

VIA UTILIZATION REPORT DECEMBER 1979

| Program Code | Program Title   | S | Observer            | Institution              | Bands         | Scheduled Time |
|--------------|---|---|---------------------|--------------------------|---------------|----------------|
|              | Baseline pointing calibration test.   |   |                     |                          | All           | 80.25          |
| AB-59        | 4C sources in poor Zwicky clusters.   | R | J. O. Burns         | NRAO (VLA)               | 20            | 33.5           |
|              |   | V | S. A. Gregory       | Bowling Green SU, OH     |               |                |
| AG-28        | Very compact HII regions towards OH/H <sub>2</sub> O maser sources.                                 | V | R. Genzel           | SAO                      | 6, 2          | 23.5           |
|              |   | V | J. M. Moran         | SAO                      |               |                |
|              |   | V | D. Downes           | MPI, West Germany        |               |                |
|              |   | V | M. J. Reid          | SAO                      |               |                |
| AG-39        | Antares.  | V | D. M. Gibson        | NMINT                    | 6, 20         | 12             |
| AH-25        | Neutral hydrogen absorption in NGC 1275.  | V | A. D. Haschick      | SAO                      | 21            | 12             |
|              |   | P | P. C. Crane         | NRAO (GB)                |               |                |
|              |   | V | J. M. van der Hulst | U of MN                  |               |                |
| AH-21        | Moving jets in SS433.   | P | R. M. Hjellming     | NRAO (VLA)               | 1.3, 2, 6, 20 | 2              |
|              |   | V | G. K. Miley         | NRA, Leiden, Netherlands |               |                |
| AJ-35        | Bright spiral galaxies in nearby rich clusters.   | P | W. Jaffe            | NRAO (CV)                | 21            | 24             |
|              |   | V | G. C. Perola        | U of Milano, Italy       |               |                |
|              |   | V | G. Gavazzi          | U of Milano, Italy       |               |                |
| AJ-34        | Dwarf X-ray stars.  | V | H. M. Johnson       | Lockheed                 | 6             | 13.25          |
|              |   | V | W. C. Cash          | U of CA, Berkeley        |               |                |
| AJ-29        | Radio star astrometry.  | V | K. J. Johnston      | NRL                      | 6             | 12             |
|              |   | P | C. M. Wade          | NRAO (VLA)               |               |                |
|              |   | V | D. M. Gibson        | NMINT                    |               |                |
| AJ-36        | Comparison of optical and radio structure of 3 low-redshift QSO's - 0837-12, 0812+020 and 0736+014. | V | K. J. Johnston      | NRL                      | 2, 6, 20      | 12             |
|              |   | V | S. Wyckoff          | Arizona SU               |               |                |
|              |   | V | I. Rudnick          | U of MN                  |               |                |
|              |   | V | F. D. Ghigo         | U of MN                  |               |                |
| AM-15        | NGC 6334S.  | V | J. M. Moran         | SAO                      | 6, 20         | 7              |
|              |   | V | I. F. Rodriguez     | U of Mexico, Mexico      |               |                |
| AN-2         | Mapping of thermal star shells.   | S | R. T. Newell        | NMINT                    | 2, 6          | 21.5           |
|              |   | P | R. M. Hjellming     | NRAO (VLA)               |               |                |
| AS-33        | Optically discovered quasars.   | V | D. S. Shaffer       | GSFC                     | 6             | 55.5           |
|              |   | V | R. F. Green         | Caltech                  |               |                |
|              |   | V | M. Schmidt          | Caltech                  |               |                |
| AV-26        | X-ray galaxy NGC 3862 = 3C264.  | V | J. P. Vallée        | Queen's U, Canada        | 20            | 12             |
|              |   | V | A. H. Bridle        | Queen's U, Canada        |               |                |

The average downtime for the month of December 1979 was approximately 25.2 percent.

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

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

Array was scheduled for 43 percent of the time: 32 percent to astronomical programs and the remaining 11 percent went to tests.

| Progr<br>Code | Program Title   | S | Observer          | Institution                  | Bands      | Scheduled<br>Time |
|---------------|---|---|-------------------|------------------------------|------------|-------------------|
|               | Baseline pointing<br>calibration test.                                  |   |                   |                              | All        | 89.75             |
| AB-56         | Synthesis of Seyfert<br>galaxies.                                       | V | B. Balick         | U of WA                      | 6, 20      | 44                |
|               |   | P | P. C. Crane       | NRAO (GB)                    |            |                   |
|               |   | V | T. Heckman        | NFRA, Leiden, Netherlands    |            |                   |
| AB-71         | 3C315.  | V | A. H. Bridle      | Queen's U, Canada            | 2          | 12                |
|               |   | P | E. B. Fomalont    | NRAO (CV)                    |            |                   |
|               |   | V | J. A. Högbom      | Stockholm Obs, Sweden        |            |                   |
|               |   | V | A. G. Willis      | NFRA, Zwiggelte, Netherlands |            |                   |
| AG-34         | Central region of<br>Fornax A.  | V | B. J. Geldzahler  | MIT                          | 6, 20      | 10                |
|               |   | P | E. B. Fomalont    | NRAO (CV)                    |            |                   |
| AH-22         | Active E/SO galaxies.   | P | D. S. Heesch      | NRAO (CV)                    | 2, 6, 21   | 48                |
|               |   | V | J. M. Wrobel      | U of Toronto, Canada         |            |                   |
| AH-23         | Maps of fields around seven<br>interesting Galaxies.                    | P | D. S. Heesch      | NRAO (CV)                    | 6, 21      | 48.5              |
|               |   | P | D. E. Hogg        | NRAO (CV)                    |            |                   |
|               |   | V | H. C. Arp         | Hale Obs                     |            |                   |
| AK-28         | High-z QSO's 0225-014 and<br>0642+44.                                   | V | P. P. Kronberg    | U of Toronto, Canada         | 6, 20      | 14                |
|               |   | V | P. I. Biermann    | MPI, Germany                 |            |                   |
| AK-14         | Solar active regions -<br>simultaneous radio and<br>X-ray observations. | V | M. R. Kundu       | U of MD                      | 6, 21      | 9.5               |
|               |   | V | A. P. Rao         | U of MD                      |            |                   |
| AK-34         | Gradual and rapid evolution<br>of solar active regions.                 | V | M. R. Kundu       | U of MD                      | 6, 20      | 30                |
|               |   | V | E. J. Schmahl     | U of MD                      |            |                   |
|               |   | V | T. Velusamy       | U of MD                      |            |                   |
| AL-10         | Continuum study of barred<br>galaxy NGC 1365.                           | V | P. O. Lindblad    | ESO, Switzerland             | 6, 20      | 15.25             |
|               |   | V | Aa. Sandqvist     | Stockholm Obs, Sweden        |            |                   |
|               |   | V | S. Jörsäter       | Stockholm Obs, Sweden        |            |                   |
| AL-12         | Galactic center, the<br>compact object.                                 | V | K. Y. Lo          | Catech                       | 6, 20      | 20                |
|               |   | P | R. L. Brown       | NRAO (GB)                    |            |                   |
|               |   | V | K. J. Johnston    | NRL                          |            |                   |
| AP-17         | NGC 6251.   | R | R. A. Perley      | NRAO (VIA)                   | 20         | 12                |
|               |   | V | A. G. Willis      | NFRA, Zwiggelte, Netherlands |            |                   |
| AR-22         | 3C48, 3C138, 3C147, 3C245,<br>3C309.1, 3C380, and<br>3C454.3.           | V | A. C. S. Readhead | Catech                       | 1, 3, 2, 6 | 35.5              |
|               |   | V | P. N. Wilkinson   | Jodrell Bank, England        |            |                   |
|               |   | P | P. J. Napier      | NRAO (VIA)                   |            |                   |
|               |   | P | R. C. Bignell     | NRAO (VIA)                   |            |                   |
| AR-23         | Jovian Radiation Belts.   | V | J. A. Roberts     | U of CA, Berkeley and CSIRO  | 21         | 20                |
|               |   | P | R. C. Bignell     | NRAO (VIA)                   |            |                   |
|               |   | V | G. I. Berge       | Catech                       |            |                   |
| AS-33         | Optically discovered<br>quasars.  | V | D. B. Shaffer     | GSFC                         | 6          | 4.25              |
|               |   | V | R. F. Green       | Catech                       |            |                   |
|               |   | V | M. Schmidt        | Catech                       |            |                   |

VLA UTILIZATION RE NOVEMBER 1979 (cont.)

| Program Code | Program Title   | S | Observer            | Institution        | Bands | Scheduled Time |
|--------------|---|---|---------------------|--------------------|-------|----------------|
| AS-38        | NGC 6217, a barred spiral.  | P | R. P. Sinha         | NRAO (VLA)         | 20    | 12.75          |
|              |   | V | V. C. Rubin         | DTM, Carnegie Inst |       |                |
| AV-27        | Stephan's Quintet.  | V | J. M. van der Hulst | U of MN            | 21    | 12.5           |
|              |   | P | A. H. Rots          | NRAO (VLA)         |       |                |
| AV-24        | z-distribution of nonthermal continuum radiation of edge-on galaxies. | V | J. M. van der Hulst | U of MN            | 20    | 10             |
|              |   | V | J. S. Young         | U of MA            |       |                |
|              |   | V | P. S. Freier        | U of MN            |       |                |

The average downtime for the month of November 1979 was approximately 19.5 percent.

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

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

Array was scheduled for 62 percent of the time: 50 percent to astronomical programs and the remaining 12 percent went to tests.

/drg 12-6-79

VIA UTILIZATION REPORT OCTOBER 1979

| Program Code | Program Title | S | Observer | Institution | Bands | Scheduled Time |
|--------------|---------------|---|----------|-------------|-------|----------------|
|--------------|---------------|---|----------|-------------|-------|----------------|

|       |  |   |                 |  |               |       |
|-------|--|---|-----------------|--|---------------|-------|
|       | Baseline pointing calibration test.                      |   |                 |  | All           | 144.5 |
| AB-64 | SNR G21.5-09.  | V | R. H. Becker    | NASA/GSFC                                | 6, 21         | 12    |
| AB-60 | SNR in NGC 4449.   | P | R. C. Bignelli  | NRAO (VLA)                               | 2, 6, 21      | 24    |
|       |  | V | E. R. Seagquist | U of Toronto, Canada                     |               |       |
| AB-65 | Double quasar 0957+561.                                  | V | B. F. Burke     | MIT                                      | 2, 6, 20      | 24    |
|       |  | V | D. H. Roberts   | MIT                                      |               |       |
| AC-17 | Optically selected QSO's; optical variables.             | V | J. J. Condon    | VPI and NRAO (CV)                        | 6             | 25.5  |
|       |  | S | K. J. Mitchell  | Penn State U                             |               |       |
|       |  | V | P. D. Usher     | Penn State U                             |               |       |
| AF-13 | Massive stars undergoing mass loss.                      | R | M. Felli        | NRAO (VLA) and Arcetri                   | 6             | 21    |
|       |  | V | N. Panagia      | Laboratorio di Radio Astronomia, Bologna |               |       |
| AF-12 | X-ray cluster Abell 2256.                                | P | E. B. Fomalont  | NRAO (CV)                                | 6, 20         | 24    |
|       |  | V | A. H. Bridle    | Queen's U, Canada                        |               |       |
| AH-20 | Low mass star formation near HII Regions.                | V | P. T. P. Ho     | U of CA, Berkeley                        | 6, 20         | 25    |
|       |  | V | A. D. Haschick  | SAO                                      |               |       |
| AI-11 | Solar active regions.                                    | V | K. R. Lang      | Tufts U                                  | 2, 6, 21      | 22    |
|       |  | S | R. F. Willson   | Tufts U                                  |               |       |
| AM-13 | Clusters of galaxies with complicated 151 MHz structure. | V | C. R. Masson    | Caltech                                  | 6, 21         | 25    |
| AN-5  | Optical spectra vs radio structure of QSO's.             | R | S. G. Neff      | NRAO (CV)                                | 6, 18         | 47.5  |
|       |  | P | R. L. Brown     | NRAO (GB)                                |               |       |
| AP-24 | Halo of Perseus A.                                       | R | R. A. Perley    | NRAO (VLA)                               | 20            | 11.5  |
|       |  | V | K. J. Johnston  | NRL                                      |               |       |
|       |  | P | P. C. Crane     | NRAO (GB)                                |               |       |
| AP-23 | 4C32.69 - a quasar with a beam.                          | V | R. I. Potash    | Brandeis                                 | 2             | 12    |
|       |  | V | J. F. C. Wardle | Brandeis                                 |               |       |
| AR-23 | Jovian Radiation Belts.                                  | V | J. A. Roberts   | U of CA, Berkeley and CSIRO              | 21            | 3     |
|       |  | P | R. C. Bignelli  | NRAO (VLA)                               |               |       |
|       |  | V | G. I. Berge     | Caltech                                  |               |       |
| AS-17 | SS433.   | V | E. R. Seagquist | U of Toronto, Canada                     | 1.3, 2, 6, 20 | 18.5  |
|       |  | V | W. S. Gilmore   | U of Toronto, Canada                     |               |       |

The average downtime for the month of October 1979 was approximately 12.1 percent.

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

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

Array was scheduled for 59 percent of the time: 40 percent to astronomical programs and the remaining 19 percent went to tests. /drg 11-5-79

VIA UTILIZATIO ORT SEPTEMBER 1979

| Program Code | Program Title                           | S | Observer             | Institution                   | Bands         | Scheduled Time |
|--------------|---|---|----------------------|-------------------------------|---------------|----------------|
|              | Baseline pointing calibration test.     |   |                      |                               | A11           | 75             |
| AB-58        | 3C433 complex.                          | V | B. Balick            | U of WA                       | 6, 20         | 28             |
|              |   | V | T. Heckman           | NFR A, Leiden, Netherlands    |               |                |
|              |   | V | G. K. Miley          | NFR A, Leiden, Netherlands    |               |                |
| AE-5         | Scintars.                               | V | W. C. Erickson       | U of MD                       | 6, 20         | 12             |
|              |   | V | J. J. Rickard        | U of IA                       |               |                |
|              |   | V | W. M. Cronyn         | U of IA                       |               |                |
|              |   | R | R. A. Perley         | NRAO (VLA)                    |               |                |
| AF-11        | Jet radio galaxies.                     | P | E. B. Fomalont       | NRAO (CV)                     | 6, 20         | 12             |
|              |   | R | R. A. Perley         | NRAO (VLA)                    |               |                |
|              |   | V | A. H. Bridle         | Queen's U, Canada             |               |                |
|              |   | V | A. G. Willis         | NFR A, Dwingeloo, Netherlands |               |                |
|              |   | V | G. K. Miley          | NFR A, Leiden, Netherlands    |               |                |
|              |   | V | W. J. M. van Breugel | NFR A, Leiden, Netherlands    |               |                |
|              |   | V | R. Fanti             | Laboratorio di Radio          |               |                |
|              |   | V | C. Iarì              | Astronomia, Bologna           |               |                |
|              |   | V | R. D. Ekers          | Groningen U, Netherlands      |               |                |
| AH-13        | Nova Vulpeculae 1976.                   | P | R. M. Hjellming      | NRAO (VLA)                    | 2, 6, 21      | 7              |
|              |   | V | N. R. Vandenbergh    | GSFC                          |               |                |
| AH-21        | SS 433.                                 | P | R. M. Hjellming      | NRAO (VLA)                    | 1.3, 2, 6, 20 | 2              |
|              |   | V | G. K. Miley          | NFR A, Leiden, Netherlands    |               |                |
| AI-1         | WR star in NGC 6888                     | V | R. Isaacman          | NFR A, Leiden, Netherlands    | 6             | 4              |
|              |   | V | H. B. Habing         | NFR A, Leiden, Netherlands    |               |                |
|              |   | V | H. R. Dickel         | U of IL                       |               |                |
| AI-2         | Planetary nebulae near galactic center. | V | R. Isaacman          | NFR A, Leiden, Netherlands    | 6             | 14             |
|              |   | V | H. B. Habing         | NFR A, Leiden, Netherlands    |               |                |
| AJ-29        | Radio star astrometry.                  | V | K. J. Johnston       | NRL                           | 6             | 12             |
|              |   | P | C. M. Wade           | NRAO (VLA)                    |               |                |
|              |   | V | D. M. Gibson         | NM117T                        |               |                |
| AR-21        | 3C129.                                  | V | L. Rudnick           | U of MN                       | 6, 20         | 26             |
|              |   | R | J. O. Burns          | NRAO (VLA)                    |               |                |
|              |   | P | F. N. Owen           | NRAO (CV)                     |               |                |
| AS-23        | Nuclei of southern radio galaxies.      | V | P. A. Shaver         | ESO, Geneva                   | 6             | 48             |
|              |   | V | R. D. Ekers          | Groningen U, Netherlands      |               |                |
|              |   | V | W. M. Goss           | Groningen U, Netherlands      |               |                |
|              |   | V | R. A. E. Fosbury     | ESO, Geneva                   |               |                |
|              |   | V | I. J. Danziger       | ESO, Geneva                   |               |                |

VIA UTILIZATION RE: SEPTEMBER 1979 (Cont.)

| Program Code | Program Title                     | S | Observer            | Institution | Bands  | Scheduled Time |
|--------------|-----------------------------------|---|---------------------|-------------|--------|----------------|
| AT-8         | SA 57, a deep survey.             | V | T. X. Thuan         | U of VA     | 21     | 12             |
|              |                                   | P | F. N. Owen          | NRAO (CV)   |        |                |
| AV-23        | 58 galaxies with nuclear sources. | V | J. M. van der Hulst | U of MN     | 20     | 24             |
| AW-16        | Nuclei of Seyfert galaxies.       | V | A. S. Wilson        | U of MD     | 6      | 48.5           |
|              |                                   | S | J. S. Ulvestad      | U of MD     |        |                |
|              |                                   | S | S. Ghosh            | U of MD     |        |                |
| AZ-6         | Solar flares.                     | V | H. Zirin            | Caltech     | 1.3, 2 | 35.5           |
|              |                                   | V | K. A. Marsh         | Caltech     |        |                |
|              |                                   | V | G. J. Hurford       | Caltech     |        |                |

The average downtime for the month of September 1979 was approximately 3.2 percent.

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

operational antennas = Total number of antenna-hours of operational antennas scheduled

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

Array was scheduled for 50 percent of the time: 39 percent to astronomical programs and the remaining 11 percent went to tests.

/drg 10-4-79

VIA UTILIZATION REPORT AUGUST 1979

| Program Code | Program Title  | S | Observer        | Institution                   | Bands | Scheduled Time |
|--------------|--|---|-----------------|-------------------------------|-------|----------------|
|              | Combined Monitor Day.  | P | A. H. Rots      | NRAO (VIA)                    | ALL   | 24             |
|              | Baseline pointing calibration tests.                                       | T |                 |                               | ALL   | 124            |
| AB-59        | 1919+479, a source in a poor Zwicky cluster.                               | R | J. O. Burns     | NRAO (VIA)                    | 20    | 13.5           |
| AD-10        | Possible precessing beam sources.  | R | J. W. Dreher    | NRAO (VIA)                    | 20    | 24             |
| AD-12        | Sources with bridges.  | R | J. W. Dreher    | NRAO (VIA)                    | 6, 20 | 37             |
| AD-14        |  |   |                 |                               |       |                |
| AF-11        | Jet radio galaxies.  | P | E. B. Fomalont  | NRAO (CV)                     | 6, 20 | 25.5           |
|              |  | R | R. A. Perley    | NRAO (VIA)                    |       |                |
|              |  | V | A. H. Bridle    | Queens U, Canada              |       |                |
|              |  | V | A. G. Willis    | NFRA, Dwingeloo, Netherlands  |       |                |
|              |  | V | G. K. Miley     | NFRA, Leiden, Netherlands     |       |                |
|              |  | V | W. van Breugel  | NFRA, Leiden, Netherlands     |       |                |
|              |  | V | R. Fanti        | Laboratorio di Radio          |       |                |
|              |  | V | C. Iari         | Astronomia, Bologna           |       |                |
|              |  | V | R. D. Ekers     | Groningen U, Netherlands      |       |                |
| AG-28        | Compact HII regions in NGC 7538.   | V | J. M. Moran     | SAO                           | 6, 2  | 12             |
|              |  | V | R. Genzel       | SAO                           |       |                |
|              |  | V | D. Downes       | MPI, West Germany             |       |                |
|              |  | R | M. J. Reid      | NRAO (CV)                     |       |                |
| AG-30        | Variable radio sources in the galactic plane, identifications and spectra. | V | P. C. Gregory   | U of British Columbia, Canada | ALL   | 25             |
|              |  | V | A. R. Taylor    | U of British Columbia, Canada |       |                |
| AH-20        | Compact HII regions.   | V | P. T. P. Ho     | U of MA                       | 6, 20 | 14             |
|              |  | V | A. D. Haschick  | SAO                           |       |                |
| AJ-21        | Zw 1141.2+2015, a spiral head-tail radio galaxy.                           | P | W. Jaffe        | NRAO (CV)                     | 21    | 12             |
| AM-10        | Close pairs of radio sources.  | V | C. R. Masson    | OVRO and Caltech              | 20    | 24             |
| AN-3         | O and B supergiants with mass outflow.                                     | S | R. T. Newell    | NMIMT                         | 6     | 25             |
|              |  | P | R. M. Hjellming | NRAO (VIA)                    |       |                |
|              |  | V | A. B. Underhill | NASA, GSFC                    |       |                |
| AR-19        | Some quasars with z>3.   | R | M. J. Reid      | NRAO (CV)                     | 6     | 24             |
|              |  | P | M. S. Roberts   | NRAO (CV)                     |       |                |

The average downtime for the month of August 1979 was approximately 15 percent.

Total number of antenna-hours of operational antennas lost due

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

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

Array was scheduled for 52 percent of the time: 35 percent to astronomical programs and the remaining 17 percent went to tests

VLA UTILIZATION REPORT JULY 1979

| Program Code  | Program Title  | S | Observer           | Institution                  | Bands         | Scheduled Time |
|---------------|--|---|--------------------|------------------------------|---------------|----------------|
| AB-52         | Baseline pointing calibration tests.                 | T |                    |                              | All           | 89             |
|               | Early-type stars undergoing mass loss.               | V | J. H. Bieging      | U of CA - Berkeley           | 6             | 36             |
|               |  | V | D. C. Abbott       | Washburn Obs                 |               |                |
|               |  | V | J. F. Cassinelli   | Washburn Obs                 |               |                |
|               |  | V | E. B. Churchwell   | Washburn Obs                 |               |                |
| AB-45         | Jet radio galaxies B2 0326+396, 3C277.3 and 3C341.   | V | A. H. Bridle       | Queens U, Canada             | 6, 20         | 56             |
|               |  | P | E. B. Fomalont     | NRAO (VLA-GB)                |               |                |
|               |  | R | R. A. Perley       | NRAO (VLA)                   |               |                |
|               |  | V | A. G. Willis       | NFRA, Dwingeloo, Netherlands |               |                |
| AB-51         | Classical doubles 0816+526 and 3C388.                | R | J. O. Burns        | NRAO (VLA)                   | 6             | 24             |
|               |  | V | W. A. Christiansen | U of NC                      |               |                |
| AG-29         | Simultaneous radio and X-ray observations of RT Lac. | V | D. M. Gibson       | NMIMT                        | 6, 20         | .5             |
| AG-31         | SS 433.  | V | W. S. Gilmore      | U of Toronto, Canada         | 6, 20         | 12             |
|               |  | V | E. R. Seagquist    | U of Toronto, Canada         |               |                |
| AH-19         | Polarization measurements in North Polar Spur.       | V | C. Heiles          | U of CA - Berkeley           | 21, 18, 6     | 47.5           |
|               |  | S | Y. H. Chu          | U of CA - Berkeley           |               |                |
| AJ-23         | Deep clusters of galaxies.                           | P | W. Jaffe           | NRAO (CV)                    | 20            | 24             |
| AJ-32         | 3C446.   | V | K. J. Johnston     | NRL                          | 6, 20         | 12             |
|               |  | P | R. L. Brown        | NRAO (GB)                    |               |                |
| AS-16         | Compact sources in SNR.                              | V | E. R. Seagquist    | U of Toronto, Canada         | 1.3, 2, 6, 20 | 32             |
|               |  | V | W. S. Gilmore      | U of Toronto, Canada         |               |                |
| AS-36         | Steep spectrum variables.                            | P | S. R. Spangler     | NRAO (VLA)                   | 6, 20         | 24             |
|               |  | S | D. B. Cook         | Iowa State U                 |               |                |
| AV-18 / AV-22 | IC 708; polarization mapping of 3C76.1 and 3C274.1.  | V | J. P. Vallée       | Queens U, Canada             | 6, 20         | 35.5           |
|               |  | V | A. H. Bridle       | Queens U, Canada             |               |                |
|               |  | V | A. S. Wilson       | U of MD                      |               |                |

The average downtime for the month of July 1979 was approximately 14 percent.

Total number of antenna-hours of operational antennas lost due to hardware and software failures during scheduled observing = Total number of antenna-hours of operational antennas scheduled x 100

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

Array was scheduled for 53 percent of the time: 44 percent to astronomical programs and the remaining 9 percent went to tests.



| Program Code    | Program Title  | S | Observer            | Institution                  | Bands         | Scheduled Time |
|-----------------|--|---|---------------------|------------------------------|---------------|----------------|
|                 | Combined Monitor Day.                                | R | R. A. Perley        | NRAO (VLA)                   | All           | 24             |
|                 | Baseline pointing calibration tests.                 | T |                     |                              | All           | 105.75         |
| AB-44           | OH masers in OH/IR stars.                            | R | J. M. Benson        | NRAO (CV)                    | 18            | 14             |
|                 |  | V | R. L. Mutel         | U of IA                      |               |                |
| AB-50           | Quasar 1229-021.                                     | P | R. L. Brown         | NRAO (GB)                    | 20            | 14.5           |
|                 |  | V | R. E. Spencer       | Jodrell Bank, England        |               |                |
|                 |  | S | S. G. Neff          | NRAO (CV)                    |               |                |
| AB-41           | Observations of 3C465.                               | R | J. O. Burns         | NRAO (VLA)                   | 6, 20         | 24             |
|                 |  | P | F. N. Owen          | NRAO (CV)                    |               |                |
|                 |  | R | J. A. Eilek         | NRAO (CV)                    |               |                |
| AC-15/<br>AP-10 | Halo of NGC 1275 = 3C84.                             | P | P. C. Crane         | NRAO (GB)                    | 20            | 14             |
|                 |  | R | R. A. Perley        | NRAO (VLA)                   |               |                |
|                 |  | V | K. J. Johnston      | NRL                          |               |                |
| AF-7            | Mass loss from HD193793 and other stars.             | S | D. R. Florkowski    | U of FL                      | 2, 6, 20      | 8.5            |
|                 |  | V | S. T. Gottesman     | U of FL                      |               |                |
| AG-29           | Simultaneous radio and X-ray observations of RT Lac. | V | D. M. Gibson        | NMIMT                        | 6, 20         | 1.5            |
| AG-23           | Positions of pulsars.                                | V | W. M. Goss          | Kapteyn Labs, Netherlands    | 6, 20         | 48.25          |
|                 |  | V | A. G. Lyne          | Jodrell Bank, England        |               |                |
|                 |  | P | E. B. Fomalont      | NRAO (VLA-GB)                |               |                |
|                 |  | V | R. N. Manchester    | CSIRO, Australia             |               |                |
| AO-12           | Observations of NGC 1265 and 3C129.                  | P | F. N. Owen          | NRAO (CV)                    | 6, 20         | 23             |
|                 |  | R | J. O. Burns         | NRAO (VLA)                   |               |                |
|                 |  | V | L. Rudnick          | U of MN                      |               |                |
| AP-16           | Jets in 4C32.69 and other quasars.                   | V | R. I. Potash        | Brandeis U                   | 6, 20         | 37             |
|                 |  | V | J. F. C. Wardle     | Brandeis U                   |               |                |
|                 |  | V | F. D. Ghigo         | Brandeis U                   |               |                |
| AS-27           | High luminosity 3CR sources.                         | V | R. T. Schilizzi     | Leiden, Netherlands          | 1.3, 2, 6     | 23.5           |
|                 |  | V | V. K. Kapachi       | Leiden, Netherlands          |               |                |
| AS-25           | Radio spectra of X-ray sources in Seyfert galaxies.  | V | H. W. Schnopper     | SAO                          | 1.3, 2, 20    | 15             |
|                 |  | V | J. M. Moran         | SAO                          |               |                |
|                 |  | P | R. M. Hjellming     | NRAO (VLA)                   |               |                |
| AS-16           | Compact sources in SNR.                              | V | E. R. Seagrist      | U of Toronto                 | 1.3, 2, 6, 20 | 3.5            |
|                 |  | V | W. S. Gilmore       | U of Toronto                 |               |                |
| AV-16           | Peculiar spiral galaxy M106 = NGC 4258.              | V | G. D. van Albada    | U of VA                      | 20            | 12             |
|                 |  | V | J. M. van der Hulst | U of MN                      |               |                |
|                 |  | V | W. W. Roberts       | U of VA                      |               |                |
| AW-11           | Seyfert galaxy nuclei.                               | V | A. S. Wilson        | U of MD                      | 6             | 39.5           |
|                 |  | V | A. G. Willis        | NFRA, Dwingeloo, Netherlands |               |                |
|                 |  | P | R. A. Stramek       | NRAO (VLA)                   |               |                |

The average downtime for the month of June 1979 was approximately 9.5 percent.

Total number of antenna-hours of operational antennas lost due  
Average downtime of =  $\frac{\text{to hardware and software failures during scheduled observing}}{\text{Total number of antenna-hours of operational antennas scheduled}}$  x 100  
operational antennas  
where "antenna-hours" definition is: An array consisting of N antennas operating for Y hours  
is defined to have YN antenna-hours of operation.

Array was scheduled for 57 percent of the time: 42 percent to astronomical programs and the  
remaining 15 percent went to tests.

/drg 7-5-79

VLA UTILIZATION REPORT MAY 1979

| Program Code    | Program Title                                       | S | Observer         | Institution            | Bands         | Schedule Time |
|-----------------|---|---|------------------|------------------------|---------------|---------------|
|                 | Baseline pointing calibration tests.                | T |                  |                        | All           | 127           |
| AB-46           | X-ray cluster of galaxies.                          | R | J. O. Burns      | NRAO (VLA)             | 6             | 11            |
|                 |   | V | M. P. Ulmer      | Northwestern U         |               |               |
| AB-49           | Central region of 3C315.                            | V | A. H. Bridle     | Queens U, Canada       | 2, 6          | 25.5          |
|                 |   | P | E. B. Fomalont   | NRAO (VLA-GB)          |               |               |
|                 |   | V | J. A. Högbom     | Stockholm Obs, Sweden  |               |               |
|                 |   | V | A. G. Willis     | Brandeis U             |               |               |
| AB-53           | Simultaneous u, v and radio observations of stars.  | P | R. L. Brown      | NRAO (GB)              | 6             | 16            |
|                 |   | V | J. J. Broderick  | VPI                    |               |               |
|                 |   | S | S. G. Neff       | NRAO (CV)              |               |               |
| AF-10           | Astrometry.   | P | E. B. Fomalont   | NRAO (VLA-GB)          | 6             | 8.5           |
|                 |   | V | K. J. Johnston   | NRL                    |               |               |
| AK-26/<br>AS-24 | Solar observations.                                 | V | M. R. Kundu      | U of MD                | 2, 6, 20      | 36            |
|                 |   | V | E. J. Schmahl    | U of MD                |               |               |
|                 |   | V | T. Velusamy      | U of MD                |               |               |
| AL-8            | Sgr A.  | V | K. Y. Lo         | Owens Valley Radio Obs | 1.3, 2, 6, 20 | 17.5          |
|                 |   | P | R. L. Brown      | NRAO (GB)              |               |               |
|                 |   | V | K. J. Johnston   | NRL                    |               |               |
| AM-9            | X-ray sources in M31.                               | V | H. W. Schnopper  | SAO                    | 6, 20         | 15            |
|                 |   | V | J. M. Moran      | SAO                    |               |               |
|                 |   | P | M. S. Roberts    | NRAO (CV)              |               |               |
|                 |   | P | R. M. Hjellming  | NRAO (VLA)             |               |               |
| AR-16           | OH maser emission from IR stars.                    | P | M. J. Reid       | NRAO (CV)              | 20            | 24            |
|                 |   | V | K. J. Johnston   | NRL                    |               |               |
|                 |   | V | J. M. Moran      | SAO                    |               |               |
| AS-25           | Radio spectra of X-ray sources in Seyfert galaxies. | V | H. W. Schnopper  | SAO                    | 1.3, 2, 20    | 21            |
|                 |   | V | J. M. Moran      | SAO                    |               |               |
|                 |   | P | R. M. Hjellming  | NRAO (VLA)             |               |               |
| AT-6            | NH <sub>3</sub> and methanol.                       | V | C. H. Townes     | U of CA, Berkeley      | 1.3           | 36.5          |
|                 |   | V | A. C. Cheung     | U of CA, Davis         |               |               |
|                 |   | V | D. N. Matsakis   | NRL                    |               |               |
| AW-14           | Astrometry of minor planets.                        | P | C. M. Wade       | NRAO (VLA)             | 1.3, 2, 6     | 24            |
|                 |   | V | P. K. Seidelmann | US Naval Observatory   |               |               |
|                 |   | V | K. J. Johnston   | NRL                    |               |               |
| AW-15           | Attempt to detect black hole.                       | P | C. M. Wade       | NRAO (VLA)             | 1.3, 2, 6, 20 | 14            |

The average downtime for the month of May 1979 was approximately 14.8 percent.

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

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

Array was scheduled for 50 percent of the time: 33 percent to astronomical programs and the remaining 17 percent went to tests.

VLA UTILIZATION REPORT APRIL 1979

| Program Code | Program Title                             | S | Observer         | Institution                 | Bands    | Scheduled Time |
|--------------|---|---|------------------|-----------------------------|----------|----------------|
|              | Combined Monitor Day.                     | R | R. A. Perley     | NRAO (VLA)                  | All      | 24.5           |
|              | Baseline pointing calibration tests.      | T |                  |                             | All      | 71.5           |
| AF-10        | Astrometry.                               | P | E. B. Fomalont   | NRAO (VLA-GB)               | 6        | 91             |
|              |   | V | K. J. Johnston   | NRL                         |          |                |
| AH-13        | Nova Vulpecula 1976.                      | P | R. M. Hjellming  | NRAO (VLA)                  | 6, 2     | 8              |
|              |   | V | N. R. Vandenberg | Goddard Space Flight Center |          |                |
| AM-5         | Synthesis observations Cas A, 3C10, 3C58. | V | D. K. Milne      | CSIRO                       | 21, 6    | 43.5           |
|              |   | V | B. Balick        | U of WA                     |          |                |
|              |   | R | R. A. Perley     | NRAO (VLA)                  |          |                |
|              |   | S | P. E. Angerhofer | U of MD                     |          |                |
| AM-7         | Cores of extended quasars.                | V | G. K. Milley     | Leiden                      | 21, 6, 2 | 48             |
|              |   | P | R. A. Sramek     | NRAO (VLA)                  |          |                |
| AS-34        | Supernova in M100.                        | P | R. A. Sramek     | NRAO (VLA)                  | 6        | 9.5            |
|              |   | V | K. W. Weiler     | MPI (West Germany)          |          |                |
| AT-7         | Central stars of planetary nebulae.       | P | A. R. Thompson   | NRAO (VLA)                  | 6        | 24             |
|              |   | P | R. P. Sinha      | NRAO (VLA)                  |          |                |

The average downtime for the month of April 1979 was approximately 15 percent.

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

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

Array was scheduled for 44 percent of the time: 34 percent to astronomical programs and the remaining 10 percent went to tests.

VLA UTILIZATION REPORT MARCH 1979

| Program Code | Program Title   | S | Observer         | Institution                             | Bands    | Sc    | led  |
|--------------|---|---|------------------|---|----------|-------|------|
|              |   |   |                  |   |          | Time  | Time |
|              | Combined Monitor Day.   | P | B. G. Clark      | NRAO (VLA)                              | All      | 26    |      |
|              | Baseline pointing calibration tests.  | T |                  |   | All      | 92.5  |      |
| AB-40        | Radio galaxies in poor clusters.  | R | J. O. Burns      | NRAO (VLA)                              | 6        | 36    |      |
|              |   | P | R. A. White      | NRAO (CV)                               |          |       |      |
| AD-9         | Hot spots. 3C390.3, 3C335, 3C61.15, 3C234.  | R | J. W. Dreher     | NRAO (VLA)                              | 6, 2     | 24    |      |
| AE-4         | 0055+26=NGC 326.  | V | R. D. Ekers      | CSIRO                                   | 6, 21    | 24    |      |
|              |   | V | R. Fanti         | Laboratorio di Radio Astronomia-Bologna |          |       |      |
|              |   | V | C. Lari          | Laboratorio di Radio Astronomia-Bologna |          |       |      |
|              |   | V | P. Parma         | Laboratorio di Radio Astronomia-Bologna |          |       |      |
|              |   | P | E. B. Fomalont   | NRAO (VLA-GB)                           |          |       |      |
| AK-15        | Early type spirals in the Virgo cluster, detection and structure.                               | V | N. A. Krumm      | Lick Obs.                               | 6        | 24    |      |
|              |   | P | R. A. Sramek     | NRAO (VLA)                              |          |       |      |
| AM-5         | Synthesis observations of Cas A, 3C10, 3C58; first epoch observation for proper motion studies. | V | D. K. Milne      | CSIRO                                   | 21, 6    | 28.50 |      |
|              |   | V | B. Balick        | U of WA                                 |          |       |      |
|              |   | R | R. A. Perley     | NRAO (VLA)                              |          |       |      |
|              |   | S | P. E. Angerhofer | U of MD                                 |          |       |      |
| AO-9         | Virgo A.  | P | F. N. Owen       | NRAO (CV)                               | 6, 2     | 24    |      |
|              |   | V | P. E. Hardee     | U of VA                                 |          |       |      |
| AP-11        | 3C449 and 4CP74.17A.  | R | R. A. Perley     | NRAO (VLA)                              | 6, 20    | 25    |      |
|              |   | V | A. G. Willis     | Brandeis U                              |          |       |      |
|              |   | V | J. S. Scott      | U of MD                                 |          |       |      |
| AR-9         | Extended lobes with optical counterparts.   | V | L. Rudnick       | U of MN                                 | 21, 6, 2 | 48.25 |      |
|              |   | V | W. C. Saslaw     | U of VA                                 |          |       |      |
|              |   | V | J. A. Tyson      | Bell Labs.                              |          |       |      |
|              |   | V | P. Crane         | ESO                                     |          |       |      |
| AV-14        | Eight high declination spirals and irregular galaxies; nuclear regions.                         | V | T. van der Hulst | U of MN                                 | 6        | 48    |      |
|              |   | P | P. C. Crane      | NRAO (GB)                               |          |       |      |

The average downtime for the month of March 1979 was approximately 9 percent.

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

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

Array was scheduled for 54 percent of the time: 42 percent to astronomical programs and the remaining 12 percent went to tests.

VIA UTILIZATION REPORT  
 FEB Y 1979

| Program Code | Program Title  | S | Observer  | Institution                                    | Bands     | Scheduled Time |
|--------------|--|---|---|--|-----------|----------------|
|              | Baseline pointing calibration tests.                       | T |   |  | ALL       | 89.75          |
| AB-42        | SgrA compact objects and nearby comparison objects.        | V | D. C. Backer<br>R. A. Sramek                                    | U of CA-Berkeley<br>NRAO (VLA)                 | 6, 21     | 16             |
| AD-2         | Observation of Saturn.                                     | V | J. R. Dickel<br>I. de Pater                                     | U of IL<br>Huygens Labs, Leiden                | 6, 2, 1.3 | 37.25          |
| AF-7         | Observation of HD193793 and Zeta Puppis.                   | S | D. R. Florkowski<br>S. T. Gottesman                             | U of FL<br>U of FL                             | 6, 2, 20  | 18             |
| AF-17        | Observations of Titan.                                     | P | W. Jaffe<br>J. J. Caldwell<br>T. C. Owen                        | NRAO (CV)<br>Earth & Sp Sci<br>Earth & Sp Sci  | 6, 2, 1.3 | 48             |
| AF-18        | Survey for compact sources.                                | V | K. J. Johnston<br>R. A. Perley<br>R. P. Sinha<br>J. S. Ulvestad | NRL<br>NRAO (VLA)<br>NRAO (VLA)<br>U of MD     | 6, 21, 2  | 75.25          |
| AK-17        | Fields of QSO's, 2126-158, PHL 5200 and PHL 938.           | V | Gopal-Krishna<br>R. A. Sramek                                   | Max-Planck<br>NRAO (VLA)                       | 21        | 24             |
| AN-1         | Radio observations of the RSGV <sub>1</sub> binary HR1099. | S | R. T. Newell<br>D. M. Gibson                                    | NMIMT<br>NMIMT                                 | 6, 21     | 20             |
| AO-11        | Observations of sources from 300' 21 cm cluster survey.    | P | F. N. Owen<br>R. A. White                                       | NRAO (CV)<br>NRAO (CV)                         | 21        | 34.75          |
| AV-11        | Mapping of IC708.  | V | J. P. Vallée<br>A. S. Wilson<br>A. H. Bridle                    | Queens U<br>U of MD<br>Queens U                | 20        | 17.50          |
| AW-12        | Small scale structure in W49A, W3(OH) and MWC349.          | V | W. J. Welch<br>J. W. Dreher                                     | U of CA-Berkeley<br>NRAO (VLA)                 | 2, 1.3    | 44             |
| AZ-5         | Observations of solar partial eclipse.                     | V | H. Zirin<br>K. A. Marsh<br>G. J. Hurford<br>R. M. Hjellming     | Cal Tech<br>Cal Tech<br>Cal Tech<br>NRAO (VLA) | 2, 6      | 24             |

The average downtime for the month of February 1979 was approximately 16 percent.

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

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

Array was scheduled for 67 percent of the time: 53 percent to astronomical programs and the remaining 14 percent went to tests.

| Program Code | Program Title  | S | Observer                       | Bands   | Scheduled Time |
|--------------|--|---|--------------------------------|---------|----------------|
|              | Combined Monitor Day.                                      | R | J. Dreher                      | All     | 24             |
|              | Baseline pointing calibration tests.                       | T |                                | All     | 139.0          |
| AB-36        | Radio jet galaxies B2 0844+319 and 3C310.                  | V | A. H. Bridle<br>E. B. Fomalont | 6, 2    | 37.5           |
|              |  | R | R. A. Perley                   |         |                |
|              |  | V | A. G. Willis                   |         |                |
|              |  | V | W.J.M. van Breugel             |         |                |
| AG-22        | Sources with aligned radio and optical structure.          | V | F. D. Ghigo<br>R. I. Potash    | 6       | 24             |
| AG-25        | Observations of Ganymede and Calisto.                      | V | S. Gorgolewski                 | 6,2,1-3 | 13             |
| AN-1         | Radio observations of the RSCV <sub>n</sub> binary HR1099. | S | R. T. Newell<br>D. M. Gibson   | 6,21,2  | 6              |
| AO-13        | Measurement of source positions from a 300' survey.        | P | F. N. Owen<br>J. J. Condon     | 6       | 15             |
|              |  | V | J. E. Ledden                   |         |                |
|              |  | V | J. N. Douglas                  |         |                |
| AP-15        | Compact objects with faint extensions.                     | R | R. A. Perley                   | 6, 20   | 48             |
|              |  | P | E. B. Fomalont                 |         |                |
|              |  | V | K. J. Johnston                 |         |                |
| AT-3         | Pulsar astrometry.   | V | J. H. Taylor                   | 6, 21   | 48             |
|              |  | P | R. M. Hjellming                |         |                |
|              |  | V | N. R. Vandenberg               |         |                |
| AW-13        | Compact infrared objects that may be compact HII regions.  | V | C. G. Wynn-Williams            | 6       | 24             |
|              |  | S | C. A. Beichman                 |         |                |
|              |  | V | E. E. Becklin                  |         |                |

The average downtime for the month of January 1979 was approximately 28 percent.

Total number of antenna-hours of operational antennas lost due

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

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

Array was scheduled for 51 percent of the time: 32 percent to astronomical programs and the remaining 19 percent went to tests.