

Mail for Alan Bridle**Mon, 11 Aug 1997 16:48:25 -0400 (EDT)**

From: Richard Simon <rsimon@NRAO.EDU>
To: brodrigu@vagabond.cv.nrao.edu
Subject: Y2K memo
Date: Mon, 11 Aug 1997 16:48:25 -0400 (EDT)

Billie -

Please forward the following to the AD's in advance of this week's meeting.
Thanks.

RSS

Year 2000 Compliance at NRAO

When clocks tick over from 1999 to 2000 in 2 years, 4 months, and change, many current computer systems and software, and other 'smart' hardware containing embedded microprocessors, may malfunction if not updated or replaced before that time. The simple convention of using 2 digits for the year instead of 4 has created a pervasive time bomb ticking away inside of much of the software and hardware we use. The effects of the so-called "Millennium Bug" may be widespread, and disastrous for organizations which are unprepared. It has become clear that substantial efforts are required to correct Year 2000 ("Y2K") problems. Widely quoted estimates place the worldwide costs to fix Y2K bugs at \$600 billion, excluding the likely litigation costs in the aftermath of up to a few trillion dollars.

For the past month or so I have been carrying on informal discussions to assess the potential problems we face here at NRAO related to the Year 2000. Alan Bridle has been particularly helpful in focusing concern on this problem. Attached below this memo is a note from Alan which outlines some of the potential areas of Y2K exposure at the NRAO. I suggest that Year 2000 (Y2K) be an agenda item at 14 August's AD meeting. I will ask Alan Bridle to outline some of the potential problems we face, as well as to respond to any questions which the other AD's might have.

We at NRAO need to move quickly to begin an assessment of where we face real problems, and start solving those problems. We should not minimize the problems we might face: if we do nothing we will face severe disruption of NRAO operations on 1 January 2000. We face some urgency in addressing Y2K problems this year and next. As the broader economy begins to panic in mid-1998 and beyond, some of the fixes we might need could become expensive due to shortages, and hiring programming staff could become prohibitively expensive.

The broad areas where we face risks are the following:

Fiscal, Payroll, and Personnel: Much of the critical work in these areas is contracted out, but significant amounts of data collection and transmission rely on NRAO facilities. We must verify that contractors we rely on are themselves Y2K compliant, and we should develop contingency plans if problems occur. Many banks and other financial institutions are extremely vulnerable; it has been speculated that the recent wave of small banks merging into larger banks has been partly fueled by the small banks' realization that they will not make it. There are also significant in-house programs which will need tested and checked; for example, the personnel office uses a locally developed

Y2K memo

data base.

Telescope Operations: Most of our online systems should be Y2K compliant, but only detailed testing can find the many likely small errors. A major national observatory recently conducted a test by setting their master clock ahead. Among other interesting effects, their calculated sidereal time was negative (and ran backwards!), and some devices thought the year was 2800, not 2000. Detailed tests at NRAO will require considerable planning to insure that we can back out of them and return to normal operations. Testing complex systems like our correlators for Y2K compliance and implementing needed fixes will be challenging.

Embedded PC's: Many of our most complex electronics systems use embedded PC's and chips which are probably not Y2K compliant. Detailed testing is required to see which systems are affected, and where updates or replacement might be needed. Here at NRAO there are numerous ATs, XTs, vanilla PCs, 8086s, 286s, 386s, etc. still in use. All of these are not Y2K compliant; the question is how important is the non-compliance.

Communications: Our phone systems and PBX's, the Intranet, the Internet, and long distance telephone services are all vulnerable. We need to review the weaknesses or potential problems in the hardware we own (for example, some of our PBX's may need updated, and many of our Cisco router boxes for networking have documented problems), and develop contingency plans if important communications services are unavailable or crippled in the first part of 2000.

Utilities and other key outside requirements: Our planning will need to include the possible (probable?) disruptions in power delivery to NRAO sites. Other services to be concerned about are listed in Alan's note below.

Computing facilities and Software: These vulnerabilities may be the most obvious and easy to deal with, but the volume of potential problems may make them challenging. The date change will affect both the operating systems and the software we run on all our machines, including UNIX workstations, PC's, and Fiscal systems. A small example of the kind of problem faced by off-line software is the FITS file format, which is not Y2K compliant. Every single FITS reader and writer routine used by our telescopes and data reduction programs will need re-written to incorporate the new FITS standard when it becomes available.

Miscellaneous systems: If you plug it in, turn it on, or boot it up, it might be vulnerable. Alan's initial list below is a useful starting point.

Specific Action Items for NRAO's AD's:

- We should form an Observatory-wide committee to deal with our Y2K problems. I propose that Simon, Bridle, Porter, Beverage, M. Glendenning, Hunt (ex-officio), an additional AOC member, and possibly a member from Tucson, and possibly a still-to-be-named Y2K czar be on this committee.
- Each site should name a Year 2000 Coordinator to interface with the committee and locals at each site. These Coordinators should be both technically competent and sufficiently abrasive that the Y2K efforts are pushed forward.
- The approximate outline of what NRAO must do is becoming clear:
 - (1) Each site, in cooperation with the Observatory-wide Y2K