January 11, 1977

TO: VLB Users

FROM: K. I. Kellermann and D. B. Shaffer

Processor Operations

In an attempt to improve the performance of the Mk II Processor, we are adopting several new procedures. These are:

1) Three full-time operators will be available to operate the Processor 120 hours per week.

2) Joe Burch will act as chief operator. He will try to keep the tapes organized, do fringe searches, examine test tapes, etc.

3) Stan Hansen is "Friend-of-the-Processor". He will try to advise users in organizing their processing, preparing "RED PREPS", and in the "Post-Processing".

4) The use of the Processor will be scheduled following a philosophy similar to that used in scheduling the NRAO telescopes. In this way we not only hope to have a more equitable and efficient use of the Processor, but also provide a better means of keeping aware of the performance of the Processor.

We propose to keep the present "sign-up" schedule until March 20, 1977. After that, the existing schedule is declared void. Please submit requests for further time to KIK. Requests should include the following information:

a) a unique name identifying the experiment;

b) the dates of observations;

c) the telescopes involved;

d) the estimated number of processor days required, assuming the Processor is working well;

e) the desired Processor dates or any other restrictions or desires on the processing time.

Requests will be accepted for any outstanding data and for any experiment which has already been scheduled. Requests for time may be made orally to KIK or by completing a "Request Form." We propose to schedule in advance only about 75 percent of the time, in order to leave time for short runs, completing or repeating nearly-finished observations, or making up for Processor failures. We anticipate that except for one shift during the day on Mondays, and for some assigned time for software improvements, that the Processor will be available for use full time. As you are aware, there is a heavy demand on the Processor, and it is expected that aside from system failues, scheduled users will not leave the system idle.

We have been experiencing a number of difficulties with incoming tape shipments which are not identified. This is particularly true of foreign shipments. All shipments should be addressed as follows:

> Name of Experimenter
> c/o Mr. Joe Burch
> National Radio Astronomy Observatory
> Edgemont Road
> Charlottesville, Virginia 22901.

Please mark on each box: Carton n of m.

Place all labels on the side and not across the seal of the box, as this is destroyed when the box is opened at NRAO or by a customs agent. For foreign shipments we suggest that you use Air Freight, not Air Express. For domestic shipments, Air Freight or UPS has given good results. Motor freight is not recommended. Routing is circuitous, and involves several different (non-cooperative) companies, delivery time is long, it is not economical except for very large shipments, and recently a shipment was threatened with sale at auction because it was misrouted.

Please notify Joe at the time of shipment, either by TWX (510-587-5482) or by telephone (804-296-0351) to expect the tapes, and he will try to have them ready for you when you come to process. Be sure to tell him the airway bill number, the number of cartons shipped and, if known, the date and flight of departure and arrival in Charlottesville.

Each box of tapes and each tape should contain some identification showing the telescope and date at which it was recorded, and some unique experiment name (the same for each telescope).

Labels on the tape reel itself should not cover tape information such as brand, type, serial number, etc., and should cover the old experiment label.

At the end of a processing session, please advise Joe of the disposition of tapes. In general, NRAO tapes will be reconditioned and sent to Green Bank. Tapes belonging to the user or to other observatories will be first reconditioned (unless Joe is specifically instructed otherwise), then will be sent to wherever specified by the most economical means feasible.

NRAO maintains a limited number of 1-inch and 2-inch video tapes, which are intended primarily for use at the 140-foot telescope and at the Charlottesville Processor. The use of these tapes implies an obligation to release the tapes soon after processing. We shall try to supply as many observers as possible, but the supply is limited and there are not enough to satisfy everyone, particularly if they are not promptly released after processing.

It is expected that in the future only tapes designed for use on helical scan recorders will be brought to Charlottesville for processing. The operators and electronics staff will not be sympathetic to spending long hours trying to retrieve marginal data recorded on unsuitable tapes.

We have had good results from

> Ampex 143
> 3M 360
> 3M 361   (1 inch)

while Memorex 80C is somewhat less satisfactory due to stiction which causes erratic motion of the tape. Memorex 78W transverse scan tape can give good results, but there is little latitude for error in setting up either the record or playback system.

No other tapes are recommended for use with the Mk II VLB system.

NRAO has a new VLB engineer, Rich Lacasse, who will be responsible for the operation of the Green Bank record system and will be coordinating the electronics installation. You should contact him well in advance of your experiment to arrange the local oscillator configuration, polarization, etc. He would appreciate hearing from you, after the data has been processed, on the quality of the Green Bank recordings. George Grove can advise you of the availability of NRAO tapes. We have both 1-inch and 2-inch recorders available for use in Green Bank.

All of the 140-foot telescope operators are familiar with the operation of the Mk II terminal and the usual operational procedures, including routine tape changes. The telescope accepts prepunched cards to control the telescope pointing, so that it is entirely feasible for a single user to run a continuous observing program lasting several days. It is our hope to ultimately provide for unattended VLB observing, but for the present we feel that we must put our priorities in providing for the proper performance of the equipment, and we shall follow our usual policy of requiring that the observer be present in Green Bank for a substantial part of the time. NRAO will, of course, continue to help defray expenses for travel to observe or process tapes. Since the telescope operation is essentially automated, there are full time operators and sufficient personnel are available to install and maintain the receiver and VLB terminal, only general supervision of the observing program is necessary.

The pointing repeatability of the 140-foot has been recently improved, and should be more reliable than in the past. But it is still the observer's responsibility to determine any pointing offsets, prior to the observing run, and to check it at intervals during the observations. By mid-1977 we hope to have a new control system which will permit the pointing to be done automatically.

In the past, our technicians have spent considerable time and effort in maintaining equipment at other observatories, and this has resulted in decreased support and inevitably reduced efficiency at the Processor. While we shall try to continue to provide engineering assistance, pc boards, etc., we do not have the people to provide routine maintenance and repair at other sites.

Software Developments

David Shaffer has assumed over-all responsibility for on-line and off-line software development. All requests for modifications to programs and JCL should be directed to him. At this time, NRAO does not support spectral line post-processing, nor any pulsar processing.

We call your attention to some modifications to LBIPREP and VLBAMP, and a new program called DISPLAY.

LBIPREP has been modified to accept station information (position, time, and LO offset) as well as baseline information. This change eases processing of multi-station experiments, since it is possible to enter processing parameters by station, rather than having to calculate all the various permutations for each baseline. See Stan Hansen for a write-up.

VLBAMP has undergone a face-lift which prints a more compact summary of the PREP information, and does not bewail the lack of an FT08F00n card 10 times. The value of DELAY printed also reflects the true delay, rather than being offset by 4 microsec. Using DELAY as the value of CLOCK in LBIPREP will put the fringes in channel 16. The new version may be run as a catalogued procedure, similar to the current VLBAMP procedure. The only change is to use the name VLBAMPD on the EXEC card. This version does not do pulsars. See Dave Shaffer if you have any questions.

A new program called DISPLAY will give a brief summary of the PREP information and the actually-correlated data in each file of a multiple-file, continuum data archive tape written with VLBAVG (such tapes are the OUTTAPE's of such catalogued procedures as VLBAVG, VLBQUICK, LBIAVG, LBIQUICK, and LBIQUIK3). If all files on the archive tape have the same DSNAME, the following JCL will execute the program:

```
//DISPLAY   JOB   (###,P,5,9,4), MSGLEVEL=(2,0),CLASS=B
//JOBLIB  DD   DSN=SHAFFER.JOBLIB,DISP=SHR
//         EXEC   PGM=DISPLAY
//FT06F001 DD   SYSOUT=A
//FT08F001 DD   UNIT=TAPE,LABEL=1,
//    VOL=SER=####, DSN=name   (Only this card needs to be changed
                                 to run a different tape.)
//FT08F002 DD LABEL=2,DSN=*.FT08F001,VOL=REF=*.FT08F001



//FT08F0nn DD LABEL=nn,DSN=*.FT08F001,VOL=REF=*.FT08F001
```

If the DSN's are different, the name must be given for each DD card. If nn is greater than or equal to the number of files on the tape, all files will be shown. Output information gives scan number, source name, day number, expected start and stop times, the observing frequency, CLOCK, LO_OFFSET, and averaging interval, all as given in the header records; and the scan number, day number, and actual start and stop times for all data that was correlated. See Dave Shaffer for further details. (If you don't know the DSN's for your tape, ask the computer operator to run a program called TAPEINDX.)

We also have a crude power spectrum program that will perform coherent integrations for arbitrary lengths of time, even over gaps in the data, unlike VLBAMP. You must perform time delay and fringe rate peak finding by hand, however. See Dave Shaffer if you want to try out this program.

KIK,DBS/bbs

MK II VLB PROCESSOR REQUEST

USER _____ Telephone _____

EXPERIMENT NAME _____

DATE OF OBSERVATION _____

TELESCOPES _____

Line ☐   2 Station ☐

Continuum ☐   3 Station ☐

TYPES OF RECORDERS NEEDED   AMPEX   1   2   3
   (Circle number of each type)   IVC   1   2   3

NUMBER OF DAYS NEEDED _____

DESIRED DATES _____

COMMENTS OR RESTRICTIONS: