From: Richard Simon <rsimon@NRAO.EDU>
To: lschwartz@aui.edu
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    rbrown@vagabond.cv.nrao.edu, jdesmond@vagabond.cv.nrao.edu
Subject: Draft response to NSF Request for Year 2000 plans
Date: Thu, 25 Sep 1997 15:34:46 −0400 (EDT)

Lyle,

        Attached below is a draft response to the 10 September 1997 NSF
request for an "Executive Summary" of AUI's plans for dealing with
problems associated with the Year 2000. Paul Vanden Bout has not yet
seen this draft because of his travel, and I am not sure that Paul and
I will overlap before the due date. Dave Hogg had no complaints about
the document. I would appreciate any general comments you might have
on this draft, or any specific areas of concern that you feel I have
not addressed. I have not addressed the effect of the century change
on activities at AUI corporate offices, but I believe we can help
support AUI's efforts at Y2K compliance without much trouble. For the
present time, I am "acting" as "Year 2000 Project Manager" (an honor
conferred upon me by Dave Hogg at my request) until Paul returns and we
can decide what changes might be desireable.

Regards,

Richard Simon

Year 2000 Plan for the National Radio Astronomy Observatory
(DRAFT: 25 September 1997)

Executive Summary

The National Radio Astronomy Observatory and Associated Universities, Inc.
regard the potential problems associated with the Year 2000 (Y2K) seriously
and have assigned high priority to efforts aimed at identification and
mitigation of such problems. A formal effort is well under way to prevent
serious operational and administrative disruptions when January 1, 2000
arrives.

1. Awareness Phase

This phase of NRAO's Y2K efforts began in June of 1997 and is largely
complete. The Director and Associate Directors of NRAO have demonstrated
strong support for the efforts by the Assistant Director for Computing to
organize Y2K efforts at the NRAO and marshal the necessary support and
resources. Dr. Richard Simon has been appointed acting Year 2000 Project
Manager, and is orchestrating efforts at the observatory to identify and
mitigate potential problems at NRAO. Management and key personnel
throughout the NRAO are aware of the potential impact of Y2K related
problems. The final remaining steps for the Awareness Phase of the
Observatory's Y2K plan will be staff briefings in October and November
1997.

The "Year 2000 Project Team" at NRAO includes representatives from each of
NRAO major sites, as well as representatives for the Administrative and
Personnel divisions. The Team is chaired by Dr. Richard Simon. As part of
our efforts to raise awareness and foster internal communications a Web

page has been created at http://www.cv.nrao.edu/y2k/.

2. Assessment Phase

A broad top level assessment has been completed to guide the detailed assessment and inventory currently underway. NRAO does not use massive amounts of customized date-aware computer software, so it does not face the severe problems which many large institutions face. The Observatory does face risks, however, which are being addressed in a concerted way by our Y2K program. The broad areas where NRAO faces potential 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. NRAO must verify that contractors we rely on are themselves Y2K compliant, and must develop contingency plans if problems occur. There are a few significant in-house programs which will need to be fully tested; for example, the personnel office uses a locally developed data base.

Telescope Operations: Most of NRAO's online systems should be Y2K compliant by design, but only detailed testing will find the small errors likely to occur. Because of the uniqueness and complexity of these systems we plan to evaluate their Y2K compliance by actual testing as soon as possible after an overall code review. Detailed tests at NRAO will require considerable planning to insure a straightforward 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. Detailed testing is required to see if any mission-critical systems are non-compliant, and where updates or replacement might therefore be needed. There are numerous old Intel-architecture based computers still in use. Many of these are not expected to be fully Y2K compliant; the essential question is how important is their non-compliance. We intend to focus our attention initially on mission-critical systems; others will be renovated or replaced as part of normal refurbishment.

Communications: We are aware that our phone systems and PBX's, the NRAO Intranet linking our sites, the Internet, and long distance telephone services are all potentially vulnerable. We will review the weaknesses or potential problems in the hardware we own (for example, some of the Observatory's PBX's may need updated, and many routers 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 Y2K contingency planning will include possible (probable?) disruptions in power delivery to NRAO sites. Other outside services and utilities essential for operations will also be reviewed.

Computing Facilities and Software: The century change problem can affect the operating systems, utility scripts, and application software run on Observatory computers, including UNIX workstations, PC's, and Fiscal systems. An initial review of NRAO's vulnerabilities in these areas is in progress.

The assessment phase formally began on 29 August with the first meeting of the Observatory's Year 2000 Project Team. Initial written assessments and inventories of vulnerable systems and critical functions and systems are

due 15 October 1997. From these assessments, detailed priorities and
testing plans will be developed. The full size of the Y2K problem at NRAO
can not be accurately estimated until inventory, assessment, and initial
testing of critical and high priority systems has been completed. While
there is reason to believe that Y2K problems at the NRAO will be
straightforward to address (most astronomical software and control systems
rely on Julian dates unaffected by the century change; critical
administrative software has been procured from vendors with active Y2K
compliance efforts), complacency at this early date would be dangerous.

3. Renovation Phase

This phase of NRAO's Year 2000 Project has already begun, with small
changes correcting Y2K bugs being made to software systems where obvious
vulnerabilities exist. Repair and renovation will be followed by further
testing, until all tests for critical systems have been successfully
passed. Major tests will be performed during late 1997 and early 1998
after first-pass renovations to correct obvious errors. Renovations,
Repairs, and/or Replacement of affected systems will take place during
1998.

4. Validation Phase

As renovations are completed and operational tests passed, systems at NRAO
will move into a validation phase during 1999. Because of the nature of
telescopes and astronomical calculations and operations, some small final
validation steps must continue during 2000, when the sky itself becomes Y2K
compliant! Validation steps will also be planned for key administrative
functions, particularly interfaces to outside vendors and computers.
Detailed planning for this phase depends on the size and scope of
vulnerabilities and problems identified during the earlier phases of NRAO's
Y2K Project.

A key step during NRAO's validation phase will be to review the Y2K
compliance of financial institutions and funding agencies with which the
Observatory must conduct business. The gloomy assessments of the general
preparedness of financial institutions and agencies within the Federal
government is a matter of serious concern for the Observatory.

5. Implementation Phase

Most critical systems at NRAO (such as telescope control systems) are
unique, and will not have a lengthy implementation phase. For some systems
there may be a deployment and implementation phase of Y2K compliant
software and hardware. The small numbers of computing systems involved in
administrative computing functions will make implementation of Y2K
solutions straightforward. Implementation of Y2K compliant solutions will
occur throughout 1998 and 1999; the goal is to complete as much of this
work as possible during 1998, in the anticipation that supplies of critical
components for Y2K repairs may become problematic during the latter part of
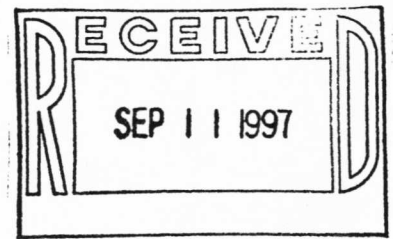1999.

Addendum: NRAO Year 2000 Project Team Members

Name	Site/Function Represented	email
Richard Simon	Project Manager (acting)	rsimon@nrao.edu
Gareth Hunt	Charlottesville	ghunt@nrao.edu
Robert Vance	Green Bank	bvance@nrao.edu
Anthony Beasley	Socorro	tbeasley@nrao.edu

Draft response to NSF Request for Year 2000 plans

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Jeffrey Hagen      Tucson           jhagen@nrao.edu
James Desmond      Administrative   jdesmond@nrao.edu
Carl Bignell       Personnel        cbignell@nrao.edu
Alan Bridle        Scientific       abridle@nrao.edu
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Dr. Lyle H. Schwartz, President   SEP 10 1997
Associated Universities, Inc. (AUI)
1400 16th Street, N.W.
Suite 730
Washington, D.C. 20036

Dear Dr. Schwartz:

Enclosed is the National Science Foundation's (NSF) Important Notice No. 120, dated June 27, 1997, (Subject: Year 2000 Computer Problem). The Notice reminds NSF awardees of their responsibilities under NSF awards and asks them to take appropriate actions to ensure that the NSF activities being supported are not adversely affected by the Year 2000 problem.

Because of the unique relationship between NSF and its Federally Funded Research and Development Centers, and the nature and significance of the activities being funded, we feel it is important for AUI to have in place a formal plan to mitigate the impact of potential problems related to the Year 2000. It is understood that AUI has such a plan in place. Please review that plan to make any necessary changes to make it comparable to the five-phased approach adopted by the Federal government which is summarized below.

It is requested that you prepare an "Executive Summary" of AUI's plan to prepare for the Year 2000 as it pertains to NSF funded activities. The plan should encompass information technology systems and equipment using embedded computer chips (e.g. laboratory equipment, fire control/life safety systems, HVAC systems, aircraft, elevators, etc.). The Executive Summary should be provided to NSF by October 10, 1997, and should include an anticipated completion date of each phase.

The phases are:

1. Awareness Phase--In this phase, the problem is defined and top management support and sponsorship are acquired; a Year 2000 Project Manager is appointed as well as a Year 2000 Project Team; an overall Year 2000 plan is developed and everyone is made aware of the plan. The plan needs to include the potential impact of the Year 2000 on hardware and embedded systems as well as software and databases.

2. Assessment Phase-- In this phase there will be an assessment of the impact of the problem; identification of mission-critical systems; creation of an inventory and analyses of the programs that support them; prioritizing conversion or replacement; development of contingency plans to handle data exchange issues, lack of data and false data; and identifying and securing necessary resources. For hardware and systems with embedded chips, testing of performance when moving from December 31, 1999, to January 1, 2000, and from February 28, 2000, to February 29, 2000, and identifying those systems that are adversely impacted.

3. Renovation Phase--In this phase there will be conversion, replacement or elimination of selected platforms, applications, databases and utilities as planned in the previous phase along with modification of interfaces, as necessary. For hardware and systems with embedded chips which failed the Year 2000 testing which will still be utilized in the Year 2000, the scheduling of Year 2000-compliant equipment.

4. Validation Phase--In this phase there will be testing, verification and validation of the converted or replaced platforms, applications, databases and utilities; testing of the performance functionality and integration of converted or replaced platforms applications, databases and utilities in an operational environment. When hardware and systems with embedded chips have been replaced, the testing of the replacement equipment to ensure their compliance.

5. Implementation Phase--In this phase there will be implementation of the converted or replaced platforms, applications, databases and utilities and the implementation of data exchange contingency plans, if required. All hardware and systems with embedded chips will be fully Year-2000 compliant.

Beginning January 1, 1998, please provide the NSF the status of your plan. This can be either reported in your Quarterly Management Report or a separate "Year 2000 Problem" report every 4 months. The report should include a narrative describing progress and any serious problems encountered. It should also include the number of mission-critical systems and the percentage that have completed each phase of the project. The status of hardware and systems with embedded chips that affect the health and safety of individuals and those that affect research results should be reported. Reports should be sent to the cognizant NSF Program Official.

It is also requested that you immediately implement a Year 2000 compliance program in all your current and future procurements. Recommended contractual provisions may be found on the General Services Administration's web site at *http://www.itpolicy.gsa.gov* under the Year 2000 Information Directory. This site also contains comprehensive information concerning Year 2000 activities, plans and issues, including greater detail of the five-phased approach discussed above.
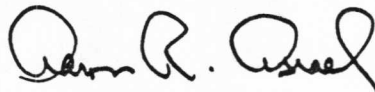
Also enclosed for your use is a copy of "Year 2000 Computing Crisis: An Assessment Guide", prepared by the United States General Accounting Office.

All Year 2000 efforts need to be conducted within existing resources. No additional funds are anticipated to be made available by NSF.

Administrative inquiries regarding the Year 2000 Problem may be directed to Stephen R. Williams, Director, Resources Management Staff, Division of Information Systems, telephone 703-306-1143, e-mail swilliams@nsf.gov. Questions of a programmatic nature should be directed to your cognizant Program Official.

Sincerely,

Aaron R. Asrael
Grants and Agreements Officer

Enclosure