National Radio Astronomy Observatory
Tucson, Arizona

May 12, 1986

MEMORANDUM

To: D. E. Hogg

From: P. R. Jewell

Subject: 1986 Summer Shutdown Projects

Here is my list of projects to be considered for Summer
Shutdown. I've organized them by category and listed the people
who may be involved.

I. Telescope Mechanical

1. Optical Telescope

We plan to install an optical telescope on the 12 m,
either at the base of the south feedleg or at the apex.
Mechanical work to install the telescope and video camera will
be required. The project will also require electronics work
for the video acquisition system. I hope that we can get
advice and, if possible, complete plans for the video system
from KPNO or Steward. Computer work may be required if we
want to record pointing positions measured by the telescope.
(Jewell, Lichtenhan, Rhodes, Freund, Stobie ?)

2. Elevation Inductosyn Mounting

The old elevation Baldwin encoder is not fixed with
respect to the earth (see Engineering Memo #126 by B. L.
Ulich). Terms still exist in the telescope pointing equations
for this effect even though it may not exist with the
inductosyn, which is mounted differently. We need to
accurately measure this effect with a laser quadrant detector
and correct the pointing equations. We need to get the
quadrant detector back from Charlottesville. (Jewell, Rhodes)

3. Azimuth Cable Wrap

We currently have a bad situation with the azimuth cable
wrap. Sources with declinations between about 25 and 38

degrees cannot be tracked continuously from rising to setting. As these sources pass through 70.4 deg azimuth, the telescope must rotate through 360 deg to re-access the source. This is because the telescope can only rotate through about 370 deg because of cable wrap restrictions. If the telescope could rotate through about 390 deg, this tracking transition would not be necessary. This situation may not be fixable this summer shutdown, but we should assess what is required. (Rhodes, Payne ?)

II. Electronics

1. Automatic Sensing and Control of the Subreflector

We need to bring subreflector positioning and switching under computer control. The azimuth pointing is tied to the + beam position of the subreflector; if the throw is changed, the azimuth pointing is changed. To correct this situation in a way that won't lead to errors, the computer needs to know what the subreflector is set to. Even if we do not implement the software for control on the existing system, we should have it ready for the new system. I don't know what electronics might be required. (Payne, Freund, Hill ?)

III. Computer

A. Hardware

1. Terminals

We need 2 more VT100's on the mountain. As do others, I often do programming when on the mountain. The present terminal situation is frustrating -- the Modgraph is usually tied up with data reduction and the VT52 in the Lab is slow and awkward to use, especially when screen editing. We need VT100's in the Observer's Lounge and in the Lab. (Hill)

2. 1600 BPI Tape Drive

I think this is already planned, but I encourage that we get one of our TS-11 tape drives on the Mountain VAX this summer. (Hill)

B. Software

1. Pointing, Focus, and Tip Files

I need some modifications made to the pointing data file and would like to see analagous files created for Focalizes and Tips. (Stobie)

2. The VAX "Problem"

I think this is also already planned, but I would like to
emphasize that we need to do everything possible this summer
to stabilize the VAX so that it won't plague us next season
and jeopardize the new control system project. (Stobie,
Olsson)

3. Miscellaneous

1) Install error traps in bomb-prone POPS code; 2)
Check that we are recording the right antenna thermistors and
that the readings are displayed on Five Points, Focalizes,
etc. (Stobie)

IV. A Question

Are we doing enough this summer to get ready for the new
control system installation in 1987? We should make a list
of things that could be done this summer and try to do as many
as possible.

V. Test Session at the Beginning of Shutdown

Following the end of the observing season and before we
dismantle the telescope for Shutdown, there are several tests
we should make with the system.

1. Test computer control of the N-S Translation stage and
develop a N-S Focalize routine.

2. Test new spectral line calibration schemes that don't use
the GAINS array in hopes of improving baselines.

3. Test spectral line beam switching techniques. Will require
some programming.

4. Finish checking out the continuum digital backend.

5. Check out new frequency switching methods.

C: Freund
   Hill
   Olsson
   Payne
   Rhodes
   Stobie