R.	JPL NRAO-VLA	Where is the counter jet in 3C273?	20	8	4.0
AM303	Malkan, M. Baganoff, F.	UCLA UCLA	X-ray/radio variability of active galactic nuclei (with NOSAT)	3.8	4,8,14,16,21 26,30	7.0 w/VR51 & VB104
AM305	Molnar, L.A. Mutel, R.L. Deng, J.	Iowa Iowa Iowa	Interstellar scattering in the Cygnus X region.	3.6,18, 20	5	5.0
AO088	Owen, F. Eilek, J.	NRAO-VLA NMIMT	Observations of M87.	3.8	14	6.5
AR223	Rudnick, L. Anderson, M. Meisenheimer, K. Roser, H.	Minnesota Minnesota MPIfA (Heidelberg) MPIfA (Heidelberg)	Testing fermi-acceleration models for 3C33 south.	2	14	4.0
AR230	Rawlings, S. Alexander, P. Eales, S.	MRAO (Manchester) MRAO (Manchester) Toronto	Radiogalaxy 6C1232+39 at z=3.22.	3.8, 6	15	7.0
AR231	Reid, M. Menten, K.	CfA CfA	"Light curves" for Mira variables.	3.8	14, 22	6.0 w/VR51
AS333	Sramek, R. Weiler, K. van der Hulst, J. Panagia, N.	NRAO-VLA NRL Westerbork (Neth) STScI	Statistical properties of radio supernovae.	2, 6	7, 26	5.9 w/VB104
AS411	Skinner, S. Brown, A. Linsky, J.	Colorado Colorado Colorado	Properties of four Herbig Be stars.	2, 3.5, 6, 20	21, 25	12.8 w/VR51
AU039	Urry, C. Padovani, P. White, R.	STScI STScI STScI	Optically selected sample of BL Lac objects.	2, 6, 20	9	4.1
AV179	Veale, A. Linsky, J. Brown, A. Fleming, T. Neff, J. Schmitt, J. Rodono, M. Byrne, P. Bromage, G.	Colorado Colorado Colorado MPIfEP (Garching) NASA/GSFC MPIfEP Catania Obs. Rutherford Lab Rutherford Lab	3-D structure of RS CVn stellar atmospheres.	3.8,6,20	6, 7, 8, 9 10, 11	26.0
AV181	van Gorkom, J. van der Hulst, J.	Columbia Westerbork (Neth)	HI imaging of nearby galaxy Centarus A.	20 line	27, 30	10.0 w/VS86
AW230	Wrobel, J. Unger, S.	NRAO-VLA RGO (Cambridge)	Monitoring of the Seyfert NGC 5548.	3.5	21	1.0 w/VR51
AW249	Wills, B. Shastri, P.	Texas Texas	Core variability in lobe-dominated quasars.	6	9	3.5
AY033	Yin, Q. Heeschen, D. Saslaw, W.	NRAO-CV NRAO-CV Virginia	Likely starburst galaxies.	6,20,90	10	3.0
AZ044	Zhao, J. Ekers, R. Goss, W. Lo, K. Narayan, R.	New Mexico AT (Australia) NRAO-VLA Illinois Arizona	Flux density variations caused by RISS. in Sgr A.	3.8,6,20	13, 28	4.0
AZ046	Zwarthoed, G. Penninx, W.	Amsterdam (Neth) Amsterdam (Neth)	Four unclassified low mass x-ray binaries.	6	14, 27	2.0 w/VS86

VLBI Utilization Report September 1990

Program	Observer	Affiliation	Program Title	Bands cm	Obsv Date	Sched hrs
VB104	Baath, L. Rantakyro, F. Okopi, J.	Onsala Space Obs. Onsala Space Obs. Onsala Space Obs.	3C345 - comparison of high dynamic range maps at 18 cm.	18	26	13.3
				single antenna	w/pointing VLBI	AS333, AM303, AB579, AB573
VB106	de Bruyn, A.G. Wilkinson, P.	NFRA (Dwingeloo) NRAL (Jodrell Bank)	Age and kinematics of 41.9+58, a powerful SNR in M82.	18	27, 28	17.9
				Phased array	MKIII VLBI	
VG67	Giovannini, G. Comoretto, G. Feretti, L. Venturi, T. Wehrle, A.	Bologna (Italy) Arcetri-Florence Bologna IRA-Bologna CIT-Pasadena	3.6 and 18 cm. VLBI observations of the low luminosity radio galaxy NGC315.	18	25	12.3
				Phased array VLBI		
VL61	Lonsdale, C. Lonsdale, C. Smith, H. Stine, P.	Haystack CalTech California-San Diego Bloomsburg	A search for compact radio cores in starburst galaxies.	18	28, 29	16.1
				Phased array MKIII VLBI		
VL62	Lazio, T. Cordes, J.	Cornell Cornell	Angular broadening of extragalactic sources behind the Andromeda Nebula.	18	29	6.5
				Phased array	MKIII VLBI	
VP106	Preuss, E. Alef, W.	MPIfR (Bonn) MPIfR (Bonn)	18 cm observations of NGC4151 with PC/SUBPC resolution.	18	27	5.1
				Phased array	MKIII VLBI	
VR51	Readhead, A. Wilkinson, P. Xu, W. Pearson, T. Lawrence, C. Herbig, T.	CIT-Pasadena NRAL Caltech Caltech CIT-Pasadena Caltech	A large sace VLBI snapshot survey.	18	20	60.2
				Single antenna VLBI	with move/op AH390, AL150, AM303, AW230, AA114, AE064, AB579, AS411	
VS86	Sakurai, T. Spangler, S. Cairns, I. Mutel, R. Armstrong, J.	Iowa Iowa Iowa Iowa USNO	Reference observations for VLBI studies of density turbulence in outer corona.	18	27	9.4
				Single antenna VLBI	with tests AV181, AA114, AZ046, AK240	
VS88	Sanghera, H. Browne, I Fanti, C. Muxlow, T.	NRAL (Jodrell Bank) NRAL IRA (Bologna) NRAL	The Jodrell Bank CSS Study.	18	20, 25	24.8
				Phased array VLBI		
VW59	Wehrle, A. Unwin, S.	Caltech Caltech	Are the Parsec-scale morphologies of high and low redshift quazars different?	18	23	48.1
				Phased array VLBI		
VAH53	Wehrle, A.	Caltech		18	27	2.0
				single antenna	w/pointing	
		NRAO Staff	Electronics			42.7
			Baseline/Startup/Pointing			47.6
			Move/Operations			31.3
			Software			24.6
			General Test			35.0
			Holiday/Shutdown			0.0
			Standard Field			12.0

901008PDH/wt

The average downtime for the month of September 1990 was approximately 4.4%.

The array was scheduled 100.0% (722.0 hours) of the time: 74.5% (537.7 hours) to astronomical programs, 16.2% (117.0 hours) to scheduled test/calibration, and the remaining 9.3% (67.3 hours) went to scheduled maintenance.

The array was in the B configuration from September 1 through September 17.
B/C configuration from September 17 through September 30.

The total number of programs run for the month of September, 1990 was 64.

The following independent proposals shared simultaneous observing time (84.9 hours total simultaneous observing):

Projects	Hours	Projects	Hours
VAH53/pointing	2.0	VR51/move/op	3.2
VB104/573	6.0	VR51/move/op	9.9
VB104/AB579	3.0	VR51/move/op	5.0
VB104/AM303	1.0	VR51/move/op	6.4
VB104/AS333	1.4	VR51/tests	2.0
VB104/pointing	1.2	VS86/AA114	1.0
VB104/ztest	0.7	VS86/AK240	1.8
VR51/AA114	1.0	VS86/AV181	5.0
VR51/AA114	1.0	VS86/AZ046	1.0
VR51/AB579	3.5	VS86/tests	0.7
VR51/AE064	1.5		
VR51/AE064	1.5		
VR51/AH390	6.0		
VR51/AL150	3.1		
VR51/AM303	1.0		
VR51/AR231	3.0		
VR51/AS411	11.0		
VR51/AW230	1.0		

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Program	Observer	Affiliation	Program Title	Bands cm	Obsv Date	Sched hrs
AA112	Anantharamaiah, K. Goss, W.	Raman Inst NRAO-VLA	Recombination lines from NGC253.	3.5 cm line	31	7.0
AA114	Aller, H. Aller, M. Bregman, J.	Michigan Michigan Michigan	X-ray/radio variability in active galactic nuclei (with ROSAT).	2	13,15,21, 26,29,30	10.0
AA115	Aschwanden, M. Bastian, T. Benz, A.	NASA-GSFC NRAO-VLA Ins of Ast ETH	VLA/VLBA/PHOENIX observations of decimetric solar radio bursts.	20, 90	4,6	9.0 w/AL222
AA116	Alexander, P. Crane, P. Wilding, T. Pooley, G.	MRAO NRAO-VLA MRAO MRAO	Star formation in nine late-type galaxies.	3.8, 20	21	8.0
AB414	Becker, R. White, R.	Calif.-Davis STScI	Monitoring radio stars HD193793 and P Cygni.	2, 6	1	3.5
AB456	Burke, B. Hewitt, J. Roberts, D.	MIT Haystack Brandeis	Monitoring Lens 0957+561.		21	2.0
AB579	Bookbinder, J. Linsky, J. Brown, A. Fleming, T. Bromage, G.	CfA Colorado Colorado MPIfEP Ruth App Lab	Monitoring M dwarfs during the ROSAT all-sky survey.	3.8, 6, 20 cm line	11,23,27	10.5
AC256	Capetti, S. Ferrari, A. Massaglia, S. Trussoni, E. Morganti, R.	Ist. di Fis. (Ital) Ist. di Fis. Ist. di Fis. Ist. di Fis. Bologna	Knots in low luminosity radio galaxy jets.	6	3	12.0
AC259	Carilli, C. Perley, R. Dreher, J.	CfA NRAO-VLA NASA-Ames	Cygnus A.	1.3	10, 11	24.0
AC281	Condon, J. Helou, G. Sanders, D. Soifer, B.	NRAO-CV IPAC Caltech Caltech	UGC 12914/5 collision.	20 line	10	4.0
AC282	Corbelli, E. Schneider, S.	Cornell Massachusetts	HI absorption by NGC4651 in the quasar 3C275.1.	20 line	4	10.0
AD188	Drake, S. Simon, T. Florkowski, D. Stencel, R. Bookbinder, J.	SASC Hawaii USNO Colorado CfA	Variability of M supergiants: alpha orionis	2, 6	3	3.0
AD244	Dey, A. van Breugel, W.	Calif.-Berkeley Lawrence Livermore	Images of radio-loud far-infrared galaxies.	6	6, 14	10.5 w/BC005
AD251	de Pater, I. Dickel, J.	Calif.-Berkeley Illinois	Saturn's atmosphere.	3.8	30, 31	12.5
AD252	de Pater, I.	Calif.-Berkeley	Jupiter patrol.	20	25, 26	12.5
Adhoc	Benson, J.	NRAO-CV		?	7	0.7
Adhoc	Taylor, G.	NRAO-VLA		?	27	0.5
Adhoc	Frail, D.	NRAO-VLA		?	29	2.1
AE067	Erickson, W. Jacobson, A.	Tasmania (Aust) Los Alamos	Ionospheric structure.	90	2,9,10,14,20 23,25,26	4.5 w/BB002
AE069	Elias, N. Dorren, J.	Pennsylvania Pennsylvania	Stars with highly active chromospheres (with ROSAT).	2, 3.8, 6, 20	3, 7	6.0
AF177	Felli, M. Churchwell, E.	Arcetri (Ital) Wisconsin	Nonthermal emission from Theta Ori A.	2, 3.8	10, 26	5.0
AF198	Frail, D. Kulkarni, S.	NRAO-VLA Caltech	A possible PSR/SNR association.	20	28	5.7
AF199	Frail, D. Hjellming, R.	NRAO-VLA NRAO-VLA	A kinematic distance to LSI+61o303.	20 line	24, 25	7.5
AF201	Fernini, L. Burns, J.	New Mexico NMSU	Depolarization asymmetry in radio galaxies.	3.8	12, 31	6.0
AF205	Fruchter, A. Goss, W.	Carnegie Inst. NRAO-VLA	Eclipse of PSR 1957+20.	90	3, 6, 16 19, 22, 23, 25	21.0
AH384	Halpern, J. Helfand, D.	Columbia Columbia	An X-ray pulsar in the nearest molecular cloud.	3.8, 20	2	12.0
AH390	Hjellming, R. Gehrz, R. Taylor, A. Seaquist, E.	NRAO-VLA Minnesota Calgary Toronto (Can)	Resolving radio novae.	3.8, 6, 20	7,16	2.0
AH400	Hanisch, R. Miley, G. Rottgering, H. de Jong, J.	STScI Leiden (Neth) Leiden (Neth) Leiden (Neth)	Rich x-ray cluster Abell 2256.	90	5	8.5
AH403	Hill, G.	Texas	A complete sample of UT radio sources.	6	27	8.0
AH407	Ho, P. Ishiguro, M. Kawabe, R. Okumura, S. Turner, J.	Harvard Nobeyama (Japan) Nobeyama (Japan) Nobeyama (Japan) UCLA	Synchrotron emission in three nearby normal spiral galaxies.	20	20, 23	24.0
AJ186/	Johnston, H.	Caltech	Deep imaging of globular clusters.	20,90	1, 2, 9,	35.1
AJ194	Kulkarni, S. Cornwell, T. Perley, R Goss, W.	Caltech NRAO-VLA NRAO-VLA NRAO-VLA			13, 16	w/BC005
AJ191	Jauncey, D. Jones, D. Meier, D. Murphy, D. Preston, R.	CSIRO (Sidney) JPL-Caltech JPL-Caltech JPL-Caltech JPL-Caltech	Monitoring possible Einstein ring 1830-211.	3.6	15	1.0
AK256	Kollgaard, R. Holdaway, M. Wehrle, A.	Lafayette College NRAO-VLA Caltech	The halo of 0106+013.	3.8, 6, 20	4	4.0

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Program	Observer	Affiliation	Program Title	Bands cm	Obsv Date	Sched hrs
AL221	Lang, K. Lesson, W. Willson, R.	Tufts Tufts Tufts	Narrow-band features in solar active regions.	20	28	8.0
AL222	Lang, K. Willson, R. Trottet, G. Kerdraon, A. Benz, A.	Tufts Tufts Obs de Paris Obs de Paris Inst for Ast, ETH	Solar bursts in space, time and frequency.	20,90	4,6	9.0 w/AA115
AL226	Lacy, M. Warner, P. Rawlings, S. Saunders, R.	MRAO MRAO MRAO MRAO	A faint source sample selected at 38MHz.	6, 20	29	5.1
AM298	Mitchell, D. de Pater, I.	Calif.-Berkeley Calif.-Berkeley	Sub-surface imaging of Mercury.	3.8, 6, 20	11, 12	17.0
AM301	Menard, F. Puche, D.	IAP (Paris) NRAO-VLA	Exciting sources of reflection nebulae.	1.3, 3.8	27, 28	10.0
AM302	Morris, M. Taylor, G.	UCLA NRAO-VLA	Bipolar nebula OH231.8+4.2.	20	31	5.0
AM305	Molnar, L. Mutel, R. Deng, J.	Iowa Iowa Iowa	A survey of interstellar scattering in the Cygnus X region.	3.8	18	14.1
AO098	Owen, F. Perley, R.	NRAO-VLA NRAO-VLA	B3 classical doubles.	3.8	15, 17, 29	16.5
AP189	Parijskij, Y. Soboleva, N. Temirova, A. Goss, W.	Leningrad (USSR) Leningrad Leningrad NRAO-VLA	Sources from a RATAN-600 survey.	20	27, 30	7.0
AP196	Puche, D. Brinks, E. Westpfahl, D.	NRAO-VLA NRAO-VLA NMIMT	Structure of the ISM in nearby dwarf galaxies.	20 line	10	8.0
AR221	Rodriguez, L. Moran, J. Curiel, S.	UNAM (Mexico) CfA CfA	Study of the remarkable triple source in Serpens.	6	12	6.0
AR222	Roland, J. Fraix-Burnet, D. Mellier, . Soucail, G.	IAP (France) IAP IAP IAP	Study of an optical jet.	6	26	1.0
AR229	Ratner, M. Lebach, D. Barthel, N. Shapiro, I.	CfA Harvard Harvard Harvard	Reference star search for the NASA gyroscope relativity experiment.	3.8	3	4.0
AR231	Reid, M. Menten, K.	CfA CfA	"Light curves" for Mira variables.	3.8	13, 14	6.1 w/BC005
AR232	Reynolds, S.	North Carolina State	Small-scale structure in young supernova remnants.	20	21	9.0
AS333	Sramek, R. Weiler, K. van der Hulst, J. Panagia, N.	NRAO-VLA NRL Westerbork (Neth) STScI	Statistical properties of radio supernovae	2, 6	24, 26	6.0 w/BT001
AS414	Szomoru, A. van Gorkom, J. Sancisi, R. Gregg, M.	Kapteyn (Groningen) Columbia Kapteyn (Groningen) Mt. Stromlo (Aust)	HI properties of void galaxies.	20 line	19, 24, 25, 26	32.0 w/BT001
AT107	Taylor, A. Goss, W. Coleman, P.	Calgary NRAO-VLA Kapteyn (Groningen)	Sources from a WSRT galactic plane survey.	20	8	5.1
AT108	Terlevich, R. Brinks, E. Skillman, E. Terlevich, E.	RGO NRAO-VLA Minnesota RGO	Seyfert galaxy NGC 1068.	20 line	13	8.0
AV165	Velusamy, T.	TIFR (India)	CTB80	90	14	9.0 w/BB002
AV179	Veale, A. Linsky, J. Brown, A. Fleming, T. Neff, J.	Colorado Colorado Colorado Colorado NASA-GSFC	3-D structure of RS CVn stellar atmospheres.	3.8, 6, 20	9	10.4
AV180	Viallefond, F.	Meudon (France)	Survey of spiral M101.	20 line	6	9.0
AW230	Wrobel, J. Unger, S.	NRAO-VLA RGO	Monitoring of the Seyfert NGC 5548.	3.8	27	1.0
AW249	Wills, B. Shastri, P.	Texas Texas	Core variability in lobe-dominated quasars.	6	18, 20	11.0
AW251	Wilson, T. Johnston, K. Henkel, C. Schilke, P. Walmsley, C.	MPIfR (Bonn) NRL MPIfR (Bonn) MPIfR (Bonn) MPIfR (Bonn)	Ammonia maser in W51.	1.3 line	1	4.1
AW258	Wagner, S. Appenzeller, I. Quirrenbach, A.	Heidelberg Heidelberg MPIfR (Bonn)	Jets & extended narrow line regions in Seyfert galaxies.	6	5	17.5
AW260	Wannier, P. Andersson, B. Morris, M.	JPL JPL UCLA	Warm HI halos around molecular clouds.	20 line	17,18,19	12.4
AY033	Yin, Q. Heeschen, D. Saslaw, W.	NRAO-CV NRAO-CV UVA	Study of nine likely starbust galaxies.	6, 20, 90	17,	3.5
AY035	Yin, Q. Thuan, T.	NRAO-CV Virginia	Blue compact dwarf galaxies.	20	18	4.0
AY037	Yusef-Zadeh, F. Cornwell, T.	Northwestern NRAO-VLA	HH-like streamers in Orion.	3.8, 6	16	10.0

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Program	Observer	Affiliation	Program Title	Bands cm	Obsv Date	Sched hrs
AZ044	Zhao, J. Ekers, R. Goss, W. Lo, K. Narayan, R.	New Mexico AT (Australia) NRAO-VLA Illinois Steward Observatory	Flux density variations caused by RISS in Sgr A.	3.8, 6,	4, 22	3.5
AZ046	Zwarthoed, G. Penninx, W.	Amsterdam (Neth) Amsterdam	Four unclassified low mass x-ray binaries.	6	4, 15, 31	3.0
BB002	Brown, R. Benson, J.	NRAO-CV NRAO-CV	The apparent structure of Sgr A.	6, 1.3	14	9.2
				single antenna VLB w/software, AV165, AE067		
BC005	Conway, J. Vermeulen, R.	Caltech Caltech	Phase connection VLBI.	6	13	14.1
				single antenna VLB w/software, AR231, AJ186, AJ194, AD244		
BM004A	Molnar, L.	Iowa		w/AM305	18	14.1
BT001	Taylor, G.	NRAO-VLA		w/tests, AS333, AS414 & pointing	24	16.0
		NRAO Staff	Baselines/Startup/Pointing			44.6
			Electronics			60.9
			Move/Operations			0.0
			Software			43.7
			General Test			38.1
			Holiday/Shutdown			0.0

900719BGC/wt

The average downtime for the month of August 1990 was approximately 4.4%.

The array was scheduled 100.0% (746.1 hours) of the time: 75.4% (562.7 hours) to astronomical programs, 10.7% (79.7 hours) to scheduled test/calibration, and the remaining 13.9% (103.7 hours) went to scheduled maintenance.

The array was in the B configuration from August 1 through August 31.

The total number of programs run for the month of August, 1990 was 68.

The following independent proposals shared simultaneous observing time (62.3 hours total simultaneous observing):

Projects	Hours
AA115/AL222	5.0
AA115/AL222	4.0
BB002/AE067	0.5
BB002/AV165	7.9
BB002/Software	0.8
BC005/AD244	1.8
BC005/AJ186/AJ194	8.0
BC005/AR231	3.1
BC005/Software	1.2
BM004A/AM305	14.1
BT001/AS333	2.0
BT001/AS414	8.0
BT001/Pointing	2.7
BT001/Tests	3.3

VLA UTILIZATION REPORT JULY 1990

Program	Observer	Affiliation	Program Title	Bands cm	Obsv Date	Sched hrs
AA115	Aschwanden, M. Bastian, T. Benz, A.	NASA/GSFC NRAO-VLA ETH	VLA/VLBA/PHOENIX observations of decimetric solar radio bursts.	20, 90	23, 24,26, 30, 31	23.2 w/AL222
AB414	Becker, R. White, R.	Calif.-Davis STScI	Monitoring radio stars HD193793 and P Cygni.	2, 6	1, 31	4.0
AB456	Burke, B. Hewitt, J. Roberts, D.	MIT Haystack Brandeis	Monitoring Lens 0957+561	6	15	2.0
AB562	Barvainis, R. Antonucci, R.	Haystack Calif, Santa Barbara	A new continuum component in radio quiet quasars.	2	30	8.0
AB564	Baum, S. Garwood, R. Briggs, F. van Gorkom, J.	NFRA (Westerbork) Pittsburgh Pittsburgh Columbia	Circumnuclear HI absorption for radio galaxies.	20 phased array VLB	17,18,19	26.3
AB571	Baudry, A. Jacq, T. Walmsley, C. Henkel, C. Schulke, P.	Bordeux Obs. Obs. de Bordeux MPIfR (Bonn) MPIfR (Bonn) MPIfR (Bonn)	HDO absorption in NGC 7538 IRS1.	1.3 cm line	26	14.0
AC270	Cowan, J. Branch, D.	Oklahoma Oklahoma	Intermediate age supernovae 1957D and 1950B in M83.	20	1	0.1
AD188	Drake, S. Simon, T. Florkowski, D. Stencel, R. Bookbinder, J.	SASC Hawaii USNO Colorado CfA	Variability of M supergiants: alpha orionis.	2, 6	12	3.5
AD255	Dressel, L. Gallagher, J.	Vanderbilt AURA, Inc.	Spectral indices of sources in blue compact galaxies.	20	31	5.0
AE067	Erickson, W. Jacobson, A.	Tasmania (Aust) Los Alamos Natl. Lab	Ionospheric structure.	90	2,4,9,11,12,14,20 26,28,31	6.5
AE068	Elias, N.	Pennsylvania	Detection of more serpentids.	6, 3.8	4, 7, 8, 13, 15,	17.5
AF177	Felli, M. Churchwell, E.	Arcetri (Ital) Wisconsin	Nonthermal emission from Theta Ori A.	2, 3.8	7, 20	5.0
AF188	Feretti, L. Bettoni, D. Galletta, G. Giovannini, G.	Bologna (Ital) Padova (Ital) Padova (Ital) Bologna (Ital)	Galaxies with kinematical evidence of recent mergers.	20	2, 7	2.5
AF190	Fomalont, E. van Gorkom, J. van Breugel, W. Ekers, R.	NRAO-CV Columbia Lawrence Livermore Australia Telescope	Fornax A.	20 cm line	4, 8, 13 15	20.0
AF194	Frail, D. Seaquist, E. Bode, M.	NRAO-VLA Toronto (Can) Lancashire Poly.	Search for non-thermal remnant of old Nova V732Sgr (1940).	6, 20	24	8.0
AF197	Feretti, L. Giovannini, G.	Bologna (Ital) Bologna (Ital)	Cluster radio galaxies of small size.	20, 6	10	3.5
AF202	Fey, A. Gaume, R. Claussen, M. Johnston, K.	NRL NRL NRL NRL	Cometary HII region candidates.	1.3, 6, 20 cm line	27	4.0
AF205	Fruchter, A. Goss, W.	Carnegie Inst. NRAO-VLA	Eclipse of PSR 1957+20.	90	11, 14, 29	9.0
AF206	Fruchter, A. Goss, W.	Carnegie Inst. NRAO-VLA	Spectral indices of globular cluster sources and search for diffuse emission.	20	7	9.0
AH295	Habing, H. Goss, W. Winnberg, A. van Langevelde, H.	Leiden (Neth) NRAO-VLA Onsala Leiden (Neth)	Monitoring OH/IR stars at the galactic center.	20 line	25	1.9
AH406	Hines, D. Wills, B. Cutri, R.	Texas Texas Steward Obs	Radio structure and spectra of IRAS QSOs.	3.8, 6, 20	6, 8	11.5
AJ184	Jackson, J. Eckart, A. Ho, P.	MPIfR (Bonn) MPIfR (Bonn) Harvard	NH3 absorption toward Centaurus A.	1.3 cm line	3, 6, 8	11.0
AJ186/ AJ194	Johnston, H. Kulkarni, S. Goss, W. Cornwell, T. Perley, R.	Caltech Caltech NRAO-VLA NRAO-VLA NRAO-VLA	Deep imaging of globular clusters.	20, 90	28, 31	13.5
AJ191/ AJ192/ AJ193	Jauncey, D. Jones, D. Meier, D. Murphy, D. Preston, R. Perley, R. Rao, P. Tzioumis, A. Muxlow, T. Patanaik, A.	CSIRO JPL Caltech JPL Caltech NRAO-VLA TIRF Australia Telescope NRAL NRAL	Possible Einstein ring 1830-211: monitoring, spectral indices, & astrometric reference sources.	3.8	5	4.0
AK240	Kapahi, V. van Breugel, W. McCarthy, P. Subrahmanya, C. Hunstead, R.	TIFR Lawrence Livermore Carnegie Inst. TIFR Sydney	Quasar with twin jets.	6, 20	4	4.5
AK245	Kundu, M. Schmahl, E. White, S. Gopalswamy, N.	Maryland Maryland Maryland Maryland	Studies of solar active regions and flares.	3.8, 6, 20	13, 15	3.8

VLA UTILIZATION REPORT JULY 1990

Program	Observer	Affiliation	Program Title	Bands cm	Obsv Date	Sched hrs
AK249	Klein, U. Brinks, E. Skillman, E.	Bonn (FRG) NRAO-VLA Minnesota	Low frequency spectral indices of blue compact dwarfs.	20, 90	26, 28	6.0
AL150	Lestrade, J. Preston, R.A.	JPL JPL	Statistical properties of RSCVn stars.	6	1	3.9
AL222	Lang, K. Willson, R. Trottet, G. Kerdraon, A. Benz, A.	Tufts Tufts Obs. de Paris Obs. de Paris ETH	Solar bursts in space, time and frequency.	20, 90	23, 24 26, 30, 31	23.2 w/AA115
AL223	Lang, K. Lesson, W. Willson, R. Gelfreikh, G. Bogod, V.	Tufts Tufts Tufts Pulkova Obs. USSR Academy of Sciences	Solar maps at the time of the July 22 solar eclipse.	2, 3.8, 6, 20	21, 22	13.1
AL227	Liszt, H. Quintana, H.	NRAO-CV Catolica (Chile)	Mapping of dumbbell (db) galaxies.	20	9, 14	10.1 w/BB002
AM296	Murphy, D. Perley, R.	JPL NRAO-VLA	Flip-flop superluminals?	20	25	8.0
AM297	Murphy, D. Perley, R.	JPL NRAO-VLA	Where is the counter jet in 3C273?	20	24	4.1
AM305	Molnar, L. Mutel, R. Deng, J.	Iowa Iowa Iowa	A survey of interstellar scattering in the Cygnus X region.	20	5	2.0
AM306	Muhleman, D. Grossman, A. Butler, B. Slade, M.	Caltech Caltech Caltech JPL	Radar observations of Titan & Saturn's rings.	3.8 cm line	15, 21, 22, 23	26.0
AM307	McHardy, I. Lehto, H. Branduardi-Raymont, G. Mason, K.	Oxford Oxford Univ College (London) Univ College (London)	The ROSAT x-ray deep survey area.	20	22	8.0
AM308	McHardy, I. Callanan, P. Lehto, H.	Oxford Oxford Oxford	Globular cluster x-ray sources.	3.8, 6, 20	12,13,14	27.0 w/BB002
AN054	Norris, R. Roy, A. Allen, D. Sramek, R.	Australia Telescope Sydney Anglo-Australian Tele NRAO-VLA	Cool but extremely luminous far-infrared galaxies.	3.8, 20	1, 4, 7, 15	36.6
AO088	Owen, F. Eilek, J.	NRAO-VLA NMIMT	Observations of M87.	3.8	20	6.0
AP183	Pedlar, A. Axon, D. Baum, S. O'Dea, C. Unger, S.	NRAL NRAL NFRA (Westerbork) NFRA (Westerbork) Royal Greenwich Obs	NGC 4151.	3.8, 6	27	10.0 w/move/op
AP184	Pedlar, A. Collison, P. Saikia, D. Axon, D. Unger, S.	NRAL NRAL TIFR NRAL Royal Greenwich Obs	Hot spot galaxy NGC1808.	3.8	3	6.0
AP196	Puche, D. Brinks, E. Westpfahl, D.	NRAO-VLA NRAO-VLA NMIMT	Structure of the ISM in nearby dwarf galaxies.	20 cm line	23	8.0
AP203	Phillips, R. Ambruster, C.	Haystack Haystack	Young G star HD82558.	3.8, 20	6	1.5
AR227	Rupen, M. Condon, J.	CfA NRAO-CV	A search for radio supernovae in nearby galaxies.	6	29	24.0
AR228	Roberts, D. van Gorkom, J. Goss, M. Leahy, P.	Brandeis Columbia NRAO-VLA NRAL	Recombination Line observations of Sgr A West.	3.8 cm line	1, 3, 9	23.9 w/BB002
AR231	Reid, M. Menten, K.	CfA CfA	"Light curves" for Mira variables.	3.8	13, 16	6.0
AS333	Sramek, R. Weiler, K. van der Hulst, J. Panagia, N.	NRAO-VLA NRL Westerbork STScI	Statistical properties of radio supernovae	2, 6	12, 21	4.5 w/BB002
AS411	Skinner, S. Brown, A. Linsky, J.	Colorado Colorado Colorado	Properties of Herbig Be stars.	2, 3.8, 6, 20	13	3.2
AT105	Taylor, G. Perley, R.	NRAO-VLA NRAO-VLA	Spectral index and depolarization of Hydra A.	90	28	8.0
AV176	van Breugel, W. McCarthy, P. Kapahi, V.	Lawrence Livermore Carnegie Inst. TIFR	High redshift molonglo radio galaxies.	3.8, 6, 20	6, 9, 10 12	22.0 w/BB002
AW230	Wrobel, J. Unger, S.	NRAO-VLA Royal Greenwich Obs	Monitoring of the Seyfert NGC 5548.	6	2, 31	2.0
AW257	Wilkinson, P. Polatidis, A. Readhead, A. Xu, W. Pearson, T.	NRAL NRAL Caltech Caltech Caltech	Caltech - Jodrell VLBI survey sources.	6	5, 26	2.0
AY035	Yin, Q. Thuan, T.	Peking Univ Virginia	Blue compact dwarf galaxies.	6, 20	14	6.0
AY040	Yusef-Zadeh, F. Morris, M.	Northwestern Calif, Los Angeles	Search for ultra-high velocity ionized gas from Sgr A*.	3.8 cm line	2	9.0
AZ044	Zhao, J. Ekers, R. Goss, W. Lo, K. Narayan, R.	New Mexico Australia Telescope NRAO-VLA Illinois Steward Obs	Flux density variations caused by RISS in Sgr A.	3.8, 6, 20	6, 20	3.0

VLA UTILIZATION REPORT JULY 1990

Program	Observer	Affiliation	Program Title	Bands cm	Obsv Date	Sched hrs
AZ046	Zwarthoed, G.	Amsterdam	Four unclassified low mass x-ray	6	6, 18	5.0
	Penninx, W.	Amsterdam	binaries.			
BB002	Brown, R.	NRAO-CV	The apparent structure of Sgr A.	1.3, 6	9, 12	18.5
	Benson, J.	NRAO-CV		single antenna w/AL227, AM308, AR228, AS333, AV176 VLB		
BV002	van Langevelde, H.	Leiden (Neth)	Distance to the galactic center using	18 cm	16	5.2
	Diamond, P.	NRAO-VLA	OH/IR stars.			w/move/op
	Habing, H.	Leiden (Neth)		phased array VLB		
	Winnberg, A.	Onsala				
	Goss, W.	NRAO-VLA				
VB105	Bartel, N.	CfA	Monitoring SN 1986J.	3.6 cm	20	12.4
	Rupen, M.	CfA		phased array MKIII VLB		
	Shapiro, I.	CfA				
	Preston, R.	JPL				
	Rius, A.					
		NRAO Staff	Electronics			54.4
			Baseline/Startup/Pointing			45.9
			Move/Operations			32.8
			Software			41.7
			General Test			48.0
			Holiday Shutdown			0.0

900627BGC/sm

The average downtime for the month of July 1990 was approximately 10.4%.

The array was scheduled 100.0 percent (746.1 hours) of the time: 70.8% (528.2 hours) to astronomical programs, 16.3% (121.5 hours) to scheduled test/calibration, and remaining 12.9% (96.1 hours) went to scheduled maintenance.

The array was in the A/B configuration from July 1 through July 19.
B configuration from July 19 through July 31.

The total number of programs run for the month of July, 1990 was 63.

The following independent proposals shared simultaneous observing time (65.1 hours total simultaneous observing):

Projects	Hours
AA115/AL222	6.5
AA115/AL222	4.2
AA115/AL222	4.5
AA115/AL222	4.0
AA115/AL222	4.0
AJ186/AJ194/move/op	5.1
AJ191/AJ192	4.0
AJ191/AJ193	4.0
AP183/move/op	5.1
BB002/AL227	1.3
BB002/AM308	8.2
BB002/AR228	8.0
BB002/AS333	1.0
BB002/AV176	0.0
BB002/move/op	5.2

VLA UTILIZATION REPORT JUNE 1990

Program	Observer	Affiliation	Program Title	Bands cm	Obsv Date	Sched hrs
AA108	Anderson, M. Rudnick, L. Perley, R.	Minnesota Minnesota NRAO-VLA	The time evolution of SNR Cassiopeia A.	6, 20	12	12.0 w/VM113
AA110	Akujor, C. Pramesh Rao, A.	Nigeria Kapteyn Lab	1912-172- a flat spectrum double source?	2, 3.5, 6, 20	28	1.0
AA113	Allen, J. Mutel, R.	Iowa Iowa	Three new OH/IR stars.	18 cm line	28, 30	2.0
AB414	Becker, R. White, R.	Calif, Davis STScI	Monitoring the radio flux of the radio stars HD193793 and P Cygni.	2, 6	13	2.0 w/VC58
AB456	Burke, B. Hewitt, J. Roberts, D.	MIT Haystack Brandeis	Monitoring Lens 0957+561	6	6	2.0
AC256	Capetti, S. Ferrari, A. Massaglia, S. Trussoni, E. Morganti, R. Fanti, R. Parma, P. de Ruiter, H.	Inst. di Fisica(Ital) Inst. di Fisica(Ital) Inst. di Fisica(Ital) Inst. di Fisica(Ital) Bologna (Ital) Bologna (Ital) Bologna (Ital) Bologna (Ital)	Knots in low luminosity radio galaxy jets.	6	11	7.0 w/VM113
AC266	Coles, W. Rickett, B. Cornwell, T. Hankins, T. Armstrong, J.	Calif.-San Diego Calif.-San Diego NRAO-VLA NMIMT/NRAO-VLA JPL	Intensity scintillation & angular scattering of the inner solar wind	3.8, 6, 20	1, 7, 9, 12, 15, 18 w/VP98, VC58, VM114, VM111	12.4
AC270	Cowan, J. Branch, D.	Oklahoma Oklahoma	Intermediate age supernovae 1957D and 1950B in M83.	20	30	7.9
AdHoc	Lestrade, J.	JPL			17	1.5
AD188	Drake, S. Simon, T. Florkowski, D. Stencel, R. Bookbinder, J. Linsky, J.	SASC Hawaii USNO Colorado CfA Colorado	Variability of M supergiants: alpha orionis	2, 6	22	3.0
AD245	Dickel, J. Cowan, J. Crane, P.	Illinois Oklahoma NRAO-VLA	SN1885 in M31.	3.8	8, 9 w/VP98, VC58	24.0
AD246	Dickey, J. Kazes, I. Mirabel, I.	Minnesota Obs. de Paris-Meudon Puerto Rico	02483+4302: a galaxy with a megamaser and a background quasar.	1.3, 3.8, 6, 20 cm line	3	9.0
AD250	Dulk, G. Lecacheux, A. Louarn, P. Zarka, P. Altenhoff, W.	Colorado Obs. de Paris-Meudon Obs. de Paris-Meudon Obs. de Paris-Meudon MPIR (Bonn)	AE Aquarii and flare stars.	2, 3.8, 6	25, 26	25.0
AD257	Drake, S. Caillault, J. Simon, T. Linsky, J.	SASC Georgia Hawaii Colorado	Quiescent emission of cool dwarfs.	3.5	24	24.0
AE65	Elias, N. Dorren, J.	Pennsylvania Pennsylvania	A detection experiment for HD 129333, a "Young Sun".	2, 3.6, 6, 20	27	6.0
AE66	Engels, D. Winnberg, A. Lindqvist, M. Walmsley, C. Schmid-Burgk, J.	Hamberger Sternwarte Onsala (Sweden) Onsala (Sweden) MPIfR (Bonn) MPIfR (Bonn)	Water maser emission in circumstellar shells.	1.3 cm line	2	6.0 w/VM114
AE67	Erickson, W. Jacobson, A.	Tasmania (Aust) Los Alamos Natl. Lab	Ionospheric structure.	90	2, 4, 11, 12, 20, 21, 25, 27 w/VM113	6.6
AF177	Felli, M. Churchwell, E.	Arcetri (Ital) Wisconsin	Nonthermal emission from Theta Ori A.	2, 3.5	7, 25	5.0 w/VP98
AF180	Fey, A. Spangler, S.	NRL Iowa	Enhanced interstellar scattering due to HII regions.	6, 20	19	5.0
AF192	Fomalont, E. Kellermann, K. Windhorst, R. Kristian, J.	NRAO-CV NRAO-CV Arizona State Mt. Wilson	1" resolution of the deep radio survey field.	6	3	12.0
AF197	Feretti, L. Giovannini, G.	NRAO-VLA NRAO-VLA	Cluster radio galaxies of small size.	6, 20	28	2.5
AF200	Frail, D. van Langevelde, H. Habing, H. Cordes, J.	NRAO-VLA Leiden (Neth) Leiden (Neth) Cornell	OH/IR stars in the bulge of the galaxy.	18 cm line	20	6.0
AG303	Gaume, R. Johnston, K. Wilson, T.	NRL NRL MPIfR (Bonn)	The dynamics of NGC7538 IRS 1.	1.3 cm line	4	8.0
AH295	Habing, H. Goss, W. Winnberg, A. van Langevelde, H.	Leiden (Neth) NRAO-VLA Onsala (Sweden) Leiden (Neth)	Monitoring OH/IR stars at the galactic center.	20 cm line	5	2.0
AH390	Hjellming, R. Gehrz, R. Taylor, A. Seaquist, E.	NRAO-VLA Minnesota Calgary Toronto (Can)	Resolving radio novae.	3.8, 6, 20	28	6.0
AJ186	Johnston, H. Kulkarni, S. Goss, W.	Caltech Caltech NRAO-VLA	Deep imaging of globular clusters.	20	14	9.0
AJ189	Johnston, K. Claussen, M. Bowers, P.	NRL NRL NRL	Distance to IK Tau: motions of water maser components.	1.3 cm line	1	4.0

Program	Observer	Affiliation	Program Title	Bands cm	Obsv Date	Sched hrs
AJ191	Jauncey, D. Jones, D. Meier, D. Murphy, D. Preston, R.	CSIRO (Aust) JPL JPL JPL JPL	Monitoring possible Einstein ring 1830-211.	3.6	10	1.0
AK226	Kulkarni, S. Phillips, T.	Caltech Cornell	Astrometry of pulsar in W44.	20 cm line	17	9.0 w/VM111
AL150	Lestrade, J. Preston, R.	JPL JPL	Statistical properties of RSCVn stars.	6	13, 14, 26	9.0
AM290	Menon, T.	British Columbia	6	6	6, 10	2.4
AP183	Pedlar, A. Axon, D. Baum, S. O'Dea, C. Unger, S.	NRAL (Engl) NRAL (Engl) NFRA (Westerbork) NFRA (Westerbork) Royal Greenwich (Engl)	NGC 4151.	3.8, 6	4, 8	20.0 w/VP98, VC58
AR216	Reid, M. Menten, K.	CfA CfA	Measurement of the size and temperature of Mira variables.	1.3	2	20.0 w/VW57, VM114
AR221	Rodriguez, L. Moran, J. Curiel, S.	UNAM (Mexico) CfA CfA	Study of the remarkable triple source in Serpens.	3.8, 20	1	8.6
AR225	Rucinski, S.	York Univ (Can)	Close binary ER Vul.	6, 20	21, 22	24.0
AR226	Rucinski, S.	York Univ (Can)	Three T Tauri stars.	3.5, 6, 20	25	5.0
AR229	Ratner, M. Lebach, D. Bartel, N. Shapiro, I.	CfA CfA CfA CfA	Reference star search for the NASA gyroscope relativity experiment.	3.8	15, 18, 23	50.5 w/VM114
AR231	Reid, M. Menten, K.	CfA CfA	"Light curves" for Mira variables.	3.8	7, 10	6.1 w/VP98
AS333	Sramek, R. Weiler, K. van der Hulst, J. Panagia, N.	NRAO-VLA NRL Kapteyn Lab (Neth) STScI	Statistical properties of radio supernovae	2, 6	29	2.0
AS405	Su, B. Mutel, R.	Yunnan Obs (China) Iowa	Ring galaxy NGC 5930.	3.8, 6	7, 12	16.0 w/VP98, VC58
AZ044	Zhao, J. Ekers, R. Goss, W. Lo, K. Narayan, R.	New Mexico Australia Tele (Aust) NRAO-VLA Illinois Steward Obs	Flux density variations caused by RISS in Sgr A.	3.8, 6, 20	9, 26	3.0 w/VC58
VC58	Cohen, M. Unwin, S. Vermuelen, R. Wehrle, A.	Caltech Caltech Caltech Caltech	Statistics of superluminal sources	6 cm single dish VLB	8, 13	24.8 w/AP183,AZ44, AD245, AC266, TESTS, AS405, AB414
VG64	Giovannini, G. Comoretto, G. Feretti, L. Venturi, T. Vermuelen, R. Wehrle, A.	NRAO-VLA Arcetri (Ital) NRAO-VLA Bologna (Ital) Leiden (Neth) Caltech	Observations of 3 radio galaxies with strong nuclear emission.	6 cm phased array VLB	13	9.3
VG66	Gabuzda, D. Cawthorne, T.	JPL CfA	Linear polarization structure of BL Lac objects.	3.6 cm phased array MKIII VLB	20	21.5
VH53	Hewitt, J. Cappallo, R. Corey, B. Lestrade, J. Lonsdale, C. Niell, A. Phillips, R. Preston, R.	Princeton Haystack Haystack Bur des Long (France) Haystack Obs Haystack Obs Haystack Obs JPL	dMe stars: First epoch astrometric measurements.	3.6 cm phased array MKIII VLB	17	19.6
VH54	van der Hucht, K. de Bruyn, A. Spoelstra, T. Williams, P.	Sron Space (Neth) Dwingeloo (Neth) Dwingeloo (Neth) Royal Observatory	Imaging the variable radio emission in Wolf-Ray binary WR140 (HD193793).	6 cm phased array MKIII VLB	6	11.3
VL59	Lestrade, J. Gabuzda, D. Preston, R. Phillips, R.	Bur de Long (France) JPL JPL Haystack Obs	Observations for RS CVn stars.	6 cm phased array MKIII	11	15.2
VM111	Mutel, R. Jie, D. Phillips, R.	Iowa Iowa Haystack Obs	Monitoring of the radio core of BL Lac	3.6 cm single dish VLB	17	9.0 w/AK226
VM113	Mantovani, F. Junor, W. Padrielli, L. Nicolsou, G.	Bologna (Ital) NRAO-VLA Bologna (Ital) NITR (South Africa)	Three compact steep spectrum low frequency variable sources.	6 cm single dish VLB	11	8.2 w/AC256, AE67
VM114	Marscher, A. Zhang, Y. Shaffer, D. Marcaide, J. Alberdi, A. Elosegui, P.	Boston Boston Interferometrics Andalucia Andalucia Andalucia	Monitoring 4C39.25.	1.3, 3.8, single dish VLB	2, 15	29.7 w/AR216, AC266 AR229
VM115	Molnar, L. Mutel, R.	Iowa Iowa	Interstellar scattering toward Cyg OB2 No. 9.	6 cm phased array MKIII VLB	11	1.1
VP98	Pearson, T. Readhead, A.	Caltech Caltech	Second-epoch maps and spectra of four sources.	6, 18 cm single dish VLB	7, 8	22.3 w/AC266,AF177, AR231,Tests,AD245
VP104	Porcas, R.	MPIfR (Bonn)	Observations of 3C179.	3.6 cm phased array VLB	19	15.5 w/Move/Op

VLA UTILIZATION REPORT JUNE 1990 (cont)

Program	Observer	Affiliation	Program Title	Bands cm	Obsv Date	Sched hrs
VP105	Porcas, R. Gopal-Krishna	MPIfR (Bonn) TIFR (India)	CTD93.	6 cm phased array VLB	13	9.5
VR53	Roberts, D. Brown,L. Ochs, M. Wardle, J. Cawthorne, T. Gabuzda, D.	Brandeis Brandeis Brandeis Brandeis CfA JPL	Polarization properties of 3C345.	3.6, 6 cm phased array MK III VLB	9, 16	24.5
VR54	Roberts, D. Brown,L. Ochs, M. Wardle, J. Cawthorne, T.	Brandeis Brandeis Brandeis Brandeis CfA	Polarization properties of 3C273.	3.6, 6 cm phased array MK III VLB	10, 16	24.3
VW57	Wehrle, A. Unwin, S. Zensus, A. Cohen, M.	Caltech Caltech NRAO-VLA Caltech	Monitoring superluminal motion in 3C345.	1.3 cm single dish VLB	1	14.0 w/standard field
V90-24	Massi, M.	Arcetri (Ital)	Periodic star LSI+61303.	phased array MKIII VLB	6	12.5
		NRAO Staff	Electronics, ect. Baseline/Startup/Pointing Move/Operations Software General Test			38.8 23.3 32.6 20.8 42.9

The average downtime for the month of June 1990 was approximately 10.3 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 100.0 percent (722.0 hours) of the time: 77.8 percent (562.0 hours) to astronomical programs, 13.9 percent (100.4 hours) to scheduled test/calibration, and remaining 8.2 percent (59.5 hours) went to scheduled maintenance.

The array was in the AB configuration from June 1 through June 30.

The total number of programs run for the month of June, 1989 was 58.

The following independent proposals shared simultaneous observing time (113.8 hours total simultaneous observing):

Projects	Hours		
VC58/AB414	2.0	VP98/AC266	0.2
VC58/AC266	2.0	VP98/AD245	2.8
VC58/AD245	13.0	VP98/AF177	2.5
VC58/AP183	1.5	VP98/AP183	8.5
VC58/AS405	2.5	VP98/AR231	3.0
VC58/AZ44	1.5	VP98/AS405	2.4
VC58/TESTS	2.0	VP98/TESTS	1.0
VC58/VG64	0.3	VP98/TESTS	2.0
VM111/AC266	1.6	VW57/AR216	4.0
VM111/AK226	7.4	VW57/STANDARD FIELD	10.0
VM113/AA108	5.2		
VM113/AC256	2.5		
VM113/AE67	0.5		
VM114/AC266	0.1		
VM114/AE66	2.1		
VM114/AR216	13.0		
VM114/AR229	14.5		
VP104/MOVE/OP	5.7		

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VLA UTILIZATION REPORT MAY 1990

Program	Observer	Affiliation	Program Title	Bands cm	Obsv Date	Sched hrs
AB414	Becker, R. White, R.	Calif.-Davis STScI	Monitoring radio stars HD193793 and P Cygni.	2, 6	16	2.0
AB456	Burke, B. Hewitt, J. Roberts, D.	MIT Haystack Brandeis	Monitoring Lens 0957+561.	6	6, 22	6.0
AB534	Baum, S. Leahy, P. Perley, R. Riley, J. Scheuer, P.	NFRA (Westerbork) NRAL NRAO-VLA MRAO MRAO	A survey of nearby hotspots.	3.8	24	36.0
AB562	Barvainis, R. Antonucci, R.	Haystack Calif,Santa Barbara	A new continuum spectral component in radio quiet quasars.	2, 6	22	8.0 w/Move/Op
AB567	Bowers, P. Johnston, K.	NRL NRL	OH masers from OH53.6-0.2 and IRC-30308.	20 cm line	23, 26	20.1
AB568	Burke, B. Hewitt, J. Turner, E. Conner, S. Heflin, M.	MIT Haystack Princton MIT MIT	Gravitational lens survey.	3.8	3, 5	38.5 w/Move/Op
AC237	Cordova, F. Hjellming, R.	Pennsylvania State NRAO-VLA	Radio Astrometry of PSR 0656+14.	20	19	5.0
AC266	Coles, W. Rickett, B. Cornwell, T. Hankins, T. Armstrong, J.	Calif.-San Diego Calif.-San Diego NRAO-VLA NMIMT/NRAO-VLA JPL	Intensity scintillation & angular scattering of the inner solar wind.	3.8, 6, 20	3, 4, 8, 10,15-17, 19,21,24, 26,27,29	23.8
AC267	Condon, J. Kellermann, K. Hazard, C. McMahon, R. Kayser, R.	NRAO-CV NRAO-CV Pittsburgh Toronto Toronto	The "Clover Leaf" quasar H1413+117.	3.8	15	8.0
AC271	Curiel, S. Rodriguez, L. Canto, J. Tereby, S.	CfA UNAM (Mexico) UNAM (Mexico) Caltech	Radio sources associated with outflows.	3.8	28	18.0
AD188	Drake, S. Simon, T. Florkowski, D. Stencel, R. Bookbinder, J.	SASC Hawaii USNO Colorado CfA	Variability of M supergiants: alpha orionis.	2, 6	29	3.0
AE067	Erickson, W. Jacobson, A.	Tasmania (Aust) Los Alamos Natl Lab	Ionospheric structure.	90	8,15,16, 22,23,24,27	6.6
AF177	Felli, M. Churchwell, E.	Arcetri (Ital) Wisconsin	Nonthermal emission from Theta Ori A.	2, 3.8	21	2.5
AF189	Fomalont, E. Geldzahler, B. Cohen, N.	NRAO-CV Appl Research Boston	Sco X-1: variations.	6	5, 8	16.0
AF192	Fomalont, E. Kellermann, K. Windhorst, R. Kristian, J.	NRAO-CV NRAO-CV Arizona State Mt. Wilson	1" resolution of the deep radio survey field.	6	21, 28	24.0
AG303	Gaume, R. Johnston, K. Wilson, T.	NRL NRL MPIfR (Bonn)	The dynamics of NGC7538 IRS 1.	1.3 cm line	19	8.0
AG308	Gopal Krishna Steppe, H. Subrahmanya, C. Swarup, G.	TIFR (India) IRAM (Italy) TIFR (India) TIFR (India)	Ultra-steep spectrum radio sources.	20	16, 17	4.4
AH392	Holdaway, M. Brown, L. Kollgaard, R.	NRAO-VLA Brandeis Lafayette	High resolution, high dynamic range map of 3C273.	2	13	10.5
AH397	Hughes, V.	Queens (Canada)	Variability of HII regions in Cepheus A.	2, 6, 20	8	6.0
AI039	Irwin, J. Baan, W. Sofue, Y.	Herzberg Inst Arecibo Obs Tokyo	HI and OH absorption in NGC3079.	20 cm line	4, 7	24.0
AJ182	Johnston, K. Florkowski, D. deVegt, C.	NRL USNO Hamburg (FRG)	Milliarcsecond positions of radio stars.	3.8	12	24.0 w/BB3
AJ183	Jackson, N. Browne, I. Shone, D. Clarke, D.	NRAL NRAL NRAL New Mexico	Structure and polarisation of 0800+608.	3.8	26, 27	16.0
AJ185	Jannuzi, B. Elston, R.	Arizona NOAO	Structure of x-ray selected BL Lac objects.	3.8	14, 24	8.0
AK239	Kapahi, V. Subrahmanya, C. Hunstead, R.	TIRF (India) TIFR (India) Sydney (Aust)	Optically deep sample of Molonglo quasars.	3.8	10	7.3
AM285	Mahon, M. Gottesman, S. Hunter, J. Hawarden, T.	Florida Florida Florida Royal Observatory	Peculiar ellipsoidal galaxy NGC 660.	20 cm line	22	8.5
AM286	Mantovani, F. Fanti, R. Padrielli, L. Saikia, D.	IRAM (Italy) IRAM (Italy) IRAM (Italy) TIFR (India)	Steep-spectrum low-frequency variable sources.	2, 3.8	17	24.0
AM291	Menten, K. Reid, M. Johnston, K. Walmsley, C. Wilson, T.	CfA CfA NRL MPIfR (Bonn) MPIfR (Bonn)	Small scale structure of methanol masers.	1.3	7	10.5

Program	Observer	Affiliation	Program Title	Bands cm	Obsv Date	Sched hrs
AM292	Miley, G. Saunders, R. Chambers, K. Rottgering, H. Rawlings, S.	Leiden MRAO Johns Hopkins Leiden MRAO	Finding the most distant galaxies: ultra-steep spectrum sources.	20	19	35.9
AM293	Mirabel, I. Rodriguez, L. Ruiz, A.	Puerto Rico UNAM (Mexico) UNAM (Mexico)	Continuum flux from the OH megamaser galaxies.	20	26	2.0
AM296	Murphy, D. Perley, R.	JPL NRAO-VLA	Flip-flop superluminals?	20	3	8.0
AM299	Muxlow, T.	NRAL	High resolution, high sensitivity imaging of the quasar 3C418.	6	14	3.0
AM308	McHardy, I. Callanan, P. Lehto, H.	Oxford Oxford Oxford	Mapping of globular cluster x-ray sources.	3.5, 6, 20	10	1.5
AO097	Ozernoy, L. Gwinn, C. Morris, M. Yusef-Zadeh, F.	Los Alamos Calif, Santa Barbara Calif, Los Angeles Northwestern	In search of a nuclear wind from the galactic center.	1.3	29	7.5
AR221	Rodriguez, L. Moran, J. Curiel, S.	UNAM (Mexico) CfA CfA	A remarkable triple source in Serpens.	3.8, 20	31	2.8
AS333	Sramek, R. Weiler, K. van der Hulst, J. Panagia, N.	NRAO-VLA NRL Westerbork STScI	Statistical properties of radio supernovae.	2, 6	2, 8, 29	11.7
AS395	Schmidt, M. van Gorkom, J. Schneider, D. Gunn, J.	Caltech Columbia Princeton/IAS Princeton	A survey of high-redshift quasars.	6	11	24.0 w/BB3
AS396	Shastri, P. Wills, B.	Texas Texas	Polarimetric test of the unified interpretation of quasars.	3.8, 6, 20	18	6.0
AS401	Sramek, R. Goss, W. Cowan, J.	NRAO-VLA NRAO-VLA Oklahoma	Supernova 1970G in M101.	6	1	6.1
AS402	Strauss, M. Partridge, B.	Caltech Haverford	Radio morphology of ultra-luminous IRAS galaxies.	20	6	15.0
AT106	te Lintel Hekkert,P. Zijlstra, A.	Leiden Kapteyn Lab	OH mapping of young stellar objects.	20 cm line	15, 31	13.5
AV164	van Breugel, W. Dey, A. Spinrad, H. McCarthy, P.	Lawrence Livermore Calif, Berkeley Calif, Berkeley Mt. Wilson	Mis-aligned radio galaxies at high redshift.	3.8, 6, 20	10	24.0
AV166	Velusamy, T. Venugopal, V.	TIFR (India) TIFR (India)	Composite SNR G18.95-1.1.	6, 20, 90	10	2.7
AV175	van Breugel, W. Allington-Smith, J.	Lawrence Livermore Durham (UK)	High resolution maps of two B2/1Jy sources.	3.8, 6, 20	8	3.0
AW230	Wrobel, J. Unger, S.	NRAO-VLA RGO	International monitoring of the Seyfert NGC 5548.	3.8	2, 23	2.0
AW249	Wills, B. Shastri, P.	Texas Texas	Core variability in lobe-dominated quasars.	6	14	10.0
AY036	Yusef-Zadeh, F.	Northwestern	Proper motion of Sgr A west arms.	2, 6	16	8.0
AZ044	Zhao, J. Ekers, R. Goss, W. Lo, K. Narayan, R.	New Mexico Australia Telescope NRAO-VLA Illinois Steward Obs	Flux density variations caused by RISS in Sgr A.	3.8, 6, 20	8, 19	3.0
BB003	Benson, J. Brown, R.	NRAO-CV NRAO-CV	The megamaser galaxies IC 4553 and III Zw35.	21,18 cm line	11	37.8 w/AS395,AJ182
		NRAO Staff	Baselines, Pointing, Delays			36.1
			Electronics, etc.			83.0
			Software			38.2
			General Tests			30.8
			Move/Operations			27.9

The average downtime for the month of May 1990 was approximately 6.7 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 100.0 percent (746.1 hours) of the time: 72.9 percent (544.2 hours) to astronomical programs, 10.8 percent (80.7 hours) to scheduled test/calibration, and remaining 16.2 percent (121.2 hours) went to scheduled maintenance.

The array was in the A configuration from May 1 through May 3.
A/B configuration from May 3 through May 31.

The total number of programs run for the month of May, 1989 was 48.

The following independent proposals shared simultaneous observing time (66.1 hours total simultaneous observing):

Projects	Hours
AB562/MOVE/OP	8.0
AB568/MOVE/OP	10.6
AB568/MOVE/OP	9.3
AC266/TESTS	0.4
BB3/AJ182	14.7
BB3/AS395	23.1

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Program	Observer	Affiliation	Program Title	Bands cm	Obsv Date	Sched hrs
AA109	Abraham, R. McHardy, I. Lehto, H. Crawford, C.	Oxford Oxford Oxford Oxford	Optical Jet in the BL Lac OQ530.	6, 20	17	3.0
AB414	Becker, R. White, R.	Calif,Davis STScI	Monitoring radio stars HD193793 and P Cygni.	2, 6	2	1.5
AB456	Burke, B. Hewitt, J. Roberts, D.	MIT Haystack Brandeis	Monitoring Lens 0957+561.	6	9	2.0
AB457	Brown, A. Bookbinder, J.	Colorado CfA	Parallax of T tauri.	2, 6	3, 6	12.0
AB535	Burke, B. Hewitt, J. Turner, E. Heflin, M.	MIT Haystack Princeton MIT	Ring candidate MG0414 + 0534.	1.3, 2, 3.8, 6	2	4.0
AB559	Backer, D. Fairhead, L.	Calif,Berkeley Calif,Berkeley	Pulsar astrometry: comparing VLA, VLBI, and timing techniques.	20	7	48.0
AB568	Burke, B. Hewitt, J. Turner, E. Conner, S. Heflin, M. Lehar, J.	MIT Haystack Princeton MIT MIT MIT	Gravitational lens survey.	3.8	29	18.0
AC265	Claussen, M. Johnston, K. Bowers, P.	NRL NRL NRL	Absolute positions of the OH masers in IK Tau.	6,20 cm line	1	2.0
AC266	Coles, W. Rickett, B. Cornwell, T. Hankins, T. Armstrong, J.	Calif,San Diego Calif,San Diego NRAO-VLA NMIMT/NRAO-VLA JPL	Intensity scintillation & angular scattering of the inner solar wind.	3.8, 6, 20	1,2,5,6,9, 10,14,16,17, 23,28	20.1
AC269	Cordes, J. Weisberg, J. Backer, D. Foster, R. Lundgren, S.	Cornell Carlston College Calif,Berkeley Calif,Berkeley Cornell	Astrometry of weak pulsars.	20	1	11.0
AD188	Drake, S. Simon, T. Florkowski, D. Stencel, R. Bookbinder, J.	SASC Hawaii USNO Colorado CfA	Variability of M supergiants: alpha orionis	2, 6	28	2.5
AD243	de Pater, I.	Calif,Berkeley	Neptune.	20	15,16,19	24.0 w/BB002
AD244	Dey, A. van Breugel, W.	Calif,Berkeley Lawrence Livermore	Images of radio-loud far-infrared galaxies.	2, 6, 20	20	7.4
AE067	Erickson, W. Jacobson, A.	Tasmania (Aust) Los Alamos Natl Lab	Ionospheric structure.	90	2,4,9,10,15, 19,25,29,30	8.2 w/BB002
AF177	Felli, M. Churchwell, E.	Arcetri (Ital) Wisconsin	Nonthermal emission from Theta Ori A.	2, 3.8	28	2.0
AF186	Fernini, I. Burns, J. Bridle, A. Perley, R.	New Mexico State New Mexico State NRAO-CV NRAO-VLA	Jet/Counterjet ratios in RGs.	6	22	24.0
AF188	Feretti, L. Bettoni, D. Galletta, G. Giovannini, G.	NRAO-VLA Padova (Ital) Padova (Ital) NRAO-VLA	Galaxies with kinematical evidence of recent mergers.	20	18, 19	6.5 w/BB002
AF191	Fomalont, E. Goss, W. Lyne, A. Manchester, R.	NRAO-CV NRAO-VLA NRAL CSIRO	Search for VLBI phase reference sources and imaging of selected pulsar fields.	2, 3.8, 6, 20	23	24.0
AF193	Fruchter, A. Goss, W.	Carnegie Inst NRAO-VLA	Globular clusters with radio sources.	20	20, 21	18.1 w/BB002
AG307	Goudfrooij, P. van Driel, W. de Jong, T.	Amsterdam Amsterdam Amsterdam	Compact core of the peculiar elliptical galaxy IC 1459.	2, 6	13	1.1
AG313	Giovannini, G. Feretti, L. Ge, J. Owen, F.	NRAO-VLA NRAO-VLA NRAO-VLA NRAO-VLA	Core of the radio galaxy 3C338.	6	2,4,5	1.9
AH295	Habing, H. Goss, W. Winnberg, A. van Langevelde, H.	Leiden (Neth) NRAO-VLA Onsala Leiden (Neth)	Monitoring OH/IR stars at the galactic center.	20 cm line	27	2.0
AH388	Hines, D. Wills, B.	Texas Texas	Radio structure of extreme IR dominated galaxy IRAS 09104+4109.	3.8, 20	10	4.0
AH391	Ho, P. Rengarajan, T.	Harvard TIFR	Extremely compact HII regions.	2, 3.8	18, 30	6.1
AH399	Hummel, E.	NRAL	Central radio sources in edge-on galaxies.	3.8, 6	9, 27	20.0
AI040	Inoue, M. Aizu, K. Tabara, H. Kato, T. Perley, R.	Nobeyama (Japan) Rikkyo (Japan) Utsunomiya (Japan) Utsunomiya (Japan) NRAO-VLA	Two candidate large rotation measure sources.	6, 20	20	4.0
AJ186	Johnston, H. Kulkarni, S. Goss, W.	Caltech Caltech NRAO-VLA	Deep imaging of globular clusters.	20	9, 10, 17	24.0
AK239	Kapahi, V. Subrahmanya, C. Hunstead, R.	TIFR TIFR Sydney	Optically deep sample of Molonglo quasars.	3.8	20	3.5
AK244	Kulkarni, S. Johnston, H. Prince, T.	Caltech Caltech Caltech	Astrometry of globular cluster pulsars.	20	12	12.0
AM290	Menon, T.	British Columbia	Structure of interacting galaxies.	6	1, 6	12.0
AM298	Mitchell, D. de Pater, I.	Calif,Berkeley Calif,Berkeley	Sub-surface imaging of Mercury.	3.8, 6, 20	13,14,15	25.0
AO088	Owen, F. Eilek, J.	NRAO-VLA NMIMT	Observations of M87.	3.8	24	11.8
AO096	Okorogu, A. Akujor, C.	Nigeria (Nsukka) Nigeria (Nsukka)	Radio jets without hotspots.	3.8	10	8.0

Program	Observer	Affiliation	Program Title	Bands cm	Obsv Date	Sched hrs
AP170	Perley, R.	NRAO-VLA	Very large Faraday rotation in Hydra A.	3.8	12	6.0
	Taylor, G.	NRAO-VLA				
	Inoue, M.	Nobeyama (Japan)				
	Kato, T.	Utsunomiya				
	Tabara, H.	Utsunomiya				
AP184	Pedlar, A.	NRAL	NGC 4321 and a sample of Sersic-Pastoriza galaxies.	3.8	15	6.0
	Collison, P.	NRAL				
	Saikia, D.	TIFR				
	Axon, D.	NRAL				
	Unger, S.	Royal Greenwich Obs				
AP186	Penninx, W.	Amsterdam	Z-source GX 340+0.	6, 20	2, 4, 5	10.2
	van Paradijs, J.	Amsterdam				
	van der Klis, M.	Amsterdam				
	Jansen, F.	Leiden				
	Lewin, W.	MIT				
AP188	Pooley, G.	MRAO	Quasars from a deep, low frequency survey.	20	14, 17, 19	23.9
	Rawlings, S.	MRAO				
	Saunders, R.	MRAO				
	Warner, P.	MRAO				
	MacMahon, R.	Cambridge				
AR208	Rudnick, L.	Minnesota	3C33 North hot spot.	20	27	10.0
	Anderson, M.	Minnesota				
	Wang, Y.	Minnesota				
AR216	Reid, M.	CfA	Measurement of the size and temperature of Mira variables.	1.3	26	8.0
	Menten, K.	CfA				
AR220	Reid, M.	CfA	OH masers and the galactic magnetic field.	20 cm line	25	13.0
	Silverstein, E.	CfA				
AR223	Rudnick, L.	Minnesota	3C33 south hot spot.	2	29	11.0
	Anderson, M.	Minnesota				
	Meisenheimer, K.	MPIfA (Heidelberg)				
	Roser, H.	MPIfA (Heidelburg)				
AS333	Sramek, R.	NRAO-VLA	Statistical properties of radio supernovae	2, 6	25	2.6
	Weiler, K.	NRL				
	van der Hulst, J.	Westerbork				
	Panagia, N.	STScI				
AS393	Saikia, D.	TIFR	Interstellar scattering in the inner galaxy.	3.8, 6	13	7.9
	Pedlar, A.	NRAL				
AS401	Sramek, R.	NRAO-VLA	Supernova 1970G in M101.	6	30	5.9
	Goss, W.	NRAO-VLA				
	Cowan, J.	Oklahoma				
AS404	Stocke, J.	Colorado	X-Ray selected BL Lac Objects.	20	13, 21	36.0
	Maccacaro, T.	CfA				
	Gioia, I.	CfA				
	Wolter, A.	CfA				
	Morris, S.	Carnegie Inst				
	Jannuzi, B.	Arizona				
AT105	Taylor, G.	NRAO-VLA	Spectral index and depolarization of Hydra A.	20, 90	1	0.6
	Perley, R.	NRAO-VLA				
AV174	van Paradijs, J.	Amsterdam	Atoll sources GX 9+1 and GX 9+9.	6	3, 6	16.2
	Penninx, W.	Amsterdam				
	van der Klis, M.	Amsterdam				
	Jansen, F.	Leiden				
	Lewin, W.	MIT				
AW248	Wieringa, M.	Leiden	Faint, steep spectrum radio sources.	20	2, 5	16.0
	Katgert, P.	Leiden				
AW252	Whittle, M.	Virginia	Jet and ISM interaction in Markarian 78.	2	16	8.0
	Wilson, A.	Maryland				
AW253	Wilson, A.	Maryland	The seyfert galaxy NGC 5252.	6, 20	28	11.5
	Tsvetanov, Z.	Maryland				
AY033	Yin, Q.	Peking/NRAO-CV	Study of nine likely starbust galaxies.	20, 90	12, 17	3.5
	Heeschen, D.	NRAO-CV				
	Saslaw, W.	Virginia				
AZ044	Zhao, J.	New Mexico	Flux density variations caused by RISS in Sgr A.	3.8, 6, 20	5, 27	3.0
	Ekers, R.	Australia Telescope				
	Goss, W.	NRAO-VLA				
	Lo, K.	Illinois				
	Narayan, R.	Steward Obs				
BB002	Brown, R.	NRAO-CV	The apparent structure of Sgr A. w/AF188,AE67,AD243,AF193		19,20 single dish VLB	16.4
	Benson, J.	NRAO-CV				
		NRAO Staff	Baselines, Pointing, Delays			32.6
			Electronics, etc.			38.2
			Software			44.1
			General Test			33.1

The average downtime for the month of April 1990 was approximately 7.4 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 100.0 percent (721.0 hours) of the time: 79.5 percent (573.1 hours) to astronomical programs, 9.1 percent (65.7 hours) to scheduled test/calibration, and the remaining 11.4 percent (82.2 hours) went to scheduled maintenance.

The array was in the A configuration from April 1 through April 30.

The total number of programs run for the month of April, 1989 was 53.

The following independent proposals shared simultaneous observing time (16.4 hours total simultaneous observing):

Projects	Hours
AD243/BB2	6.7
AE67/BB2	1.0
AF188/BB2	0.6
BB2/AF193	8.2

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Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AA110	Akujor, C. Rao, A.	Nigeria Kapteyn Lab.	1912-172 - a flat spectrum double source.	3.8, 6, 20	3	0.5
AB414	Becker, R. White, R.	Calif, Davis STScI	Monitoring radio stars HD193793 and P Cygni.	2, 6	3, 19	3.5 w/VAH49
AB456	Burke, B. Hewitt, J. Roberts, D.	MIT Haystack Brandeis	Monitoring Lens 0957+561	6	15	2.0
AB457	Brown, A. Bookbinder, J.	Colorado CFA	Distance to the Taurus-Auriga star formation region.	6	14	6.8
AB532	Bridle, A. Fomalont, E.	NRAO-CV NRAO-CV	Polarimetry of lobes of 3C288.	3.8	1	5.1 w/Move/Op
AB560	Barthel, P. Schilizzi, R. Miley, G.	Kapteyn Lab. NFRA Leiden Obs.	Core-dominated quasars at high redshift.	6	23	24.0
AB561	Barthel, P. Coleman, P.	Kapteyn Lab. Kapteyn Lab.	Radio-quiet QSOs, and the BAL QSO connection.	3.8	24	14.0
AB563	Baudry, A. Wilson, T. Walmsley, C. Menten, K. Johnston, K.	Obs. de Bordeux MPIfR (Bonn) MPIfR (Bonn) CfA NRL	J=5/2 and J=3/2 transitions of OH in W3(OH).	3.8 cm line	25, 30	16.0
AC266	Coles, W. Rickett, B. Cornwell, T. Hankins, T. Armstrong, J.	Calif, San Diego Calif, San Diego NRAO-VLA NRAO-VLA JPL	Intensity scintillation & angular scattering of the inner solar wind	3.8, 6, 20	24,25,31	5.5
AC269	Cordes, J. Weisberg, J. Backer, D. Foster, R. Lundgren, S.	Cornell Carleton College Calif, Berkeley Calif, Berkeley Cornell	Astrometry of weak pulsars.	20	26	9.0
AC272	Catarzi, M. Cesaroni, R.	Arcetri Obs. MPIfR (Bonn)	Water maser and disk structure in star forming regions.	1.3 cm line	10, 11	8.0 w/VR51
AC273	Coleman, P. Turnshek, D. Briggs, F.	Kapteyn Lab. Pittsburgh Pittsburgh	Quadruply lensed quasar 1412+117.	3.8	30	6.0
AdHoc	Palmer, P.	Chicago			16	0.8
AD244	Dey, A. van Breugel, W.	Calif, Berkeley Lawrence Livermore	Images of radio-loud far-infrared galaxies.	2, 6, 20	7	11.6 w/VW57
AE067	Erickson, W. Jacobson, A.	Tasmania Los Alamos Natl. Lab.	Ionospheric structure.	90	9,15,18, 21,22,25	7.3
AF177	Felli, M. Churchwell, E.	Arcetri Obs. Wisconsin	Nonthermal emission from Theta Ori A.	2, 3.8	2, 13, 26	7.0
AG310	Gabuzda, G. Lestrade, J.	JPL JPL	VLBI Astrometry of stars.	3.8 w/AR216	3	9.7 single antenna VLB
AH295	Habing, H. Goss, W. Winnberg, A. van Langevelde, H.	Leiden Obs. NRAO-VLA Onsala Leiden Obs.	Monitoring OH/IR stars at the galactic center.	20 cm line	1	2.0
AH385	Han, X. Hjellming, R.	NMIMT NRAO-VLA	Imaging the radio remnant of x-ray Nova V404 Cyg.	3.8	8, 10	12.5 w/VW57,VR51
AH386	Hanisch, R. Miley, G. Rottgering, H. de Jong, J.	STScI Leiden Obs. Leiden Obs. Leiden Obs.	Rich X-ray cluster Abell 2256.	20	26	8.5
AH387	Hankins, T. Cordes, J. Weisberg, J. Dewey, R.	NRAO-VLA Cornell Carleton College JPL	Gated astrometry of pulsars.	6, 20	29, 31,	26.0
AH390	Hjellming, R. Gehrz, R. Taylor, A. Seaquist, E.	NRAO-VLA Minnesota Calgary Toronto	Resolving radio novae.	3.8, 6,	25,11,14, 20	9.5
AH396	Huang, Z. Condon, J. Thuan, T. Yin, Q.	Beijing/NRAO-CV NRAO-CV Virginia Beijing Obs.	Compact starbursts and AGN.	3.8	4	18.4
AH397	Hughes, V.	Queen's Univ.	Variability of HII regions in Cepheus A.	2, 6, 20	13	6.0
AH398	Hughes, V. MacLeod, G. Moriarty-Schieven, G.	Queen's Univ. Queen's Univ. Queen's Univ.	HII regions in dark clouds.	2, 6, 20	24, 25	12.0
AJ188	Johnston, K. Gaume, R. Stolovy, S. Wilson, T. Wamsley, C. Menten, K.	NRL NRL NRL MPIfR (Bonn) MPIfR (Bonn) CfA	Methanol masers associated with OMC-1.	1.3 cm line	26	4.0
AJ189	Johnston, K. Claussen, M. Bowers, P.	NRL NRL NRL	Distance to IK Tau: Motions of water maser components.	1.3 cm line	1	4.1
AK241	Kenny, H. Taylor, A.	Calgary Calgary	AG Pegasi: Dynamics of the inner system.	2, 6	2	6.0

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AL150	Lestrade, J. Preston, R.	JPL JPL	Statistical properties of RSCVn stars.	6	11,17,20	4.5 w/VR51
AL218	Lucas, R. Chambers, K.	STScI Johns Hopkins	Texas survey sources.	20	25	6.0
AM287	Martin-Pintado, J. Bachiller, R. Johnston, K. Gaume, R.	CAY (Spain) CAY (Spain) NRL NRL	Ionized stellar winds: MWC349.	1.3 cm line	29	12.0
AM288	Masson, C.	CfA	Measuring the angular expansion of W3(OH).	1.3, 2	9	12.0
AM293	Mirabel, I. Rodriguez, L. Ruiz, A.	Puerto Rico UNAM UNAM	Continuum flux from the OH megamaser galaxies.	20	6,12	8.0 w/VR51
AM297	Murphy, D. Perley, R.	JPL NRAO-VLA	Search for a counter jet in 3C273.	20	22	4.0
AO087	Owen, F. Eilek, J. Cornwell, T.	NRAO-VLA NMIMT NRAO-VLA	Observations of M87.	90	21	10.0
AP170	Perley, R. Taylor, G. Inoue, M. Kato, T. Tabara, H.	NRAO-VLA NRAO-VLA Nobeyama Utsunomiya Utsunomiya	Very large Faraday rotation in Hydra A.	3.8	13	6.0
AP187	Perley, R. Roser, H.	NRAO-VLA MPIfA	Pictor A.	1.3, 2	2, 6, 12	11.3
AR216	Reid, M. Menten, K.	CfA CfA	Measurement of the size and temperature of Mira variables.	1.3	3	19.0 w/AG310
AR219	Rao, A.	Kapteyn Lab.	Candidate gravitational lens 1830-211.	1.3, 2	1	2.0
AR222	Roland, J. Fraix-Burnet, D. Mellier, Y. Soucail, G.	IAP (France) Obs. de Toulouse Obs. de Toulouse Obs. de Toulouse	Study of an optical jet.	20, 90	3	2.0
AS333	Sramek, R. Weiler, K. van der Hulst, J. Panagia, N.	NRAO-VLA NRL Westerbork STScI	Statistical properties of radio supernovae.	2,6,20	7,14	4.2
AS388	Seaquist, E. Smolinski, J.	Toronto (Can) Copernicus Astr. Ctr.	Supergiant binary HR8752.	1.3, 2, 3.8, 6, 20	11	9.0 w/VR51
AS394	Sakurai, T. Spangler, S.	Iowa Iowa	Extragalactic radio sources as a probe of the solar corona.	20	21	12.0
AS396	Shastri, P. Wills, B.	Texas Texas	Polarimetric test of the unified interpretation of quasars.	3.8, 6, 20	11	13.0 w/VR51
AS400	Sramek, R. Filippenko, A. Sargent, W.	NRAO-VLA Calif, Berkeley Caltech	The Seyfert 1 nucleus of dwarf Sd galaxy NGC 4395.	3.8	2	10.0
AS403	Strom, R. Penninx, W. van Paradijs, J. van der Klis, M.	NFRA (Dwingeloo) Amsterdam Amsterdam Amsterdam	Extended emission associated with Cyg X-1.	6, 20	4	5.6
AT105	Taylor, G. Perley, R.	NRAO-VLA NRAO-VLA	Spectral index and depolarization of Hydra A.	20, 90	31	7.4
AV177	Velusamy, T.	TIFR (India)	Pulsar candidates in SNR G33.6+0.1	20, 90	9	5.0
AW230	Wrobel, J. Unger, S.	NRAO-VLA RGO	Monitoring of the Seyfert NGC 5548.	3.5	12	1.0 w/VR51
AW244	Wootten, A. Mangum, J. Butner, H.	NRAO-CV NRAO-CV Texas	Protostar in the Rho Oph complex.	1.3, 2, 3.8	10	3.2 w/VR51
AW249	Wills, B. Shastri, P.	Texas India Inst. of Sci.	Core variability in lobe-dominated quasars.	6	1	10.0
AZ044	Zhao, J. Ekers, R. Goss, W. Lo, K. Narayan, R.	New Mexico Australia Telescope NRAO-VLA Illinois Steward Obs.	Flux density variations caused by RISS in Sgr A.	3.8, 6, 20	1, 19	3.5 w/VAH49
V8962	Felli, M.	Arecetri Obs.	HD 193793.	6 cm phased array MK III VLB	7	0.8
VAH49	Jamcey, D. Jones, D. Murphy, D. Preston, R. Meier, D. Perley, R. Tzioumis, A.	CSIRO JPL JPL JPL JPL NRAO-VLA Sydney	Lens candidate 1830-211.	18 cm single antenna VLB	19	4.6 w/AZ44,AB414, Tests
VB81	Barthel, N. Rogers, A. Shapiro, I.	CfA Haystack Obs. CfA	The expansion and morphology of SN1979C.	6 cm phased array MK III VLB	8, 9, 10, 12	26.0
VB100	Biretta, J. Cawthorne, T. Reid, M. Gabuzda, D.	NRAO-VLA CfA CfA JPL	Polarization structure of the M87 nuclear jet.	18 cm phased array MK III VLB	19	16.6

VLA UTILIZATION MARCH 1990 (cont)

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
VB101	Benz, A. Isliker, H. Alef, W. de Vicente, P.	ETH, Zurich ETH, Zurich MPIfR (Bonn) MPIfR (Bonn)	VLBI of M-Dwarfs.	18 cm phased array MK III VLB	15, 17 18	10.7
VB102	Barthel, N. Rogers, A. Shapiro, I.	CfA Haystack Obs. CfA	SN1979C: round or elongated?	18 cm phased array MK III VLB	17, 18, 21	16.2
VC56	Cordes, J. Gwinn, C.	Cornell Calif, Santa Barbara	Astrometry of the binary pulsar 1913+16.	18 cm phased array MK III VLB	19	4.0
VG63	Gwinn, C. Mutel, R. Cordes, J. Moran, J. Clegg, A.	Calif, Santa Barbara Iowa Cornell CfA Cornell	OH maser scattering disk in W49N.	18 cm phased array VLB	17	8.3
VJ54	Jones, D. Dewey, R. Gwinn, C. Linfield, R. Davis, M.	JPL JPL Calif, Santa Barbara JPL Calif, Berkeley	PSR 1937+214.	18 cm phased array MK III VLB	15	3.2
VL57	Lonsdale, C. Phillips, R. Barthel, P. Muxlow, T.	Haystack Obs. Haystack Obs. Kapteyn Lab. NRAL	Hotspot in 3C263.1.	18 cm phased array MK III VLB	20	9.8
VM110	Mutel, R. Spangler, S. Molnar, L. Cordes, J.	Iowa Iowa Iowa Cornell	ISS studies of heavily scattered sources.	18 cm phased array MK III VLB	14, 18	18.2
VM112	Mutel, R. Baum, S. O'Dea, C.	Iowa NFRA (Dwingeloo) NFRA (Dwingeloo)	Maps of three compact doubles.	6,18 phased array VLB	7, 20	24.4
VP100	Pauliny-toth, I. Porcas, R.	MPIfR (Bonn) MPIfR (Bonn)	High sensitivity optically selected quasars.	18 cm phased array MK III VLB	15,16	23.7
VP101	Phillips, R. Feigelson, E. Lonsdale, C.	Haystack Obs. Penn State Haystack Obs.	Compact nonthermal emission around naked T Tauri stars.	6,18 phased array MK III VLB	12,13, 15,16	16.6
VR49/ VR50	Roberts, D. Brown, L. Cawthorne, T. Wardle, J. Gabuzda, D.	Brandeis Brandeis Brandeis Brandeis JPL	Survey and monitoring of linear polarization structures.	6 cm phased array MK III VLB	5	19.6
VR51	Readhead, A. Wilkinson, P. Xu, W. Pearson, T. Lawrence, C. Herbig, T.	Caltech NRAL Caltech Caltech Caltech Caltech	A large scale VLBI snapshot survey.	6 cm single dish VLBI	10,11 w/AW244,AH386,Tests, AL150,AC272,AS348, AH390,AS396,AW230, AM293	48.8
VV03	Vermeulen, R. Schilizzi, R. Spencer, R. Romney, J. Preston, R. Fejes, I.	Caltech NFRA (Dwingeloo) NRAL NRAO-CV JPL Budapest	The radio spectrum of the jets of SS433.	18 cm phased array MK III VLB	14	11.2
VW57	Wehrle, A. Unwin, S. Zensus, A. Cohen, M.	Caltech Caltech NRAO-VLA Caltech	Monitoring superluminal motion in 3C345.	6 cm single dish VLBI	7 w/AD244,AH385	16.1
		NRAO Staff	Baselines, Pointing, Delays Electronics, etc. Software General Tests Move/Operations			34.0 40.7 24.8 28.5 6.1

The average downtime for the month of March 1990 was approximately 4.1 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 100.0 percent (746.1 hours) of the time: 82.5 percent (615.5 hours) to astronomical programs, 8.7 percent (65.1 hours) to scheduled test/calibration, and the remaining 8.8 percent (65.5 hours) went to scheduled maintenance.

The array was in the A configuration from March 1 through March 31.

The total number of programs run for the month of March, 1989 was 71.

The following independent proposals shared simultaneous observing time (83.4 hours total simultaneous observing):

Projects	Hours
AB532/MOVE/OP	4.1
AG310/AR216	9.7
VAH49/AZ44	3.5
VAH49/TESTS	1.1
VR51/AC272	8.0
VR51/AH385	6.0
VR51/AH390	15.0
VR51/AL150	1.3
VR51/AM293	2.0
VR51/AS388	9.0
VR51/AW230	1.0
VR51/AW244	3.2
VR51/TESTS	3.0
VR51/VB81	0.3
VW57/AD244	10.7
VW57/AH385	5.4

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Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AB-414	Becker, R. White, R.	Calif, Davis STScI	Monitoring radio stars HD193793 and P Cygni.	2,6	1,5,8, 12,24 w/AQ4,Move/Op	7.0
AB-456	Burke, B. Hewitt, J. Roberts, D.	MIT Princeton Brandeis	Monitoring Lens 0957+561.	6	1,19 w/AQ4,Move/Op	4.0
AB-532	Bridle, A. Fomalont, E.	NRAO-CV NRAO-CV	Polarimetry of lobes of 3C288.	3.8	28	0.9
AC-262	Campbell, B.	New Mexico	Radio emission from new young stellar objects.	6	4	6.0 w/AQ4
AC-268	Cordes, J. Gwinn, C.	Cornell Calif, Santa Barbara	Point sources near the binary pulsar 1913+16.	20,18	12	3.0 w/AQ4
AD-188	Drake, S. Simon, T. Florkowski, D. Stencel, R. Bookbinder, J. Linsky, J.	SASC Hawaii USNO Colorado CfA Colorado	Variability of M supergiants: alpha orionis.	2,6	8	4.0 w/AQ4
AD-248	Dougherty, S. Taylor, A. Waters, L.	Calgary Calgary Western Ontario	Be stars.	2,3.8	5,20	14.5 w/AQ4
AE-66	Engels, D. Winnberg, A. Lindqvist, M. Walmsley, M. Schmid-Burgk, J.	Hamburger Sternwarte Onsala Onsala MPIR, Bonn MPIR, Bonn	Water maser emission in circumstellar shells.	1.3 cm line	26	6.0
AF-177	Felli, M. Churchwell, E.	Obs Astro Arcetri Wisconsin	Nonthermal emission from Theta Ori A.	3.5,2	14	2.5 w/AQ4
AG-304	Geldzahler, B.	Applied Research Corp	X-ray triple 1916-05.	20	13	10.0 w/AQ4
AG-309	Gwinn, C.	Calif, Santa Barbara	Reference source near W49N.		8,11	1.9 w/AQ4
AH-295	Habing, W. Goss, W. Winnberg, A. van Langevelde, H.	Leiden NRAO-VLA Onsala Leiden	Monitoring OH/IR stars at the galactic center.	20 cm line	8	2.0
AH-348	Hjellming, R. Han, X. Cordova, F.	NRAO-VLA NMIMT Penn State	"Z-source" low mass x-ray binaries.	6,20	16	10.0 w/AQ4
AH-389	Hjellming, R. Han, X. Johnston, K.	NRAO-VLA NMIMT NRL	Search for minutes-time-scale radio QPOs in strong x-ray binaries.	3.5	2,3,4	39.0 w/AQ4
AH-390	Hjellming, R. Gehrz, R. Taylor, A. Seaquist, E.	NRAO-VLA Minnesota Calgary Toronto	Resolving radio novae.	3.8,6, 20	7,11,25	8.0 w/AQ4
AH-394	Howarth, I. Brown, A.	Univ. College London Colorado	B supergiant winds.	3.8,6	8,12	13.1 w/AQ4
AH-395	Howarth, I. Brown, A.	Univ College London Colorado	Emission from O stars.	3.8	17	12.5 w/AQ4
AH-396	Huang, Z. Condon, J. Thuan, T. Yin, Q.	Beijing NRAO-CV Virginia Beijing Obs	Compact starbursts and AGN.	3.8	24	18.0
AI-40	Inoue, M. Aizu, K. Tabara, H. Kato, T. Perley, R. Taylor, G.	Nobeyama Radio Obs Nobeyama Radio Obs Utsunomiya Utsunomiya NRAO-VLA NRAO-VLA	Two candidate large rotation measure sources.	6,20	27	4.5
AJ-187	Johnston, K. Webster, W. Seidelmann, P. Altenhoff, W.	NRL NASA USNO MPIR, Bonn	The spatial distribution of the microwave emission from Ceres.	1.3	23,25 26	26.2
AK-225	Klein, U. Reuter, U. Wielebinski, R. Kronberg, P. Lesch, H.	Bonn MPIR, Bonn MPIR, Bonn Toronto Heidelberg	Tracing the magnetic field in M82.	90	28	2.0

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AM-280	Menten, K. Reid, M. Johnston, K. Walmsley, C. Wilson, T. Henkel, C.	CfA CfA NRL MPIR, Bonn MPIR, Bonn MPIR, Bonn	Emission from Methanol lines toward star forming regions.	1.3 cm line	1	7.0
AM-294	Muhleman, D. Grossman, A. Slade, M. Jurgens, R. Butler, B.	Caltech Caltech JPL JPL Caltech	Radar imaging of Venus.	3.8	18,25	17.0
AO-94	O'Dea, C. Baum, S. Stanghellini, C.	NFRA NFRA Bologna	What are the GHz-peaked spectrum sources?	1.3,3.5 6,18,20	8	24.0 w/AQ4, Move/Op
AP-181	Pallavacini, R. Kundu, M. White, S.	Arcetri Obs Maryland Maryland	Post T-Tauri and naked T-Tauri stars.	6	18,19	20.0 w/AQ4
AP-182	Patnaik, A. Browne, I. Wilkinson, P. Wrobel, J.	NRAL NRAL NRAL NRAO-VLA	Calibrator sources for MERLIN.	3.5	19,21,22	60.5 w/AQ4
AQ-04	Quirrenbach, A. Witzel, A. Krichbaum, T. Schalinski, C. Hummel, C. Alberdi, A. Johnston, K. Zensus, A.	MPIR, Bonn MPIR, Bonn MPIR, Bonn MPIR, Bonn MPIR, Bonn MPIR, Bonn NRL NRAO-VLA	Rapid radio variability in 0917+624. w/AB456,AS333,AB414,Move/Op,AR218, AH389,AW242,AC262,AH394,AS397,AC268, AG304,AF177,AW239,AH348,AH395,AP181, AP182,AD248	2,3.6,6, 20,90	1,2,5,7, 8,10-12, 14,15, 17-22	389.6 4 antenna subarray
AR-209	Reipurth, B. Rodriguez, L.	ESO, Chile UNAM	HH 80-81 spectral indices.	3.8,6	24	6.0
AR-216	Reid, M. Menten, K.	CfA CfA	Measurements of the size and temperature of Mira variables.	1.3,2, 3.5	13,14, 16	16.0
AR-218	Rankin, J. McKinnon, M. Hankins, T.	Vermont NMIMT NMIMT	Polarimetry of the pulsar PSR1702-19.	20,90	2,5	8.5 w/Move/Op
AS-333	Sramek, R. Weiler, K. van der Hulst, J. Panagia, N.	NRAO-VLA NRL Westerbork STScI	Statistical properties of radio supernovae.	2,6	1,6,8,12, 15,18,26	17.0 w/AQ4 Move/Op
AS-397	Skinner, S. Brown, A. Linsky, J.	Colorado Colorado Colorado	Emission from massive pre-main sequence stars.	3.8	10,11,16	42.0 w/AQ4
AW-238	Wolter, A. Gioia, I. Maccacaro, T. Stocke, J. Morris, S.	CFA CFA CFA Colorado Mt. Wilson	Study of radio properties of x-ray selected BL Lac objects.	2,6 20,90	5	3.0 w/AQ4
AW-239	White, S. Kundu, M.	Maryland Maryland	Flare stars at high frequencies and impulsive phase of optical flares.	2	15	10.0 w/AQ4
AW-242	Willson, R. Lang, K.	Tufts Tufts	Stellar bursts.	20,90	3	10.0 w/AQ4
AW-255	Worrall, D. Murray, S. Birkinshaw, M.	Smithsonian Obs Smithsonian Obs Harvard Univ	The Eridanus Einstein deep survey field.	6	1	4.0 w/AQ4
		NRAO Staff	Electronics			49.4
			Baseline/Startup/Pointing			34.8
			Move/Operations			73.4
			Software			43.2
			General Test			51.2

The average downtime for the month of February 1990 was approximately 5.9 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 98.0 percent (673.9 hours) of the time: 68.2 percent (459.6 hours) to astronomical programs, 18.1 percent (121.7 hours) to scheduled test/calibration, and the remaining 13.7 percent (92.6 hours) went to scheduled maintenance.

The array was in the AD configuration from February 1 through February 12.
D configuration from February 12 through February 28.

The total number of programs run for the month of February, 1989 was 36.

The following independent proposals shared simultaneous observing time (413.2 hours total simultaneous observing):

AC262/MOVE/OP	6.0
AO94/MOVE/OP	6.9
AQ4/AB414	6.0
AQ4/AB456	4.0
AQ4/AC262	6.0
AQ4/AC268	3.0
AQ4/AD188	4.0
AQ4/AD248	15.0
AQ4/AF177	2.5
AQ4/AG304	10.0
AQ4/AG309	0.9
AQ4/AH348	10.0
AQ4/AH389	39.0
AQ4/AH390	7.0
AQ4/AH394	13.0
AQ4/AH395	12.5
AQ4/AO94	24.0
AQ4/AP181	20.0
AQ4/AP182	60.5
AQ4/AR218	8.5
AQ4/AS333	15.0
AQ4/AS397	42.0
AQ4/AW238	3.0
AQ4/AW239	10.0
AQ4/AW242	10.0
AQ4/AW255	4.0
AQ4/MOVE/OP	47.6
AQ4/TESTS	17.5
AR216/MOVE/OP	5.3

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Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AB-414	Becker, R. White, R.	Calif, Davis STScI	Monitoring radio stars HD193793 and P Cygni.	2,6	14	2.5
AB-456	Burke, B. Hewitt, J. Roberts, D.	MIT Princeton Brandeis	Monitoring Lens 0957+561.	6	12,23	4.0 w/BW1
AB-552	Beckman, J. Cepa, J. Shaw, M. Pedlar, A. Vila, B.	IAC IAC Manchester NRAL NRAL	Triggering by density waves in grand design spiral galaxies.	20 cm line	15	11.7
AB-554	Byrne, R. Gottesman, S.	Florida Florida	Dwarf galaxies out to a distance of 50 Mpc.	20 cm line	21	16.0
AB-557	Brett, B. Beck, R.	Manchester MPIR, Bonn	Magnetic field in NGC 2903.	20	28	11.5
AC-244	Carilli, C. Perley, R. Dreher, J. Bridle, A. Cotton, W.	CfA NRAO-VLA MIT NRAO-CV NRAO-CV	Cygnus A.	3.8	23	6.0
AC-251	Curiel, S. Raymond, J. Rodriguez, L. Canto, J.	CfA CfA CfA UNAM	Spectral index of radio sources associated with molecular outflows.	2	26	16.0
AC-255	Cool, A. Ho, P.	Harvard Harvard	NH_3 condensations in the Orion KL Nebula.	1.3 cm line	13,15,16, 18,19	40.6
AC-260	Chambers, K. Baum, S. Miley, G.	Johns Hopkins NFRA Leiden	Redshifted CO line emission from a radio galaxy at Z=3.8.	1.3 cm line	8	12.0
AC-261	Cruddance, R. Johnston, K.	NRL NRL	Radio maps of MSH-17-203.	6,20,90	25	3.0
AC-264	Condon, J. Broderick, J.	NRAO-CV Virginia Poly Inst	UGC galaxies.	6	8,20	11.0
Ad Hoc	Perley, R.	NRAO-VLA			31	4.0 w/AQ4,Move/Op
AD-188	Drake, S. Simon, T. Florkowski, D. Stencel, R. Bookbinder, J. Linsky, J.	SASC Hawaii USNO Colorado CfA Colorado	Variability of M supergiants: alpha orionis.	2,6	23	4.5
AD-239	Dubner, G. Arnal, M. Winkler, F. Goss, W.	IAFE IAR Middlebury College NRAO-VLA	Eight SNRs.	20	21	8.0
AE-63	Edelson, R. Begelman, M.	Colorado Colorado	CfA Seyfert Galaxies.	2,6,20	17	4.5
AF-179	Fomalont, E. Hogan, C. Partridge, B. Windhorst, R.	NRAO-CV Steward Obs Haverford Arizona State	CBR fluctuations.	3.8	1,2,4, 5,11,22	60.1 w/BW1
AG-243	Giovannini, G. Feretti, L.	NRAO-VLA NRAO-VLA	The extended source near Coma A.	90	11	1.5
AG-275	Gottesman, S. Hunter, J. Mahon, M.	Florida Florida Florida	The peculiar spindle galaxy NGC2685.	20 cm line	20	8.0
AG-294	Gregorini, L. Padrielli, L. Parma, P.	Bologna Bologna Bologna	Radio galaxies of intermediate strenght.	20	6	2.5
AG-295	Gregg, M.	Mt. Stromlo	HI observations of the Bootes Void galaxies.	20 cm line	2,30	10.5
AG-296	Gussie, G. Taylor, A.	Calgary Calgary	HI in the young planetary nebulae NGC 7027 and IC418.	20 cm line	12	16.0 w/BW1
AG-301	Giovanelli, R. Haynes, M.	NAIC Cornell	Intergalactic HI cloud.	20 cm line	28	4.0
AH-353	Hurt, R. Turner, J.	Calif, Los Angeles Calif, Los Angeles	Maffei 2.	2,6 cm line	28	6.0
AH-377	Hawkins, G. Zuckerman, B.	Calif, Los Angeles Calif, Los Angeles	HI around red giant W Hydrae.	20 cm line	2	4.0
AH-380	Ho, P. Yun, M. Jackson, J.	Harvard Harvard MPIR, Bonn	Hot cores in W51 and NGC 7538.	1.3 cm line	5,7,28	26.0
AH-394	Howarth, I. Brown, A.	Univ. College London Colorado	B supergiant winds.	3.8,6	29	10.2 w/AQ4

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AK-225	Klein, U. Reuter, U. Wielebinski, R. Kronberg, P. Lesch, H.	Bonn MPIR, Bonn MPIR, Bonn Toronto Heidelberg	Tracing the magnetic field in M82.	2	3	12.1
AK-234	Kundu, M. White, S. Schmahl, E. Gopalswamy, N.	Maryland Maryland Maryland Maryland	Microwave & millimeter imaging of solar flares.	1.3,2	6	6.5
AK-235	Keene, J. Masson, C. Menten, K.	Caltech CfA CfA	NH_3 emission in B335.	1.3 cm line	19	10.0
AL-213	Ladd, E. Myers, P. Wood, D.	CfA CfA CfA	Ammonia in low and intermediate mass star formation regions.	1.3 cm line	13,16	17.0
AL-215	Langston, G. Kassim, N. Weiler, K.	NRL NRL NRL	Filled-center supernova remnants.	1.3,3.8	7	7.0
AM-280	Menten, K. Reid, M. Johnston, K. Walmsley, C. Wilson, T. Henkel, C.	CfA CfA NRL MPIR, Bonn MPIR, Bonn MPIR, Bonn	Emission from Methanol lines toward star forming regions.	1.3 cm line	20	12.0
AM-281	Menten, K. Henkel, C. Wilson, T.	CfA MPIR, Bonn MPIR, Bonn	W28A2: neutral & ionized gas.	1.3 cm line	22	3.0
AM-282	Menten, K. Reid, M. McClintock, J. Leventhal, M.	CFA CFA CFA Bell Lab.	Emission from the unique x-ray binary GX1+4.	3.5	29	4.0 w/AQ4
AM-284	Mundy, L. Rudolph, A. Evans, N. Zhou, S.	Maryland Maryland Texas Texas	Condensations in NGC 2024.	1.3 cm line	27	10.0
AM-300	Menard, F. Puche, D.	Paris NRAO-VLA	Sources in a selected sample of reflection nebulae.	3.5	30	2.5 w/AQ4
AN-53	Niell, A. Lestrade, J. Lonsdale, C.	Haystack Obs Obs. de Paris Haystack Obs	VLBI phase reference source near AE Aquarii.	3.6,20	18	1.5
AO-87	Owen, F. Eilek, J. Cornwell, T.	NRAO-VLA NMIMT NRAO-VLA	Observations of M87.	90	3	2.5
AO-88	Owen, F. Eilek, J.	NRAO-VLA NMIMT	Observations of M87.	3.8	12	3.0 w/BW1
AQ-04	Quirrenbach, A. Witzel, A. Krichbaum, T. Schalinski, C. Hummel, C. Alberdi, A. Johnston, K. Zensus, A.	MPIR, Bonn MPIR, Bonn MPIR, Bonn MPIR, Bonn MPIR, Bonn MPIR, Bonn NRL NRAO-VLA	Rapid radio variability in 0917+624.	2,3.6,6, 20,90 cm 4 antenna subarray	29,30	34.6 w/AM282,AH394,AU38, AM300,AR216,Move/Op Ad Hoc
AR-203	Rodriguez, L. Anglada, G. Estalella, R. Torrelles, J. Canto, J.	UNAM Barcelona Barcelona IAA UNAM	Low-luminosity sources of molecular and optical outflows.	3.8	4,25	9.0
AR-216	Reid, M. Menten, K.	CfA CfA	Measurements of the size and temperature of Mira variables.	1.3,2, 3.8	14,27 30	22.0 w/AQ4
AS-333	Sramek, R. Weiler, K. van der Hulst, J. Panagia, N.	NRAO-VLA NRL Westerbork STScI	Statistical properties of radio supernovae.	2,6,20	26,29	1.3
AS-349	Seaquist, E. Bell, M.	Toronto Herzberg Inst.	Molecular absorption against Cen A.	1.3,2 cm line	18	2.5
AS-368	Sadler, E. Whiteoak, J.	Anglo-Australian Obs CSIRO	HI velocity field in NGC 5077.	20 cm line	26	9.2
AS-377	Szomoru, A. van Gorkom, J. Sancisi, R. van Woerden, H.	Kapteyn Lab Columbia/NRAO-VLA Kapteyn Lab Kapteyn Lab	Galaxies in the Bootes Void.	20 cm line	13,14, 16,23	24.0

Program	Observer	Affiliation	Program title	Bands (cm)	Obsv date	Sched hrs
AS-378	Seaquist, E. Taylor, A.	Toronto Calgary	Survey of symbiotic stars at 8.4 GHz.	3.5	12,18,25	8.0 w/BW1
AS-384	Strom, R. van Paradijs, J. van der Klis, M.	NFRA Amsterdam Amsterdam	Double radio sources associated with x-ray binaries.	1.3,2	14	8.0
AS-392	Shaw, M. Wilkinson, A.	Manchester Manchester	Radio properties of box/peanut galactic bulges.	20	5,6	20.0
AU-38	Ulmer, M. Grabelsky, D.	Northwestern Northwestern	Pusing X-ray source Her X-1.	20	30	9.0 w/AQ4
AV-171	van Gorkom, J. Casertano, S.	Columbia/NRAO-VLA Pittsburgh	NGC1683, a galaxy with a declining rotation curve.	20 cm line	10,17	16.0
AW-243	Warner, P. Rees, N. Baldwin, J.	MRAO MRAO MRAO	An object with a spectrum of 2.	3.8,20,90	25	2.0
AY-33	Yin, Q. Heeschen, D. Saslaw, W.	Peking Univ NRAO-CV Virginia	Study of nine likely starburst galaxies.	2,6,20	8,11	4.5
AY-34	Yun, M. Ho, P. Lo, K.	Harvard Harvard Illinois	HI synthesis mapping of M82.	20 cm line	23,24	16.0
AY-38	Yin, Q. Heeschen, D. Saslaw, W.	NRAO-CV NRAO-CV NRAO-CV	Study of position shift of the centers of 2259+157.	6	18	2.0
BV-01	van Langevelde, H. Diamond, P. Habing, H. Winnberg, A. Goss, W.	Sterrewacht Leiden NRAO-CV Sterrewacht Leiden Onsala NRAO-VLA	Distance to the galactic center using OH/IR stars.	18 cm phased array MK II VLB	11	5.0
BW-01	Wrobel, J.	NRAO-VLA	PC-scale twist in the radio galaxy	6 cm single dish	12 w/AF179,AO88, AB456,AS378, AG296	14.6
		NRAO Staff	Electronics, etc.			58.4
			Baseline/Startup/Pointing			52.7
			Move/Operations			5.5
			Software			48.1
			General Test			16.7
			Holiday/Shutdown			15.0

The average downtime for the month of January 1990 was approximately 10.3 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 98.0 percent (731.0 hours) of the time: 73.7 percent (549.7 hours) to astronomical programs, 10.0 percent (74.8 hours) to scheduled test/calibration, and the remaining 14.3 percent (106.6 hours) went to scheduled maintenance.

The array was in the D configuration from January 1 through January 29.
AD configuration from January 29 through January 31.

The total number of programs run for the month of January, 1989 was 57.

The following independent proposals shared simultaneous observing time (53.2 hours total simultaneous observing):

AB456/BW1	2.0
AF179/BW1	0.8
AG296/BW1	6.8
AO88/BW1	3.0
AQ4/AH394	10.2
AQ4/AM282	4.0
AQ4/AM300	2.5
AQ4/AR216	3.5
AQ4/AU38	9.0
AQ4/MOVE/OP	5.5
AS378/BW1	2.0
MOVE/OP/ADHOC	4.0

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