

Subject: [Fwd: Important files missing from Tucson]
Date: Tue, 18 Dec 2001 09:30:02 -0500
From: Robert Brown <rbrown@NRAO.EDU>
To: Paul Vanden Bout <pvandenb@NRAO.EDU>

Paul,

Did you ever see this "bound collection", perhaps at the time we were decommissioning the 12m?

-Bob

Part 1.2 Type: message/rfc822
Encoding: 7bit

Subject: History of the 36-ft -- missing
Date: Mon, 17 Dec 2001 13:32:29 -0700
From: "Mark A. Gordon" <mgordon@NRAO.EDU>
To: "Desmond, Jim" <jdesmond@NRAO.EDU>
CC: <pvandenb@NRAO.EDU>

Hi Jim,

Dale just asked me about some of the early agreements between AUI, AURA, and the NSF regarding the establishment of the 36-ft telescope. I reminded him that in the late 1970s, I organized a bound folder containing every document that Ted Riffe, Phyllis Jackson, the NSF, and I could find regarding this phase of the NRAO. It was not complete because many of the transactions had been done by telephone. I assembled the document because, at the time, I was cutting deals with KPNO regarding our expanded operations and needed to know the background regarding our obligation to the Papago Tribe and KPNO, the dormitories that AUI bought into on the Kitt Peak summit, the space AUI purchased in the KPNO Cherry Avenue building, etc. This document also spelled out the terms of the original agreement with AURA regarding NRAO operations on Kitt Peak.

Unfortunately, this folder has disappeared from the Tucson central files. It was clearly marked as special and not to be destroyed. I feel sick about this. As far as I know, some of these documents did not have copies. Finding the originals was an enormous job even during the late 1970s.

So, we're left with recollections. Ted may remember some details; I, others. Dale was not involved with most of these negotiations, unfortunately, because I was a hands-on site manager. Nonetheless, he knows more than I do about agreements made after 1984.

I hope the document turns up. If it doesn't I'd be happy to chat with you regarding any of these early arrangements.

Good luck,

-- Mark

-- Mark

Mark A. Gordon
National Radio Astronomy Observatory
949 North Cherry Avenue
Tucson, Arizona 85721 USA
Tel: (520) 882-8250, x112
FAX: (520) 882-7955

Subject: 12 M Spares
Date: Sat, 08 Dec 2001 18:45:48 -0700
From: Peter Strittmatter <pstrittm@as.arizona.edu>
To: Richard Barvainis <rbarvai@nsf.gov>, Paul Vanden Bout <pvandenb@NRAO.EDU>
CC: twilson@as.arizona.edu, lziurys@as.arizona.edu, hfagg@as.arizona.edu,
Wayne Van Citters <gvancitt@nsf.gov>

Richard, Paul

Attached is an email I received from Harry Fagg our chief engineer for the 12m and HHT. It is self-explanatory. I would, however, like to thank both of you for your help in reaching this solution. Certainly we are now in a much better position to maintain the 12m.

Harry also raises the question of mm-wave VLBI. We are in contact with Joe Salah, Tony Zensus and others to see what makes sense. I will be away in Japan next week but we are hoping to set up a telcon of interested parties the following week. Clearly NRAO participation would also be necessary. I will let you know where we are after the telcon.

Once again many thanks for your help.

Best wishes,

Peter

Part 1.2 Type: message/rfc822
Encoding: 7bit

Subject: [Fwd: 12m Rcvr Parts]
Date: Fri, 07 Dec 2001 11:11:40 -0700
From: "Dale A. Webb" <dwebb@NRAO.EDU>
To: jdesmond@NRAO.EDU, pvandenbout@NRAO.EDU, dwebb@NRAO.EDU, jpayne@NRAO.EDU, aperfetto@NRAO.EDU, jkingsley@NRAO.EDU

Paul and Jim: We added about \$100,000. worth of stuff to the 12-meter loan agreement. As part of that addition we are giving them much of the now dismantled 8 beam receiver and the other spare parts, including one gunn oscillator which is listed in this memo from Antonio. To my knowledge there is nothing more to give to them that would be appropriate.....Dale

Part 1.2 Type: message/rfc822

Encoding: 7bit

Subject: Request for Help at 12 Meter
Date: Thu, 16 Aug 2001 08:32:11 -0400
From: Paul Vanden Bout <pvandenb@NRAO.EDU>
To: pstrittmatter@as.arizona.edu
CC: rbarvainis@nsf.gov, jbreckinridge@nsf.gov, rdickman@nsf.gov,
jkingsley@NRAO.EDU

Peter -

Jeff Kingsley sent me a message saying that you were wondering about the status of your request for help with the 12 Meter. After assessing the situation here is what we can do:

-- We would be happy to answer questions. I understood this to be your prime concern when we discussed this in Pasadena at the AAS meeting - access to unique institutional knowledge about the 12m.

-- We would not object to your hiring NRAO personnel as consultants, during evenings, weekend, vacation time, for actual work at the telescope. We do not feel we can take them away from ALMA tasks during working hours. I do not remember you asking for help at the telescope in Pasadena, and this point may well be irrelevant, but I thought you should know our position anyway. I understand this has been the practice in so far.

-- Finally, you should know that the people we had who understood the 12m software have left. Jeff might be able to direct you to them should any questions regarding software need answering.

Cheers,

Paul

Subject: Peter Strittmatter visit
Date: Wed, 15 Aug 2001 17:01:21 -0700
From: "Jeffrey S. Kingsley" <jkingsle@tuc.nrao.edu>
To: "Marc Rafal" <mrafal@NRAO.EDU>, <pvandenb@NRAO.EDU>

Part 1.1 Type: Plain Text (text/plain)
Encoding: 7bit

Subject: 12m
Date: Tue, 14 Aug 2001 16:40:07 -0400
From: "Marc D. Rafal" <mrafal@NRAO.EDU>
To: "Paul Vanden Bout" <pvandenb@NRAO.EDU>

Here is what the guys in Tucson have concluded based on a visit to the site.

What is not said in this memo is the following:

There is a significant amount of work needed to get the place operational. Several major pieces of hardware are not working and partially disassembled.

The work required far exceeds the level of effort they are requesting.

Kingsley suggests that we tell Steward that we would be willing to allow any of our staff to work privately for them outside of their normal work schedule (i.e. vacation days and weekends). They would have to negotiate that with the individuals involved.

There is a general concern that if we agree to provide any level of support, than when things do not work, they will blame us for not providing enough support regardless of the effort actually provided.

Marc

Name: ALMA12mResponceDraft1.pdf
ALMA12mResponceDraft1.pdf Type: Acrobat (application/pdf)
Encoding: base64

Subject: Re: 12-meter question
Date: Wed, 08 Aug 2001 09:48:36 -0400
From: Paul Vanden Bout <pvandenb@NRAO.EDU>
To: "Breckinridge, James B" <jbreckin@nsf.gov>
CC: rbarvainis@nsf.gov

Jim -- I have not forgotten this question; here is the status. To decide what we could help with and to what extent that help could be provided without impacting ALMA work, I asked Marc Rafal to talk to the NRAO-Tucson people. They believe that we could do this with two exceptions: it is impossible to provide software support as the people who know about the software are no longer working for us, and they do not believe support to bring the 8-beam receiver on-line is feasible as that effort would require far more of our time than we can manage. Other than these exceptions, we are willing to talk. To that end, John Payne talked to Peter Strittmatter to arrange a visit to the 12m and assess what might be needed and appropriate. Peter is going to get back to John with a date. Until I hear from Tucson on what seems appropriate and can be provided, we should hold off with an official reply. Paul

"Breckinridge, James B" wrote:

>
> Paul,
>
> Representatives of the consortium currently running the 12-meter in Tucson
> have asked me to see if there is some way for NRAO to provide 2 to 3 days
> per month of technical support to the telescope between now and December
> '02.
>
> This is during the privitization phase of the system.
>
> Is this possible? It would seem that this is a reasonable request.
>
> Members of the Consortum will be coming by NSF soon and I am sure that will
> be one of their questions to us..

>
> Jim.
>
> James B. Breckinridge
>
> James B. Breckinridge, PhD
> Program Director, Advanced Technology & Instruments (ATI)
> and Program Manager, National Radio Astronomy Observatory (NRAO)
> National Science Foundation
> 4201 Wilson Blvd., Suite 1045
> Arlington, VA. 22230
> Voice phone: 703-292-4892
> FAX: 703-292-9034
> jbreckin@nsf.gov or james.breckinridge@jpl.nasa.gov
> home e-mail: jbreckin@earthlink.net
> PS All the telephone numbers at NSF have been changed. You may look up the
> new numbers at "http://staff.nsf.gov".

Subject: U of A site about the 12 M.
Date: Mon, 30 Apr 2001 12:43:36 -0700
From: Darrel Emerson <demerson@NRAO.EDU>
Organization: NRAO
To: pvandenb@NRAO.EDU, rbrown@NRAO.EDU

The NSF Review Panel report about funding (or not) the 12 M for
operation by
the U of A has been put on the U of A web site. See:

http://kp12m.as.arizona.edu/Review_Panel.html

which has a link to:

<http://kp12m.as.arizona.edu/docs/reviewpanel.pdf> .

Cheers,
Darrel.

Subject: Arizona Star article
Date: Mon, 30 Apr 2001 12:36:46 -0700
From: Darrel Emerson <demerson@NRAO.EDU>
Organization: NRAO
To: pvanden@NRAO.EDU, rbrown@NRAO.EDU

> ARIZONA DAILY STAR
> Tucson, Arizona Monday, 30 April 2001
>
> Grant rejection could close Kitt Peak scope
> By Thomas Stauffer
> The National Science Foundation has turned down a grant proposal submitted
> by the UA and the University of Massachusetts to keep Kitt Peak's 12-Meter
> Telescope operating.
> The telescope, owned by the foundation, is the only millimeter-wavelength
> radio telescope available to all U.S. astronomers. It serves about 150
> users, including graduate students from all over the country.

> "I don't know what these students are going to do," said Lucy Ziurys, a
> professor of astronomy and chemistry at the University of Arizona. "We have
> no money to keep it going right now. We're down to zero."
> The telescope is a radio dish that measures the radio waves of interstellar
> molecules at wavelengths between 1 and 3 millimeters. Two Nobel
> Prize-winning scientists used it to discover carbon dioxide emissions in
> 1970. Dozens of other molecules have been discovered with the telescope,
> including a simple sugar found last year in the cloud of gas and dust near
> the center of our Milky Way galaxy.
> The telescope has been operating at a reduced level on emergency funding
> since July. The National Radio Astronomy Observatory, which had operated the
> telescope since it went on line in 1967, announced last February that it
> would close the radio dish six months later to cut costs.
> Astronomers from all over the United States quickly formed the Action
> Committee for Millimeter Astronomy to save it.
> While the UA and UMass were writing a grant proposal to take over
> operations, the Research Corp., a Tucson-based foundation, provided \$150,000
> in emergency funding to keep it operating.
> The telescope at Kitt Peak National Observatory, 55 miles southwest of
> Tucson, cost the National Radio Astronomy Observatory about \$2 million a
> year to operate full time. The grant proposal submitted by the UA and UMass
> asked for \$800,000 a year for three years. The Research Corp. had agreed to
> supplement that with \$100,000 per year, and the two universities would have
> added \$50,000 each.
> The 33-year-old telescope fills a niche in the United States that will not
> be met until new radio telescopes are up and running, said Buddy Powell,
> associate director of the UA's Steward Observatory.
> "It's getting old, but it's still a very productive facility," Powell said.
> "We don't debate that it someday may outlive its usefulness, but that day
> has not arrived."
> Steward Observatory Director Peter Strittmatter, who led the grant proposal,
> said the telescope could be shut down June 30 unless alternative sources of
> funding can be found.
> "The main fear that I have for the longer term is that students will cease
> to go into this kind of work at a time when the country is investing large
> amounts of money in building facilities that in five or seven or 10 years
> will in fact need those people," he said.
> * Contact Thomas Stauffer at 573-4197 or at
> stauffer@azstarnet.com <mailto:stauffer@azstarnet.com>.
>
>

Subject: FUNDING DENIED TO PIONEER TELESCOPE

Date: Tue, 24 Apr 2001 14:55:14 -0600 (MDT)

From: Dave Finley <dfinley@aoc.nrao.edu>

To: pvandenb@zia.aoc.NRAO.EDU, mgoss@zia.aoc.NRAO.EDU, rbrown@zia.aoc.NRAO.EDU,
demerson@zia.aoc.NRAO.EDU, kkellerm@zia.aoc.NRAO.EDU

FYI.

Dave

----- Begin Included Message -----

THE FOLLOWING RELEASE WAS RECEIVED FROM THE UNIVERSITY OF ARIZONA, IN TUCSON, AND IS FORWARDED FOR YOUR INFORMATION. (FORWARDING DOES NOT IMPLY ENDORSEMENT BY THE AMERICAN ASTRONOMICAL SOCIETY.) Lynn Cominsky, American Astronomical Society

FUNDING DENIED FOR PIONEER TELESCOPE
(From Lori Stiles, UA News Services)

- Sent April 24, 2001 -

The National Science Foundation (NSF) has decided not to provide to the University of Arizona and the University of Massachusetts funds they requested to continue operations at the 12-meter radio telescope on Kitt Peak, Ariz.

Contact:
Peter A. Strittmatter
520-621-6524, pstrittmatter@as.arizona.edu

The decision was officially communicated to Peter Strittmatter, director of Steward Observatory and leader of a grant proposal to fund telescope operations for the next three years.

It was with the 12-meter telescope that Nobel Prize-winning scientists Arno Penzias and Robert Wilson discovered emission from the carbon monoxide molecule in 1970, leading to a revolution in astronomers' understanding of how stars form and how our galaxy evolves with time.

" We are simply dumbfounded, " Strittmatter said. "The importance of the telescope to the U.S. astronomy community was clearly recognized by all the reviewers. In fact the review panel was '...unanimous in its opinion that a way must be found to continue scientific research at the Kitt Peak 12m telescope'. Yet the proposal was declined."

The Kitt Peak 12-meter (KP12m) radio telescope is owned by the NSF and has been used since 1967 as the sole national facility supporting millimeter-wavelength radio astronomy research by scientists and students around the country. Its instrumentation is unique. The previous operator, the National Radio Astronomy Observatory (NRAO), announced February 2000 that, due to budget constraints, it would shut down the KP12m on July 31, 2000.

Concerned astronomers - including graduate students - reacted quickly by forming the Action Committee for Millimeter Astronomy (ACMA) which now has over 100 members. Since July 31 the University of Arizona has been running the telescope with emergency funding provided by the Tucson-based Research Corporation.

Many graduate students protested last year's telescope closure, noting that it would discourage U.S. students from going into this important field, just when major new facilities are being planned. These new facilities, which include the \$200 million-plus NRAO Atacama Large Millimeter Array (ALMA) and the 50-meter Large Millimeter Telescope, are several years from completion.

"With assistance from the Research Corporation and overwhelming support from ACMA, we were able to give it a very good shot," Strittmatter said. "The reviews confirm the strength of our case. The 12-meter telescope is very valuable to U.S. astronomy and is likely to remain so for many years to come. We will continue our efforts to keep it going."

UA news is online @<http://uanews.org>*

IF YOU DO NOT WISH TO CONTINUE RECEIVING PRESS RELEASES THAT ARE FORWARDED TO THE NEWS MEDIA VIA THE AMERICAN ASTRONOMICAL SOCIETY, PLEASE REPLY ACCORDINGLY TO ANY INCOMING PRESS RELEASE, OR WRITE TO lynnc@charmian.sonoma.edu

----- End Included Message -----

Subject: forwarded message from Aldo Apponi
Date: Tue, 24 Apr 2001 10:52:10 -0400 (EDT)
From: Al Wootten <awootten@NRAO.EDU>
To: pvandenb@polaris.cv.nrao.edu, kkellerm@polaris.cv.nrao.edu

I'm not sure that the statement in here about NRAO diverting the \$2M from 12m to ALMA is correct...but FYI it has just been sent to the list.

Al

Part 1.2 Type: message/rfc822
Encoding: 7bit

Subject: U of A & the 12 M Telescope
Date: Thu, 19 Apr 2001 12:37:14 -0700 (MST)
From: Darrel Emerson <demerson@NRAO.EDU>
To: pvanden@NRAO.EDU, Robert Brown <rbrown@NRAO.EDU>, mrafal@NRAO.EDU

Yesterday I forwarded on to you the "Executive Summary" from the NSF Site Review of last December at Amherst, when the U of A made their case to an NSF panel about getting funding to continue to operate the 12 M Telescope at Kitt Peak. Lucy Ziurys gave me the summary, and gave me permission to show it to anyone. She said they intend to make the report available on a U of A web page.

There are some kind words in the report about the 12 M Telescope and its scientific productivity. However, there are some less kind comments about NRAO: "NRAO's unprecedented action of abruptly closing the KP 12m has brought unnecessary hardwhip to the mm-wave astronomical community. ..." "... note that the overt act of abruptly closing the 12m without adequate consultation ... is precedent in NRAO's long and distinguished history ... unfortunate if this were seen as a lack of commitment to future ALMA science ..."

The latest I heard is that the NSF has denied U of A funding to run the telescope, but that Steward Observatory is (1) appealing against that

decision and (2) are negotiating with the Research Corporation for further independent funding.

Just for information.

Cheers,
Darrel.

Subject: Re: updating links
Date: Mon, 29 Jan 2001 09:57:49 -0500
From: "Patrick P. Murphy" <pmurphy@nrao.edu>
To: Lucy Ziurys <lziurys@as.arizona.edu>
CC: webmaster@nrao.edu, aaponi@as.arizona.edu, jmangum@nrao.edu

On Thu, 25 Jan 2001 17:47:48 -0700 (MST), Lucy Ziurys
<lziurys@as.arizona.edu> said:

> Hi. It has been brought to my attention that there is an outdated link
> on your website for the Kitt Peak mm-wave 12 m telescope.

Hi Lucy.

I've found one link on our Sites & Telescopes page, and have updated/corrected it <<http://www.nrao.edu/telescopes/>>. Also, Jeff Mangum is working on the NRAO/Tucson web server and its pages; he will make sure they have been appropriately updated.

If you know of any other links or references on the main (www.nrao.edu) or Charlottesville (www.cv.nrao.edu) pages, please let me know.

> <http://kp12m.as.arizona.edu>

Let us know if this link changes in the future, so we can keep our pages current. Thanks!

- Pat (de facto webmaster for NRAO)

--

Patrick P. Murphy, Ph.D. Division Head, Charlottesville Computing
(804) 296-0372, 296-0236 National Radio Astronomy Observatory
Home: <http://www.chien-noir.com/> Work: <http://www.cv.nrao.edu/~pmurphy/>
"Linux is Inevitable." "Why?" "Because it's alive!" - John MadDog Hall

Subject: [Fwd: ACMA Newsletter] (fwd)
Date: Tue, 23 Jan 2001 14:15:52 -0700 (MST)
From: Darrel Emerson <demerson@NRAO.EDU>
To: Robert Brown <rbrown@NRAO.EDU>, pvandenb@NRAO.EDU

You may already have seen this. Just for info - the U of A newsletter about the continuing 12 M operation.

Cheers,
Darrel.

----- Forwarded message -----

Date: Mon, 22 Jan 2001 15:53:28 -0700

From: Simon Radford <sradford@nrao.edu>
To: Darrel Emerson <demerson@nrao.edu>
Subject: [Fwd: ACMA Newsletter]

Part 1.2Type: MESSAGE/RFC822

Subject: Re: [Fwd: Assistance from NRAO]
Date: Thu, 14 Sep 2000 14:06:40 -0700
From: Darrel Emerson <demerson@NRAO.EDU>
Organization: NRAO
To: Paul Vanden Bout <pvandenb@NRAO.EDU>

Paul,

I'd indicate we'll help, but of course try to get some political credit out of it!

This matches my philosophy that I'd like to see NRAO's investment over the years put to further use for the benefit of science. I've spoken to Bob Freund, and he is willing to spend the one or 2 days estimated helping out. I think this is good public relations for NRAO, will help maintain good relations between our organizations in Tucson, and it's even conceivable that some science might come out of it.

Bob Freund now reports to Graham Moorey within ALMA, although he's spending 50% of his time helping Dick Sramek's group. I ought to have consulted Graham before replying to you, but Graham is on vacation for 2 weeks. I believe Graham will agree with my sentiments.

So, please say "yes" we'll help, with all the usual caveats about limited resources.

Darrel.

Paul Vanden Bout wrote:

>
> Darrel -- Shall I indicate we would help if asked or should I tell him
> to forget it? Paul

>
> ----- Original Message -----
> Subject: Assistance from NRAO
> Date: Thu, 14 Sep 2000 11:09:19 EDT
> From: Joe Salah <jes@haystack.mit.edu>
> To: pvandenb@NRAO.EDU
> CC: jes@planck.haystack.edu, aeer@planck.haystack.edu,
> rbp@planck.haystack.edu,dole@planck.haystack.edu

>
> Dear Paul,
> The CMVA group at Haystack is preparing its observing program
> for the October 2000 session. The 3-mm VLBI projects that have

> been selected based on approved proposals submitted by the community
> call for the inclusion of the 12-m telescope at Kitt Peak. The
> sensitivity of the telescope, its dual-polarization capability, and its
> location are crucial to the success of the planned VLBI observations.
> Bob Phillips has contacted the Arizona group (Lucy Ziurys) about
> the use of the 12-m for the mm-VLBI experiments. She supports such a
> use in the interim period while their proposal is being reviewed at NSF,
> but Haystack will need to take a greatly expanded role in operating the
> 12-m for VLBI during any session. Haystack is willing to do so, but
> since
> this is the first time that we will be responsible for the entire VLBI
> set-up at KP, we need your approval to solicit some help from NRAO
> staff. In particular, I am told that Bob Freund would be a key person
> to help in the set-up and in documenting the procedures for us to follow
> in the future after this initial hand-off phase. I guess that we are
> talking about a couple of days of his time, with support from others as
> he may need.
> Of course, we will also coordinate with the VLBA since the 12-m
> telescope uses the VLBA data acquisition system at KP.
> Please let me know whether we have your approval to seek Bob
> Freund's assistance, or who we should contact for this request.
> Thank you and best regards,
> Joe Salah

Subject: 12 M help

Date: Wed, 13 Sep 2000 11:33:02 -0700 (MST)

From: Darrel Emerson <demerson@NRAO.EDU>

To: pvandenb@NRAO.EDU

To be honest, there have been only very modest demands on us from the U of A folks so far. Of course, they haven't actually tried to do any observing yet, so that may change. They have been very lucky with lightning - there has been no lightning hit (so far) on the telescope during this monsoon. Every other year I can remember we've had to do at least some fixing of equipment taken out by lightning.

Antonio says he's been called a couple of times about test equipment up at the telescope.

Dale has had a few discussions about various issues, but no crises.

Bob Freund has been contacted a few times by the CMVA about VLBI issues. Bob does have lunch once a week with Tom Folkers (now the U of A operations manager for the 12 M), and various 12 M operation issues always come up during the lunch.

Frank Gacon has been asked to help with Filter Bank maintenance. Actually they want to get several hours of his effort, perhaps on a regular basis, but are proposing to pay him personally for the time, which would be from Frank's free time, not his NRAO time.

I'm sure that's not complete, but it gives a flavor of how little demand there has been so far.

Hope that helps.

Darrel.

Subject: 12 Meter & Liability
Date: Tue, 12 Sep 2000 16:11:12 -0700
From: Darrel Emerson <demerson@NRAO.EDU>
Organization: NRAO
To: pvandenb@NRAO.EDU
CC: mrafal@NRAO.EDU

Paul,

This is for your information. I believe we can handle things quite amicably locally, but just to keep you informed:

As you know, part of the agreement in the U of A consortium loan of the 12 M Telescope is that we'll have reasonable access to the telescope for ALMA tests, for a few days every few months. The first such test session, for ALMA software, is scheduled at Kitt Peak in early December.

1. The ALMA software guys want 8 days of telescope time, 24 hours round the clock.
2. The U of A guys say this is a problem, because they can't supply telescope operators round the clock.
3. The NRAO folks are quite capable of carrying out the tests without U of A operators - in fact nothing would be gained by having a U of A operator, because the standard 12 M control software that the operators understand will not be used.
4. The U of A folks then say that, if there are not to be U of A operators present all the time, they want a statement from NRAO that NRAO will accept liability for the telescope - if someone gets crushed by the telescope while no U of A operator is present, they want NRAO to pick up the tab.
5. This liability point was put to Jim Desmond, who says that he doesn't have the funds to guarantee the liability, but perhaps ALMA does. I believe Jim will be talking to Marc about this.

That's where we are. I don't want to make a big thing of it, and I want to keep relations between us and the U of A good. If it's necessary, the ALMA software guys are prepared to compromise - a shorter test run, or not operating around the clock - in interests of keeping good relations. This is not a crisis. I just want to keep you in the picture.

Darrel.

Subject: Re: Question on 12-m telescope
Date: Thu, 07 Sep 2000 10:42:41 -0400
From: Paul Vanden Bout <pvandenb@NRAO.EDU>
To: Pierre Kaufmann <pierrek@mackenzie.com.br>

Dear Pierre:

My initial reaction is that it makes no sense to move the 12m anywhere. It is old and not a great antenna, even though it was/is superbly instrumented and had a wonderfully stable operating system. The cost of moving would be much better put toward a new, modern antenna.

The 12m is currently on loan to Steward Observatory. By the end of this year it will have been decided by the NSF whether UAz is to be funded to continue to operate it. So any discussion of alternative uses is premature, my opinion on the advisability of moving it somewhere notwithstanding.

Cheers,

Paul

Pierre Kaufmann wrote:

>
> Dear Paul,
>
> Argentina and Brazil radio-astronomers are considering the possibility
> to build a small (6-10 m) submm-w radio-telescope for survey purposes. I
> have been asked to make the very preliminary investigations in this
> sense.
>
> The idea would be to place the instrument in El Leoncito site, that I
> believe you visited sometime. We have been using our new solar submm-w
> telescope (200 and 400 GHz) located near the large optical telescope,
> and have been finding very good figures for sky transmission, specially
> having in mind the altitude the measurements are taken (nearly 2600 m).
> But at El Leoncito there are a number of higher elevations, up to nearly
> 4000 m, which can be reached without major problems.
>
> I am just wondering whether it make any sense at all to consider a
> relocation of the NRAO 12-m to El Leoncito. If it makes sense to you,
> Argentina and Brazil might work out for the necessary funds (in the case
> these numbers also make some sense, and become attractive in comparison
> to the cost of a new project). We would also take care for its
> operations. Maybe NRAO might join in some kind of partial partnership.
>
> Please, let me know.
>
> Best regards.
>
> Pierre.
>
> PS: Please respond to; kaufmann@mackenzie.br.

Subject: AD

Date: Mon, 14 Aug 2000 00:53:15 -0700 (MST)

From: Darrel Emerson <demerson@NRAO.EDU>

To: pvandenb@NRAO.EDU

CC: mralfal@NRAO.EDU, Monroe Petty <mpetty@NRAO.EDU>

Here are some of the reasons that contribute to the continuing need, at the NRAO site in Tucson, of someone local with the authority and status of Assistant Director. Needless to say, that person may well be someone other than Darrel Emerson.

I agree that for purely ALMA issues, the authority of a Deputy AD, reporting to Marc Rafal, would be appropriate. However, site responsibilities inevitably will continue to go beyond just that.

In no particular order, and certainly not complete:

* There will be continuing negotiations with Steward Observatory, with Peter Strittmatter and his staff, over the 12 Meter Telescope operation. From time to time, in the interests of good relations between NRAO and the community, we will agree to loan our engineers and some pieces of NRAO test equipment. Part of the negotiation will be to permit continuing access of NRAO staff to the 12 M, for ALMA tests, and continuing access to some instrumentation that normally forms part of the 12 M Operation, now in the care of S.O.. It only makes sense to take care of these negotiations locally as far as possible. Reduced authority, below the AD level, will make this job very much harder; some issues that could have been dealt with locally will end up being referred back to NRAO headquarters, making more work for everyone involved.

* NRAO Tucson activities are NOT limited to ALMA. We have scientific staff (Gordon) and AIPS++ staff (Holdaway) here too. Someone local needs to have the authority to make non-ALMA decisions.

* NRAO Tucson has played a major role in protection of VLBA frequencies at Kitt Peak. The AD status has been most advantageous in local negotiations with companies and organizations trying to install transmitters that could compromise the VLBA operation.

* The removal of an AD position from Tucson will be a significant contribution to worsening staff morale in Tucson. It will be seen as another indication of the imminent closure of the entire site. (A little while ago, well before our recent office move, I was seen by one of the Tucson technical staff as I was clearing up my office and throwing out old records. "Oh no" he said, "so Tucson IS now being closed down altogether after all." The word spread. You probably can't imagine the nervousness of the remaining Tucson staff about this sort of thing, despite the attempts at reassurance from John and myself.)

* The site still needs close contact with the NRAO director, not the least to combat "outpost mentality" that hinders NRAO working as one organization. There will always be local

Arizona politics, and strong interaction between NRAO and the Tucson astronomy community. This interaction will be more effective if the direct 2-way communication between Tucson and the NRAO director continues. Removing an AD presence in Tucson won't help.

* I see no conflict between there being an AD in Tucson who deals with all these issues, but who has the status of Deputy AD in ALMA matters, and in those reporting to Marc. This is just a simple example of matrix management, just as has been happening quite successfully now anyway.

* This itself is no argument, but I will point out that there are now more (>30) NRAO employees working exclusively on ALMA in Tucson than the 24 that used to support just the 12 M Telescope.

* I do want to emphasize that these arguments have nothing to do with the retention or otherwise of Darrel Emerson as Assistant Director, Deputy AD or whatever. They address the needs of the site. But I will point out that my letter of appointment in Tucson defined my responsibilities as "Arizona Operations," not just as "12 M Telescope." I have always taken that as recognition that the responsibilities had extended beyond just the 12 M, as today they extend beyond just ALMA.

Conclusion

Removing the presence of an AD from Tucson will make so many tasks so much harder, both locally in Tucson and meaning more work having to be done at headquarters that could have been seen to more quickly, more easily and more effectively locally. It will bring no gain to NRAO. The chain of command for ALMA issues, with Marc in command, is totally unaffected either way.

Subject: [allemploy] The 12 Meter Telescope
Date: Thu, 03 Aug 2000 10:56:05 -0400
From: Billie Rodriguez <brodrigu@nrao.edu>
To: allemploy@nrao.edu

NRAO Loans 12 Meter Telescope to University of Arizona

The National Radio Astronomy Observatory is pleased to announce that it has loaned its 12 Meter Telescope and associated equipment, located on Arizona's Kitt Peak, to the University of Arizona for a period of six months. We understand that a consortium led by the University of Arizona will be preparing a proposal to submit to the National Science Foundation, the telescope's owner, for the eventual takeover of the telescope. Observers interested in using the 12 Meter should contact Dr. Lucy Ziurys.

The 12 Meter data archive will be maintained by the NRAO Tucson office.

For observers needing access to archived data, contact Jeff Mangum. We will continue to offer data analysis services through our downtown Tucson computer system by request. If you would like information on the former 12 Meter Telescope system, see the links under the former 12 Meter Telescope web page or contact Jeff Mangum.

allemloy@nrao.edu is an auto-generated mailing list comprised of all staff with computer access at NRAO.

Subject: [Fwd: Fw: Two documents]
Date: Thu, 27 Jul 2000 14:13:07 -0400
From: Jim Desmond <jdesmond@NRAO.EDU>
To: pvandenbout@NRAO.EDU

Type: message/rfc822
Part 1.2 Encoding: 7bit
Download Status: Not downloaded with message

Subject: [Fwd: Daily Operator's Log]
Date: Wed, 26 Jul 2000 07:14:31 -0700
From: "Dale A. Webb" <dwebb@NRAO.EDU>
To: PVANDENBOUT@NRAO.EDU, JDESMOND@NRAO.EDU, RBROWN@NRAO.EDU, MPETTY@NRAO.EDU, DHOGG@NRAO.EDU

Part 1.2 Type: message/rfc822
Encoding: 7bit

Subject: Re: DLT drive. (fwd)
Date: Thu, 13 Jul 2000 08:46:25 -0700
From: "Dale A. Webb" <dwebb@nrao.edu>
To: Darrel Emerson <demerson@nrao.edu>
CC: Jeff Mangum <jmangum@nrao.edu>, jpayne@nrao.edu, pvandenb@nrao.edu, mrafal@nrao.edu, Robert Brown <rbrown@nrao.edu>, jdesmond@nrao.edu

On this issue of who is going to be responsible for all archive material; do we need to consider that there may one day be a new nsf organization to do just that? I also need to know soon where to put all 12-meter drawings for equipment, all old observing logs, all old equipment manuals, and other 12-meter related stuff....Dale

Darrel Emerson wrote:

> Hi Jeff,
>
> I got trapped with Lucy and Strittmatter on Tuesday evening. Tom was
> at the meeting too. They now say they're intending to use ALL our
> receivers, and claim they will also try to support the 8-feed 1.3 mm

> system. Whether this is possible or not is another issue. They also
> claim that Pete Schloerb from U.Mass agrees to this and has given up the
> U.Mass plan of mounting their own receivers on the 12 M. I've no idea
> how true that is.

>
> Their line is then that they want all the receivers, and all the tools
> that go with them. They have agreed explicitly that no receivers will be
> taken to Mt. Graham (at least not without our permission), nor will they
> in any way be disassembled. They understand that receivers would just be
> on loan from NRAO. I explained that we have no intention of outfitting
> their lab with tools for receiver maintenance. It was actually much more
> friendly than it sounds, and we all agreed that there was no problem, our
> organizations will continue to cooperate together as we have in the past,
> and that when necessary and if possible we would be prepared to lend them
> specialized tools, just as we have in the past. They are, by the way, now
> definite that they want to keep the MAC spectrometer to use at the 12 M.
> Even Lucy agreed with that.

>
> As regards use of our employees; I did make clear that although we'd
> like to help, there is a limit to how much manpower we can spare to help
> them out. Alternative schemes of either trading ALMA test time on the 12
> M for NRAO engineer time, or of a straight hourly payment for NRAO
> engineer time, were mentioned but no decisions were made.

>
> Jeff, do we have a response to Tom's message below? Actually I
> wouldn't mind him taking over responsibility for our archived data, but
> what do you think? We should probably give an explanation for what tape
> drives and discs have been or will be removed from the mountain (e.g.
> they're property of NRAO's DMD, were only on loan to Tucson, and Beasley
> or Cornwell now want them back). We should just tell Tom the plain facts,
> whatever they are.

>
> Oh, and at this meeting I did have a go at Tom for talking to so
> many of our NRAO employees to try to get them to leave NRAO and
> join Steward Observatory. He apologizes and promises not to do it again.

>
> Cheers,
> Darrel.

> =====
> ----- Forwarded message -----
> Date: Wed, 12 Jul 2000 16:38:39 -0700
> From: Thomas Folkers <tfolkers@hamms.as.arizona.edu>
> To: demerson@nrao.edu
> Cc: tfolkers@hamms.as.arizona.edu
> Subject: DLT drive.

>
> Darrel,
> While at the 12m telescope today, going over future summer shutdown tasks,
> I noticed that not only has both DLT drives been removed, but that all of the
> blank tapes too. There was (10) tapes in the storage cabinet in my old office.
> Each tape costs \$80. Also I noticed that all of the blank DAT and Exabyte
> tapes have been removed.
> Just thought you would like to know.

_/ _/ _/ _/ _/ Tucson, Arizona 85721
//_/_/_/ _/ _/ _/_/_/_/ email: tfolkers@as.arizona.edu
----- Voice: (520) 626-7837
----- Fax: 621-5554 Pager: 446-0760
-- http://maisel.as.arizona.edu:8080/ -- Mobil: 975-0724 Home: 742-9279
~~~~~

Subject: [Fwd: Re: Receiver move.]  
Date: Tue, 11 Jul 2000 12:33:07 -0700  
From: Darrel Emerson <demerson@nrao.edu>  
Organization: NRAO  
To: pvandenb@nrao.edu, jpayne@nrao.edu, rbrown@nrao.edu, dwebb@nrao.edu

----- Original Message -----

Subject: Re: Receiver move.  
Date: Tue, 11 Jul 2000 09:17:30 -0700  
From: Peter Strittmatter <pstrittm@as.arizona.edu>  
To: Darrel Emerson <demerson@nrao.edu>  
CC: bpowell@as.arizona.edu, tfolkers@as.arizona.edu  
References: <39652946.207A6C3C@as.arizona.edu>  
<396604E9.D8A49832@nrao.edu> <39665491.F25E3147@as.arizona.edu>  
<39665FD4.5703CB6A@as.arizona.edu> <396B36C2.F72479F4@nrao.edu>

Dear Darrel,  
We indeed need to be perfectly clear about this. Perhaps we should sit down and talk about it rather than conversing by email and under time pressure. I believe that your thinking may have been conditioned by the thought that Lucy will be the principal user but in fact we have letters from many people wanting to use the other systems (1.3mm, 8-channel). I have asked Buddy and Tom Folkers to take the lead in reviewing the equipment situation. I gather that Buddy is also in communication with Jim Desmond on the transfer matters. In discussions yesterday, it seemed that it might be worthwhile for us to arrange a "transfer" day at the telescope rather than a "removal" day. This would allow for some good interaction between the people involved. Finally, let me say that we do not wish to acquire stuff that we have no intention of using. And we DO wish to continue a mutually supportive interaction with you and your colleagues at NRAO.  
Cheers,  
Peter

Darrel Emerson wrote:

> Hi Peter,  
>  
> I think you're oversimplifying the issues a little!

>  
> We need to know exactly what you need and what you have in mind. For  
> example, if you don't have any intention of using the 1.3-mm 8-beam  
> system on the 12 M Telescope - and it is a very high maintenance  
> receiver - we will use it ourselves to benefit development in the ALMA  
> project. I'm sure you understand that we would NOT find acceptable  
> passing on wholesale all the 12 M receivers to SO or to 5 Colleges, only  
> to find that some of them were being disassembled for parts. I'm sure  
> that's not what you have in mind, but we need to be perfectly clear  
> about this!

>  
> Cheers,  
> Darrel.

> Peter Strittmatter wrote:

>>  
>> Darrel,  
>> I have bad news and good news.  
>> The bad news is that I sent you an incorrect message - namely we would prefer to  
>> leave all of the stuff at the 12m and deal with it ourselves although we would  
>> value advice etc from time to time as we have discussed before.  
>> The good news is that you don't need to do anything about moving things from the  
>> mountain on the 27th.

>> Peter

>>  
>> Peter Strittmatter wrote:

>>>  
>>> OK, I now understand your reasons for haste in reaching a decision. Go ahead  
>>> and bring them all down on the 27th. We will have some people there to  
>>> observe and assist. For simplicity may I suggest you bring them all to the  
>>> SMTO lab.

>>> Thanks and have a good weekend. Hope John has a good trip.

>>> Peter

>>>  
>>> Darrel Emerson wrote:

>>>  
>>>> Hi Peter,

>>>>  
>>>> Sorry, but no!

>>>>  
>>>> John is out of the country until shortly before the planned date of  
>>>> moving the receivers from the telescope (July 27). He has to set the  
>>>> wheels in motion - it's not a trivial task, arranging for transport,  
>>>> crane operators, receiver engineers, telescope operators and so on to  
>>>> be in the right place at the right time. John has to make sure everyone  
>>>> knows what's expected of them, before he leaves today.

>>>>  
>>>> But this isn't really a big deal. We're removing all the receivers  
>>>> from the telescope, as we do every monsoon/lightning season, for their  
>>>> own protection. Bitter experience has taught us the necessity of doing  
>>>> so! The plan is for the 1mm and the 1mm multi-beam receivers to be  
>>>> transported safely to the NRAO lab downtown, and for the 2/3-mm receiver  
>>>> to be removed from the telescope and be put for now in the lab at Kitt  
>>>> Peak. We can then talk about which receivers will then be taken over by

>>>> the SO + 5-colleges consortium, and which receivers may be transported  
>>>> to which SO lab for the needed maintenance, more or less at our  
>>>> leisure. It doesn't make any sense to try to observe until early  
>>>> September, at the earliest. If you (i.e. the consortium) decide that  
>>>> you'd prefer the 3-mm receiver to be left on the telescope a little  
>>>> longer for any tests, before performing the maintenance on that receiver  
>>>> & taking your chances with lightning, then we just need to know that  
>>>> before July 27th and we'll leave that receiver cold on the telescope. (I  
>>>> say the 3mm because it doesn't make any sense to try to use shorter  
>>>> wavelengths at this time of year.)

>>>>  
>>>> As I mentioned on the phone yesterday, this may be a good opportunity  
>>>> for your own engineers to observe the operation - the complete procedure  
>>>> of how receivers are handled when being removed or installed on the  
>>>> telescope.

>>>>  
>>>> Cheers,  
>>>> Darrel.

>>>>  
>>>> Peter Strittmatter wrote:

>>>>>  
>>>>> Darrell, I have not been able to touch base with all the necessary  
>>>>> people and am tied up all day at Research Corp. Do you think we could  
>>>>> postpone giving orders till Monday?  
>>>>> Peter

Subject: Re: Receiver move.  
Date: Tue, 11 Jul 2000 08:01:22 -0700  
From: Darrel Emerson <demerson@nrao.edu>  
Organization: NRAO  
To: Peter Strittmatter <pstrittm@as.arizona.edu>  
CC: bpowell@as.arizona.edu, twilson@as.arizona.edu, lziurys@as.arizona.edu,  
tfolkers@as.arizona.edu, fpatt@as.arizona.edu, cwalker@as.arizona.edu,  
jpayne@nrao.edu, pvandenb@nrao.edu, rbrown@nrao.edu, dwebb@nrao.edu,  
jdesmond@nrao.edu, jmangum@nrao.edu

Hi Peter,

I think you're oversimplifying the issues a little!

We need to know exactly what you need and what you have in mind. For example, if you don't have any intention of using the 1.3-mm 8-beam system on the 12 M Telescope - and it is a very high maintenance receiver - we will use it ourselves to benefit development in the ALMA project. I'm sure you understand that we would NOT find acceptable passing on wholesale all the 12 M receivers to SO or to 5 Colleges, only to find that some of them were being disassembled for parts. I'm sure that's not what you have in mind, but we need to be perfectly clear about this!

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>>>> Peter

Subject: [Fwd: Re: Receiver move.]  
Date: Fri, 07 Jul 2000 15:31:06 -0700  
From: Darrel Emerson <demerson@nrao.edu>  
Organization: NRAO  
To: jpayne@nrao.edu, rbrown@nrao.edu, pvandenb@nrao.edu  
CC: jmangum@nrao.edu, gmoorey@nrao.edu

Peter's response. Although I'm sure he's trying to be helpful, we may not take him up immediately on the suggested logistical simplification.

Cheers,  
Darrel.

----- Original Message -----

Subject: Re: Receiver move.  
Date: Fri, 07 Jul 2000 15:07:13 -0700  
From: Peter Strittmatter <pstrittm@as.arizona.edu>  
To: Darrel Emerson <demerson@nrao.edu>  
CC: bpowell@as.arizona.edu, twilson@as.arizona.edu,  
lziurys@as.arizona.edu, tfolkers@as.arizona.edu, fpatt@as.arizona.edu,  
cwalker@as.arizona.edu  
References: <39652946.207A6C3C@as.arizona.edu>  
<396604E9.D8A49832@nrao.edu>

OK, I now understand your reasons for haste in reaching a decision. Go ahead and bring them all down on the 27th. We will have some people there to observe and assist. For simplicity may I suggest you bring them all to the SMTO lab.  
Thanks and have a good weekend. Hope John has a good trip.  
Peter

Darrel Emerson wrote:

> Hi Peter,  
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> Cheers,  
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>> people and am tied up all day at Research Corp. Do you think we could  
>> postpone giving orders till Monday?  
>> Peter

Subject: Re: Receiver move.  
Date: Fri, 07 Jul 2000 09:27:21 -0700  
From: Darrel Emerson <demerson@nrao.edu>  
Organization: NRAO  
To: Peter Strittmatter <pstrittm@as.arizona.edu>  
CC: jpayne@nrao.edu, pvandenb@nrao.edu, rbrown@nrao.edu

Hi Peter,

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> people and am tied up all day at Research Corp. Do you think we could  
> postpone giving orders till Monday?  
> Peter

Subject: 12m Receivers

Date: Thu, 06 Jul 2000 13:53:38 -0700

From: John Payne <jmpayne@tuc.nrao.edu>

To: pvandenbout@tuc.nrao.edu, Darrel Emerson <demerson@tuc.nrao.edu>, jmangum@tuc.nrao.edu

Status of 12m receivers.

Traditionally we have performed maintenance on the 12m receivers during our summer shutdown period. Obviously the situation is different -even if we wanted to we have nobody to work on them. Here is a brief description of the status of each receiver.

1) The 1mm dual channel receiver.

There is a vacuum leak that needs to be fixed. There is some evidence that this is due to a leaking rotary feed through. These rotary vacuum feed throughs are used both on this receiver and the 2/3 mm receiver. The anticipated life( according to the manufacturer is 5 years. They have been in service for around 13 years in some cases and if NRAO were to continue operation of the telescope I would recommend

that all be replaced.

2) The 2/3mm receiver.

The main refrigerator needs its annual maintenance. There is a small helium leak in the J-T refrigerator that needs to be located and fixed. This could prove to be a long and tedious operation.

3) The 8 beam 1mm receiver.

This receiver needs maintenance on the main refrigerator. Also in order to be truly competitive it needs work in order to decrease the noise temperature on all channels.

In any event the receivers need removal from the antenna and here is what I have tentatively arranged. On the morning of the luncheon on Kitt Peak (Thursday 27 July) a crew will arrive early at the 12m and remove all the receivers from the telescope. The 8 beam receiver and the 1mm dual channel receiver will be taken down town. If it is anticipated that the 2/3 mm receiver will be needed for testing in the near future then it can remain cold and on the antenna although it will need removal soon for the maintenance and my preference is to remove it.

Please let me know if there are any objections to this plan. If there are none in the next day or so we shall proceed.

Subject: Re: Access to 12m Telescope  
Date: Fri, 30 Jun 2000 14:03:12 -0700  
From: Peter Strittmatter <pstrittm@as.arizona.edu>  
To: Paul Vanden Bout <pvandenb@NRAO.EDU>

Thanks Paul  
Peter

Paul Vanden Bout wrote:

> Gentlemen:

>

> As I understand the situation, a partnership of the University of  
> Arizona and the University of Massachusetts, represented by the U of A,  
> would like access to the 12m Telescope on 1 August 2000 to operate it  
> for their own users and for users in the community at large. A proposal  
> is being prepared for submission to the NSF for support for this  
> endeavor. In the meantime, funds have been secured by the partnership  
> to operate the 12m for a limited period of time until a decision on  
> federal funding can be made.

>

> The ultimate decision on the disposition of the 12m and associated  
> equipment must wait until NSF reaches a decision on funding. I believe  
> the simplest mechanism to allow this partnership access to the telescope  
> between the end of July and that date is as follows.

>

> The 12m and its equipment are currently on the NRAO (AUI) inventory.  
> (We have not declared any of it surplus.) Were the U of A to request a

> loan of the telescope and equipment for this interim period, NRAO(AUI)  
> would agree to such a loan provided it was at no cost or liability to  
> NRAO(AUI). Given that this loan involves much more than the typical  
> loan of equipment for the NRAO, the NSF should approve the deal.  
>  
> There are other issues to resolve if this is to work. Here are a few  
> that come to mind: NRAO people will undoubtedly be called upon to answer  
> questions. I can imagine their help might be needed in an emergency. I  
> would like this assistance to be recognized in the form of occasional  
> NRAO access to the 12m for ALMA test. As the final disposition of the  
> equipment at the 12m will not be settled until NSF makes a funding  
> decision and decides on the final disposition of the telescope itself,  
> the equipment and instrumentation should be left in present condition  
> during the loan period. There may be other issues. I suggest that  
> Buddy Powell and Jim Desmond work out the details, with help from Dale  
> Webb, and do so soon.  
>  
> Please keep this matter as confidential as possible while still allowing  
> business to proceed. Premature distribution of what is proposed here to  
> the general community email or the press will do no good for any of us.  
> If everything is worked out by the end of the month, an appropriate  
> joint public announcement should be made.  
>  
> Paul Vanden Bout

Subject: Access to 12m Telescope

Date: Fri, 30 Jun 2000 15:52:04 -0400

From: Paul Vanden Bout <pvandenb@NRAO.EDU>

To: pstrittmatter@as.arizona.edu, schloerb@astro.umass.edu,

Jim Desmond <jdesmond@NRAO.EDU>

CC: Darrel Emerson <demerson@NRAO.EDU>, jbreckinridge@nsf.gov

Gentlemen:

As I understand the situation, a partnership of the University of Arizona and the University of Massachusetts, represented by the U of A, would like access to the 12m Telescope on 1 August 2000 to operate it for their own users and for users in the community at large. A proposal is being prepared for submission to the NSF for support for this endeavor. In the meantime, funds have been secured by the partnership to operate the 12m for a limited period of time until a decision on federal funding can be made.

The ultimate decision on the disposition of the 12m and associated equipment must wait until NSF reaches a decision on funding. I believe the simplest mechanism to allow this partnership access to the telescope between the end of July and that date is as follows.

The 12m and its equipment are currently on the NRAO (AUI) inventory. (We have not declared any of it surplus.) Were the U of A to request a loan of the telescope and equipment for this interim period, NRAO(AUI) would agree to such a loan provided it was at no cost or liability to NRAO(AUI). Given that this loan involves much more than the typical loan of equipment for the NRAO, the NSF should approve the deal.

There are other issues to resolve if this is to work. Here are a few that come to mind: NRAO people will undoubtedly be called upon to answer questions. I can imagine their help might be needed in an emergency. I would like this assistance to be recognized in the form of occasional NRAO access to the 12m for ALMA test. As the final disposition of the equipment at the 12m will not be settled until NSF makes a funding decision and decides on the final disposition of the telescope itself, the equipment and instrumentation should be left in present condition during the loan period. There may be other issues. I suggest that Buddy Powell and Jim Desmond work out the details, with help from Dale Webb, and do so soon.

Please keep this matter as confidential as possible while still allowing business to proceed. Premature distribution of what is proposed here to the general community email or the press will do no good for any of us. If everything is worked out by the end of the month, an appropriate joint public announcement should be made.

Paul Vanden Bout

Subject: Draft Message  
Date: Fri, 30 Jun 2000 13:22:37 -0400  
From: Paul Vanden Bout <pvandenb@NRAO.EDU>  
To: Darrel Emerson <demerson@NRAO.EDU>

Darrel -- I will send this message to Strittmatter & Co., pending comments from you. Paul

Gentlemen:

As I understand the situation, a partnership of the University of Arizona and the University of Massachusetts, represented by the U of A, would like access to the 12m Telescope on 1 August 2000 to operate it for their own users and for users in the community at large. A proposal is being prepared for submission to the NSF for support for this endeavor. In the meantime, funds have been secured by the partnership to operate the 12m for a limited period of time until a decision on federal funding can be made.

The ultimate decision on the disposition of the 12m and associated equipment must wait until NSF reaches a decision on funding. I believe the simplest mechanism to allow this partnership access to the telescope between the end of July and that date is as follows.

The 12m and its equipment are currently on the NRAO (AUI) inventory. (We have not declared any of it surplus.) Were the U of A to request a loan of the telescope and equipment for this interim period, NRAO(AUI) would agree to such a loan provided the U of A indemnified NRAO(AUI) of all liability. Given that this loan involves much more than the typical loan of equipment for the NRAO, the NSF should approve the deal.

There may be other issues to resolve if this is to work and I leave that to the business/legal experts. I suggest that Buddy Powell and Jim

Desmond work out the details, soon.

Please keep this matter as confidential as possible while still allowing business to proceed. Premature distribution of what I am proposing in the general community email or the press will do no good for any of us. If everything is worked out by the end of the month, an appropriate joint public announcement should be made.

Paul Vanden Bout

Subject: Re: KP12 Meter  
Date: Fri, 30 Jun 2000 07:49:40 -0700  
From: Peter Strittmatter <pstrittm@as.arizona.edu>  
To: "Breckinridge, James B" <jbreckin@nsf.gov>  
CC: Wayne Van Citters <gvancitt@nsf.gov>,  
Peter Schloerb <schloerb@fcrao1.astro.umass.edu>,  
Fred Byron <byron@resgs.umass.edu>, pvandenb@NRAO.EDU,  
lziurys@as.arizona.edu, bpowell@as.arizona.edu

Dear Jim,

Thanks for the email. In the meantime, Wayne has informed me that you will be handling this issue and I am delighted to work with you to reach a resolution. My phone number here is 520-621-6524. I will be on campus all day but have an appointment with my VP-Research from 11.00 - 12.00 Arizona time. Otherwise, any time after 8.00am should work.

Peter

Breckinridge, James B wrote:

> Dear Peter,

>

> We would save a day or two in communication if you copied me on your  
> e-mails. The scientific community regards this topic to be of a time  
> critical nature.

>

> In response to your meeting here on Monday we held a two hour meeting with  
> representatives from the NSF DGA, property, NRAO, and me to discuss several  
> constructive approaches that we can use.

>

> Please give me a telephone number that we can discuss the results of our  
> meeting.

>

> Thank you.

>

> Jim.

>

> Dr. James B. Breckinridge

> Direct Telephone with voice mail: # 703-306-1833

> Until Monday, July 31, 2000. Then, we all get new telephone numbers.

> Program Manager, National Radio Astronomy Observatory

> Program Director, Advanced Technology & Instruments

> Room 1045

> National Science Foundation

> 4201 Wilson Boulevard

> Arlington, Va. 22230  
> 703-306-1820 voice secretary  
> 703-306-0525 fax  
> e-mail: jbreckin@nsf.gov

Subject: Re: KP12m  
Date: Fri, 30 Jun 2000 07:34:47 -0400  
From: "G. Wayne Van Citters" <gvancitt@nsf.gov>  
To: Peter Strittmatter <pstrittm@as.arizona.edu>  
CC: Wayne Van Citters <gvancitt@nsf.gov>, pvandenb@NRAO.EDU,  
Peter Schloerb <schloerb@fcrao1.astro.umass.edu>,  
lziurys@as.arizona.edu, bpowell@as.arizona.edu,  
Fred Byron <byron@resgs.umass.edu>, jbreckin@nsf.gov

Dear Peter,

Thank you for the statement of intent with regard to the 12-Meter. I have forwarded it to Jim Breckinridge as he is the Program Manager for NRAO. Please feel free to correspond directly with Jim (copy to me is fine) on this issue as he is handling the interface with our legal and contractual folks.

Wayne

Subject: KP12m  
Date: Thu, 29 Jun 2000 19:17:11 -0700  
From: Peter Strittmatter <pstrittm@as.arizona.edu>  
To: Wayne Van Citters <gvancitt@nsf.gov>  
CC: pvandenb@NRAO.EDU, Peter Schloerb <schloerb@fcrao1.astro.umass.edu>,  
lziurys@as.arizona.edu, bpowell@as.arizona.edu,  
Fred Byron <byron@resgs.umass.edu>

Dear Wayne,

Attached is a draft summary of a proposal to NSF for UA to be designated as the responsible party for operating the KP 12m telescope after NRAO ceases operations on July 31. Our goal is simply to ensure that we can keep the 12m going in a limited way after that date and until the NSF response to our longer term proposal is known. As you know, the Research Corporation has provided some temporary funding to allow us to maintain a skeleton operations crew at the 12m at least in the short term.

We would like to know whether you think we are on the right track with this first proposal and also what other information/assurances you will need to effect the transfer of responsibility. Our main concern is the time it may take to make this change, so any guidance you can provide on speeding up the process would also be appreciated. NOAO must have been through something similar with SARA etc.

It also occurred to me that, in a sense, the responsibility for the 12m (as a piece of property) would remain with NRAO even after operations cease, unless NSF explicitly changes the situation. If the formalites of transfer will take too long, an alternative approach to accomplishing the immediate purpose would be for NRAO to assign operating

responsibility to UA at no cost or liability to NRAO. I have spoken to Paul Vanden Bout in regard to this and believe he is at least willing to consider such a step if it should prove necessary.

Thanks again for meeting with us on Monday,

Cheers

Peter

\*\*\*\*\*

Proposal to the National Science Foundation

to assume

Operations Responsibility for the Kitt Peak 12m Telescope

submitted by the

University of Arizona

on behalf of

The 12m Consortium

July 1, 2000

Summary

On February 21th, 2000 the National Radio Astronomy Observatory (NRAO) announced plans to shut down, effective July 31st, the nation's only generally available millimeter-wave telescope, the Kitt Peak 12m (KP12m). The telescope is extraordinarily well instrumented and its closure would have a devastating effect on many scientific programs, ranging from the detection of new interstellar molecules to the study of active galactic nuclei. It would also cut off many graduate students who are attempting to carry out thesis projects using the telescope. In fact the KP12m is the corner stone of mm-wave astronomical research in the US and will be so for several years to come. The community has, therefore, been making strenuous efforts to create a consortium in order to continue operations for the foreseeable future. The level of interest can be judged by the number (over 100) of scientists joining the ACMA (Action Committee for Mm-wave Astronomy), an organization formed to ensure the continue operation of the KP12m (see Appendix 1 for a listing).

As the local university and as an active user of both the KP12m and the Heinrich Hertz Sub-millimeter Telescope (HHSMT), the University of Arizona (UA) intends to submit a proposal to the National Science Foundation (NSF), to continue operations of the KP12m. This proposal will be submitted by the end of July 2000 on behalf of the 12m Consortium, which will be led by scientists at the UA and the University of Massachusetts (UMass). UMass also operates the Five College Radio Observatory (FCRAO) in Amherst and has a long and distinguished record in mm-wave radio astronomy. The expected KP12m annual operations budget



is around \$1M per year, of which \$200K per year will be provided by the consortium in the form of matching funds.

In the meantime, the UA has submitted to the Research Corporation a proposal for emergency funding, so that operations of the KP12m can continue without interruption for several months after July 31st, albeit on a skeleton crew basis. The Research Corporation has agreed to provide this emergency funding, and has also agreed to provide a matching fund contribution of \$100K per year for three years toward the cost of KP12m operations, provided that the NSF agrees to support the proposal for continued operations. The UA and UMass have also agreed to provide jointly an additional \$100K per year in matching funds for this purpose and on a similar basis.

The KP12m and its associated equipment are the property of the NSF. The telescope and receivers have been constructed and operated by the NRAO on behalf of the NSF and for the benefit of the astronomical community. In this proposal the UA is requesting that the NSF assign to UA operating responsibility for the KP12m, effective July 31, 2000 for a period of five months and on a no cost basis. In making this request, the UA recognizes that the KP12m and its associated equipment remain the property of the NSF. It also understands that in assigning temporary operating responsibility to the UA, the NSF is making no commitment to the UA or the KP12m consortium to provide operating funds after January 1, 2000.

Subject: [Fwd: INVENTORY]  
Date: Wed, 07 Jun 2000 07:48:11 -0600  
From: Jim Desmond <jdesmond@NRAO.EDU>  
Organization: NRAO  
To: pvandenbout@NRAO.EDU

-----  
Part 1.2 Type: message/rfc822  
Encoding: 7bit

Subject: Schloerb visit  
Date: Thu, 25 May 2000 10:06:43 -0700  
From: Darrel Emerson <demerson@aoc.nrao.edu>  
Organization: NRAO  
To: pvandenb@cv3.cv.nrao.edu  
CC: rbrown@cv3.cv.nrao.edu, mrafal@cv3.cv.nrao.edu

Hi Paul,

This is just for your information. I'm replying to Pete on all the questions he asks.

However, I'm sure you can see the irony of all this. We're having to abandon plans for important ALMA tests using the 12 M. But the U.Mass folks are proposing to take over the 12 M Telescope, with the intention

of:

" we'd like to evolve the 12m system to look like the eventual LMT system, or putting it another way, we'd like to begin to test (at least parts of) the eventual LMT system on a real telescope."

They're proposing to replace the subreflector & change the focal length, and change the control system. We're having to abandon ALMA tests we had planned - in particular by Glendenning & Raffi of ALMA real-time telescope control software - while U.Mass intend to take over the telescope and make substantial changes to it for tests purely to benefit the LMT.

I have no idea how this is all going to turn out, but if the telescope ends up being used as a test bed for LMT, can we at least negotiate some deal that guarantees us time on the 12 M for ALMA tests too?

Cheers,  
Darrel.

=====

----- Original Message -----

Subject: Re: Visit II  
Date: Wed, 24 May 2000 15:59:52 -0400 (EDT)  
From: schloerb@fcrao1.astro.umass.edu  
To: Darrel Emerson <demerson@nrao.edu>  
CC: Neal Erickson <neal@fcrao1.astro.umass.edu>, Mark Heyer <heyer@fcrao1.astro.umass.edu>, F Peter Schloerb <schloerb@fcrao1.astro.umass.edu>

Darrel:

We think that it might be best to postpone our visit, since it would be best to be able to talk to both you and John. If it looks like the percentage chance of your being present on the morning of the 8th might take a turn upwards, then we might reconsider. Please let me know.

In the mean time, there are some things we should work on to try to understand the system better. We are quite interested in the 12m and will most likely attempt to put in a proposal (most likely with UA). However, we need to learn a lot more about the telescope before we could actually do that.

There are three areas, specifically, where we could really use more information right away so that we could see whether a sensible proposal could be written.

1. Optics and receiver mounting. Our basic plan is to mount our focal plane arrays on the telescope, including both the 3mm heterodyne array (SEQUOIA) and, possibly, a bolometer array for the 1.3 and 2.1 mm windows (with emphasis on the latter at Kitt Peak.) The problem is that the

desired f ratio of all of our receivers is about f/4.5 or so, whereas the 12m is about f/13. Thus, we'd need to do something with the 12m to accommodate our receivers. The question is what. As a baseline, we are wondering about changing the secondary on the system, but to make progress requires more information.

\* Is there a set of mechanical drawings of the 12m optics and receiver bays that would allow us to look at some options?

\* Do you know the specifications on the subreflector mass, etc. that would allow us to make use of the present positioning system with a new subreflector?

2. Control system. Of course, to deal with our receivers and spectrometers, we will have to interface them to the present system. Moreover, we'd like to evolve the 12m system to look like the eventual LMT system, or putting it another way, we'd like to begin to test (at least parts of) the eventual LMT system on a real telescope.

\* Do you have some sort of description/documentation available that would allow my group to begin figuring out how big a chore this might be?

3. General Instrumentation and Infrastructure. More generally, we are concerned about the level of documentation of the present system that might exist. I expect that a plan to operate the 12m will involve hiring some of the existing staff that are being laid off, and we've been talking closely with Arizona about collaborating on this. However, we won't be able to hire everyone and I understand that people are now evaporating from the project.

\* What is your feeling about the level of general documentation of the existing system? Is there sufficient information on key systems and circuits that competent engineering staff could understand the system without resorting to reverse engineering?

\* Are there some useful technical memos about the 12m that we should be aware of?

Thanks for your help,

Pete

Subject: Outside Users of SMT

Date: Wed, 17 May 2000 11:07:43 -0700

From: Tom Wilson <twilson@as.arizona.edu>

To: "Vandenbout, Paul" <pvandenb@NRAO.EDU>,  
"Strittmatter, P." <pstrittm@as.arizona.edu>

Dear Paul:

I have no yet replied to your last mail about the number of outside users of SMT. A season extends from October to June, usually. I try to

schedule a minimum of 3 days for a visitor, since the travel to Mt. Graham is 3.5 hours (one way) from Tucson. In the longer term, we will try for remote observing. Then we could schedule shorter programs with more visitors.

In the Steward Observatory time (1/2 of the total) . In 1998/9, we had 15 users who actually travelled from institutions other than Steward Obs., and stayed at the telescope. In addition, we had 8 visitors who assisted with the VLBI experiment in Feb 99.

In 1999/2000, we had 16. This does not include the visitors in the MPIfR period. Also, as stated, we do not include outsiders on a proposal who did not show up. We have a 'priority observing' procedure in which the staff observe for outsiders. We have had an additional 2 proposals from NRAO and 4 from CfA.

All of the MPI observers travel from Europe. These people require a great deal more staff attention. Also, the MPI programs are longer since the travel is expensive and time consuming. If MPI dropped out of the SMTO, we can easily accommodate three times more visitors, without problems. However, SMTO would need the 50% contributed by MPIfR.

I hope this answers your questions. Regards, Tom Wilson

--

T. L. Wilson  
Director, Submillimeter Telescope Obs.  
Steward Obs.  
The Univ. of Arizona  
Tucson, Az. 85721  
Phone 520-621-5505  
Fax 520-621-5554

Subject: Greetings from Tucson  
Date: Wed, 17 May 2000 10:04:45 -0700  
From: Tom Wilson <twilson@as.arizona.edu>  
To: "Vandenbout, Paul" <pvandenb@NRAO.EDU>

Dear Paul:

I have just been listening to a number of people talk about the project to cut a hole in the 12m surface. This sounds a bit precipitous, and the project may be better done on the ALMA prototype dish when this arrives in Socorro. An action of cutting a hole just before closing might look like vandalism on the part of NRAO. An alternative (if people want to carry out this project) would be to remove a panel. This is not ideal, but is certainly less destructive.

We should try to get together at some point. Are you attending the IAU?  
Regards, Tom Wilson

--

T. L. Wilson  
Director, Submillimeter Telescope Obs.  
Steward Obs.

The Univ. of Arizona  
Tucson, Az. 85721  
Phone 520-621-5505  
Fax 520-621-5554

Subject: [Fwd: Travel Support for Outside Users]  
Date: Tue, 16 May 2000 09:26:49 -0400  
From: Paul Vanden Bout <pvandenb@NRAO.EDU>  
To: schloerb@astro.umass.edu

----- Original Message -----

Subject: Travel Support for Outside Users  
Date: Mon, 15 May 2000 16:18:31 -0400  
From: Paul Vanden Bout <pvandenb@NRAO.EDU>  
To: phillips@submm.caltech.edu, afs@astro.caltech.edu,leo blitz  
<blitz@gmc.berkeley.edu>,Peter Schloerb  
<schloerb@comet.astro.umass.edu>,twilson@as.arizona.edu

As some of you already know, we are thinking of establishing an NRAO program of travel support to outside users of the university-based mm/submm facilities in the US that would be similar to that now enjoyed by users of the 12 Meter. This would help 12 Meter users who apply for time on these facilities in that it would minimize any potential increases in the cost of utilizing observing time granted.

The NRAO program in effect today at the 12 Meter (and other NRAO telescopes) is as follows:

- air travel is reimbursed for one person per observing session;
- no reimbursement for ground transportation, lodging, or meals;
- reimbursement is made to the institution, not directly to the traveller.

In earlier email I received some information/answers from some of you to the following question -- how many outside users do you have now? and how many more could you handle, with or without additional NSF support?

I have heard from Tom Phillips and Anneila Sargent. Any communications with the rest of you have left me confused. May I ask Leo, Pete, and Tom Wilson if they would supply these numbers? (Note, if you need additional funding to accomodate these additional outside users, that is between you and the NSF. At least I will have an upper bound on the amount of air travel support required.)

On the assumption that NRAO would only reimburse air travel, nothing else, an estimate can be made of the program cost. I have no idea whether the NSF will approve this or whether we can afford it, so there are no promises here. But we would like to do what we can for the mm/submm community in the post-12M era, before ALMA interim operations begin.

If it all worked out, I propose the administration go like it does now

at an NRAO telescope. One user for each proposal/observing run gets an NRAO travel claim when they show up. Some local person in charge approves it, certifying, in effect, that the trip was made. On submission to NRAO with the original air ticket receipt, we will issue a check for that amount to the users home institution.

I hope to hear from you soon.

Regards,

Paul

Subject: Nuisance hysteria  
Date: Tue, 16 May 2000 09:20:01 -0400  
From: Paul Vanden Bout <pvandenb@NRAO.EDU>  
To: Darrel Emerson <demerson@NRAO.EDU>

Darrel -- Would you contact these people and tell them to relax, that we do not intend to harm the telescope, and what we actually plan to do?

And please tell our people to stop speculating about what they might or might not do in front of Loris et al. What has happened, apparently, is that loose discussion of half-baked plans has spun them up in that some of those ideas involved cutting struts, ribs, more than one panel, etc. Who is this person?

We need a clear plan for what is required for ALMA. I am sure you have one. Hopefully, that plan will not affect the 12m's performance. Once we have confirmed the plan with our team, so they know clearly what is being contemplated, Peter and Loris can be informed. And then they should relax.

I have no more time for Strittmatter or Loris on this one. They are all yours now. Good luck. Paul

Dear Paul,

Thanks for your quick response to my email to Darrell Emerson. I am sure this matter can be resolved without it becoming a major issue.

While I agree that cutting a 5-inch hole in a single panel need not cause any discernible performance loss, I think the situation is a little more complex than you state - although I stand to be corrected.

I gather that the person asked to carry out this task has stated that (a) it cannot be done as currently planned without cutting into the panel ribs; and (b) he does not have the appropriate tools to carry out the work and so runs the risk of damaging the rest of the panel - or more. I am told he has refused to do the work for these reasons. There are now concerns that someone less competent will be asked to do the work.

I am also curious as to why this was not done much earlier if it is seen as an "improvement" to the telescope and what doing this on the 12m can

possibly tell you about the performance on a presumably much different ALMA antenna.

I reiterate therefore my request that no such hole be cut, without prior discussion with those who may be affected. In that context, I look forward to hearing from Darrell who can undoubtedly provide a full briefing on the matter. The main problem as usual seems to be a lack of communication.

I'd be happy to discuss this by phone if that would help. Just tell me when I should call.

Peter

Paul,

I don't think you would act in bad faith in this matter at all. It's just that in talking to some of the people up here who actually cut and weld and deal with metal (as opposed to engineers who have never even snipped a tin can or scientist who have never even touched an acetylene torch) it seems to me that there is a difference of opinion in whether the surface can be affected or not. Removing a 5inch in diameter hole obviously would not affect the performance of a 12-meter dish. But if in cutting that hole you had to cut through 1 or 2 of the supporting struts in back of a panel with a regular saber saw (which is the only thing up here right now) it is not at all clear that the shape of the entire panel would or would not suffer. The engineers that got sent up here last week were even talking about placing the hole so it would affect two panels rather than one so it seems to me that not as much thought has gone into this as you or Jeff Mangum would have me believe. Now, I don't know the first thing about cutting metal or holography, but I'm hearing two different stories from people who claim that they know what they're doing. So I think it is legitimate to be concerned and I encourage you to resolve this conflict of opinion.

In re-reading this I realize that I said struts instead of ribs in the paragraph above. Since I can't edit my message with this editor (I'm at the 12-meter instead of my office I have to be a bit less polished than I would like to be.

Sincerely,  
Loris Magnani

Subject: 12m  
Date: Mon, 15 May 2000 16:29:10 -0700  
From: Peter Strittmatter <pstrittm@as.arizona.edu>  
To: pvandenb@NRAO.EDU

CC: demerson@NRAO.EDU, jbreckinridge@nsf.gov

Dear Paul,

Thanks for your quick response to my email to Darrell Emerson. I am sure this matter can be resolved without it becoming a major issue.

While I agree that cutting a 5-inch hole in a single panel need not cause any discernible performance loss, I think the situation is a little more complex than you state - although I stand to be corrected.

I gather that the person asked to carry out this task has stated that (a) it cannot be done as currently planned without cutting into the panel ribs; and (b) he does not have the appropriate tools to carry out the work and so runs the risk of damaging the rest of the panel - or more. I am told he has refused to do the work for these reasons. There are now concerns that someone less competent will be asked to do the work.

I am also curious as to why this was not done much earlier if it is seen as an "improvement" to the telescope and what doing this on the 12m can possibly tell you about the performance on a presumably much different ALMA antenna.

I reiterate therefore my request that no such hole be cut, without prior discussion with those who may be affected. In that context, I look forward to hearing from Darrell who can undoubtedly provide a full briefing on the matter. The main problem as usual seems to be a lack of communication.

I'd be happy to discuss this by phone if that would help. Just tell me when I should call.

Peter

\*\*\*\*\*

Peter Strittmatter wrote:

>  
> Dear Darrell,  
> I hear from Buddy Powell that NRAO intends to cut a hole in the 12m  
> reflector in order to do some optical pointing tests. I also gather  
> that  
> the hole would remain for anyone taking over the telescope. If the  
> preceding statements are true, I can only say I would view it as an  
> act  
> of enormous bad faith - as well as little utility to any other project  
> -  
> to do this within a few weeks of handing over the 12m to another  
> scientific user group. As you know Steward is attempting to form a  
> user  
> consortium to continue 12m operations.  
> I therefore request that no such hole be cut - and in any event, that  
> no  
> such action be taken without prior consultation with the NSF (the



owners  
> of the 12m) and prospective users groups.  
> Thank you for your cooperation in this matter  
> Peter Strittmatter

Dear Peter:

Your recent message regarding the planned test of the ALMA optical pointing system on the 12 Meter telescope has a distressing tone of panic about it. Am I to believe that you actually think we would do something that damaged the performance of the 12 Meter? This test has been planned for a long time, well before we were forced to announce the

closure of the 12 Meter. The contract for the ALMA prototype antenna requires that we deliver an optical pointing system, and we had always planned to test that system on the 12 Meter.

We cannot see how the loss of a five-inch diameter circle of collecting area will result in any measureable degradation of performance, either in gain, system temperature, or beam pattern. Furthermore, on completion of the ALMA tests, we planned to move the present 12 Meter optical pointing system to this new location, behind the surface, firmly attached to the backup structure. This would likely improve the overall telescope performance.

I suggest that Darrel Emerson brief you and any others of your consortium that may be interested on our plans. If someone can think of some technical reason that for not proceeding, we would, of course, reconsider. We are no more interested in seeing the performance of the 12 Meter harmed than anyone else.

Regards,

Paul

---

Part 1.2 Type: message/rfc822  
Encoding: 7bit

Subject: Re: 12m holes  
Date: Mon, 15 May 2000 16:42:10 -0400 (EDT)  
From: loris@milan.physast.uga.edu  
To: pstrittm@as.arizona.edu, pvandenb@NRAO.EDU  
CC: demerson@NRAO.EDU, jbreckin@nsf.gov, mrafal@NRAO.EDU

Paul,

I don't think you would act in bad faith in this matter at all. It's just that in talking to some of the people

up here who actually cut and weld and deal with metal (as opposed to engineers who have never even snipped a tin can or scientist who have never even touched an acetylene torch) it seems to me that there is a difference of opinion in whether the surface can be affected or not. Removing a 5inch in diameter hole obviously would not affect the performance of a 12-meter dish. But if in cutting that hole you had to cut through 1 or 2 of the supporting struts in back of a panel with a regular saber saw (which is the only thing up here right now) it is not at all clear that the shape of the entire panel would or would not suffer. The engineers that got sent up here last week were even talking about placing the hole so it would affect two panels rather than one so it seems to me that not as much thought has gone into this as you or Jeff Mangum would have me believe. Now, I don't know the first thing about cutting metal or holography, but I'm hearing two different stories from people who claim that they know what they're doing. So I think it is legitimate to be concerned and I encourage you to resolve this conflict of opinion.

In re-reading this I realize that I said struts instead of ribs in the paragraph above. Since I can't edit my message with this editor (I'm at the 12-meter instead of my office I have to be a bit less polished than I would like to be.

Sincerely,  
Loris Magnani

Subject: Travel Support for Outside Users  
Date: Mon, 15 May 2000 16:18:31 -0400  
From: Paul Vanden Bout <pvandenb@NRAO.EDU>  
To: phillips@submm.caltech.edu, afs@astro.caltech.edu,  
leo blitz <blitz@gmc.berkeley.edu>,  
Peter Schloerb <schloerb@comet.astro.umass.edu>,  
twilson@as.arizona.edu

As some of you already know, we are thinking of establishing an NRAO program of travel support to outside users of the university-based mm/submm facilities in the US that would be similar to that now enjoyed by users of the 12 Meter. This would help 12 Meter users who apply for time on these facilities in that it would minimize any potential increases in the cost of utilizing observing time granted.

The NRAO program in effect today at the 12 Meter (and other NRAO telescopes) is as follows:

- air travel is reimbursed for one person per observing session;
- no reimbursement for ground transportation, lodging, or meals;

-- reimbursement is made to the institution, not directly to the traveller.

In earlier email I received some information/answers from some of you to the following question -- how many outside users do you have now? and how many more could you handle, with or without additional NSF support?

I have heard from Tom Phillips and Anneila Sargent. Any communications with the rest of you have left me confused. May I ask Leo, Pete, and Tom Wilson if they would supply these numbers? (Note, if you need additional funding to accomodate these additional outside users, that is between you and the NSF. At least I will have an upper bound on the amount of air travel support required.)

On the assumption that NRAO would only reimburse air travel, nothing else, an estimate can be made of the program cost. I have no idea whether the NSF will approve this or whether we can afford it, so there are no promises here. But we would like to do what we can for the mm/submm community in the post-12M era, before ALMA interim operations begin.

If it all worked out, I propose the administration go like it does now at an NRAO telescope. One user for each proposal/observing run gets an NRAO travel claim when they show up. Some local person in charge approves it, certifying, in effect, that the trip was made. On submission to NRAO with the original air ticket receipt, we will issue a check for that amount to the users home institution.

I hope to hear from you soon.

Regards,

Paul

Subject: Re: 12m holes  
Date: Mon, 15 May 2000 11:04:46 -0400  
From: Paul Vanden Bout <pvandenb@NRAO.EDU>  
To: Peter Strittmatter <pstrittm@as.arizona.edu>  
CC: loris@milan.physast.uga.edu, mrafal@NRAO.EDU,  
Darrel Emerson <demerson@NRAO.EDU>,  
Jim Breckinridge <jbreckin@nsf.gov>

Peter Strittmatter wrote:

>  
> Dear Darrell,  
> I hear from Buddy Powell that NRAO intends to cut a hole in the 12m  
> reflector in order to do some optical pointing tests. I also gather that  
> the hole would remain for anyone taking over the telescope. If the  
> preceding statements are true, I can only say I would view it as an act  
> of enormous bad faith - as well as little utility to any other project -  
> to do this within a few weeks of handing over the 12m to another  
> scientific user group. As you know Steward is attempting to form a user  
> consortium to continue 12m operations.  
> I therefore request that no such hole be cut - and in any event, that no

- > such action be taken without prior consultation with the NSF (the owners
- > of the 12m) and prospective users groups.
- > Thank you for your cooperation in this matter
- > Peter Strittmatter

Dear Peter:

Your recent message regarding the planned test of the ALMA optical pointing system on the 12 Meter telescope has a distressing tone of panic about it. Am I to believe that you actually think we would do something that damaged the performance of the 12 Meter? This test has been planned for a long time, well before we were forced to announce the closure of the 12 Meter. The contract for the ALMA prototype antenna requires that we deliver an optical pointing system, and we had always planned to test that system on the 12 Meter.

We cannot see how the loss of a five-inch diameter circle of collecting area will result in any measurable degradation of performance, either in gain, system temperature, or beam pattern. Furthermore, on completion of the ALMA tests, we planned to move the present 12 Meter optical pointing system to this new location, behind the surface, firmly attached to the backup structure. This would likely improve the overall telescope performance.

I suggest that Darrel Emerson brief you and any others of your consortium that may be interested on our plans. If someone can think of some technical reason that for not proceeding, we would, of course, reconsider. We are no more interested in seeing the performance of the 12 Meter harmed than anyone else.

Regards,

Paul

Subject: 12 Meter Hole  
Date: Mon, 15 May 2000 09:46:39 -0400  
From: Paul Vanden Bout <pvandenb@NRAO.EDU>  
To: Darrel Emerson <demerson@NRAO.EDU>

Darrel -- I propose to send the following reply to Strittmatter, copying Loris, Jim Breckinridge, and (blind) Bob Dickman. Paul

---

DRAFT

Dear Peter:

Your recent message regarding the planned test of the ALMA optical pointing system on the 12 Meter telescope has a distressing tone of panic about it. Am I to believe that you actually think we would do something that damaged the performance of the 12 Meter? This test has

been planned for a long time, well before we were forced to announce the closure of the 12 Meter. The contract for the ALMA prototype antenna requires that we deliver an optical pointing system, and we had always planned to test that system on the 12 Meter.

We cannot see how the loss of a five-inch diameter circle of collecting area will result in any measureable degradation of performance, either in gain, system temperature, or beam pattern. Furthermore, on completion of the ALMA tests, we planned to move the present 12 Meter optical pointing system to this new location, behind the surface, firmly attached to the backup structure. This would likely improve the overall telescope performance.

I am forced to conclude that you have been badly advised. Could we replace this flurry of email by sensible discussion? I suggest that Darrel Emerson brief you and any others of your consortium that may be interested on our plans. If someone can think of some technical reason that for not proceeding, we would, of course, reconsider. We are no more interested in seeing the 12 Meter harmed than anyone else.

Regards,

Paul

Subject: Use of test periods at Kitt-Peak 12m for ALMA (fwd)  
Date: Mon, 15 May 2000 06:03:27 -0700 (MST)  
From: Darrel Emerson <demerson@nrao.edu>  
To: pvandenb@nrao.edu, Jeff Mangum <jmangum@nrao.edu>  
CC: Graham Moorey <gmoorey@nrao.edu>, jpayne@nrao.edu,  
Robert Brown <rbrown@nrao.edu>

Hi Paul,

As you see, there's a formal request from the ESO/NRAO ALMA software group for a continuation of their testing using the 12 M Telescope, amounting to some 4 days & nights per quarter, starting in the coming November or December.

I hope that within any agreement with whatever consortium may take the telescope, this can be accommodated. Bob Freund will already be on the ALMA project by then, and I'm sure we'll be able to make him available to help with such tests.

Cheers,

Darrel.

----- Forwarded message -----

Date: Sat, 13 May 2000 19:02:13 +0200  
From: Gianni Raffi <graffi@eso.org>  
To: Darrel Emerson <demerson@nrao.edu>  
Cc: Brian Glendenning <bglenden@zia.aoc.nrao.edu>,  
Marc Rafal <mrafal@nrao.edu>, Richard Kurz <rkurz@eso.org>  
Subject: Use of test periods at Kitt-Peak 12m for ALMA

Hi Darrel,

this is to confirm the interest of the software group (ESO and NRAO) in repeating the test which was done last year at the 12m Kitt-Peak.

The periods we would need would be:

- 4 days (and nights in between) per Quarter, starting with last Quarter of this year at the end of Nov. or early December.

- The first test would be to validate the ALMA prototype Common Software.

- The second would be to test the the ALMA Antenna prototype Software.

- If there was a third period we would like to use it to test a more advanced version of the ALMA Antenna and ACS software.

During these periods we would appreciate the assistance of Robert Freund, who contributed last year to the success of the first test.

Please let us know sometimes if and when this will be possible.

Kind regards,

Gianni and Brian

Subject: 2nd addendum, 12 M optical telescope.

Date: Sun, 14 May 2000 20:56:59 -0700 (MST)

From: Darrel Emerson <demerson@NRAO.EDU>

To: pvandenb@NRAO.EDU

CC: Peter Napier <pnapier@NRAO.EDU>

Hi Paul,

Having slept on it, here's my suggested compromise for the optical telescope hole-in-the-telescope issue, in order to avoid the wrath of the community. But it's your call.

1. We want to retain the best possible relations with the US mm-wave community.

2. Although we had planned the optical telescope long before the announced closure of the telescope, and although it will not do any harm to the telescope (in fact the 12 M would have benefited from a better siting of the optical telescope), I think that "the community" has decided we're doing the test now because we don't care any more about what happens to the telescope. Although this is absolutely not true, I'm doubtful that now we'll ever get the community to believe our intentions are wholly honourable. Although we've even run structural models of what happens to a panel when you cut a hole in it, I now think we'll never persuade the community that the telescope surface would be safe.

3. The planned ALMA tests would benefit from the planned, optimum siting of the telescope. The plans should give best correlation between optical and radio pointing, best stability of the optical pointing, and in every way the ALMA tests would be better if we could site the optical telescope where we'd planned. As planned, it's more likely to show up problems on the ALMA prototype. BUT:

4. The compromise to ALMA tests if, say, the optical telescope were mounted off the edge of the dish, still attached to the backup structure, MIGHT not be too serious. (I have not yet had the chance to discuss this with the guys involved in the test, however. I may be wrong.) This could

not be seen by anyone as a threat to the telescope surface.

5. Overall, I think the trade-off of a less-than-optimum position for the siting of the ALMA telescope for the ALMA tests might be worth it, in return retaining the maximum amount of goodwill from the mm-wave community.

6. My suggestion would be yet another case of a technically bad compromise being made in the interests of community relations. However, this seems all too often to be a necessary evil in the ALMA project.

Just a suggested response to my own plea for advice.

Cheers,  
Darrel.

Subject: 12 Meter & optical telescope (Addendum)  
Date: Fri, 12 May 2000 19:11:25 -0700 (MST)  
From: Darrel Emerson <demerson@NRAO.EDU>  
To: pvandenb@NRAO.EDU

Hi Paul,

An afterthought:

The optical telescope is part of the contract with the antenna company: NRAO has agreed to provide the means, specifically the optical telescope, to prove whether or not the ALMA prototype antenna meets basic pointing specs. This is a contractual obligation, not a "would be nice to have" item. The 12 M tests are part of this.

Cheers,  
Darrel.

----- Forwarded message -----

Date: Fri, 12 May 2000 17:39:25 -0700 (MST)  
From: Darrel Emerson <demerson@nrao.edu>  
To: pvandenb@nrao.edu  
Cc: Jeff Mangum <jmangum@nrao.edu>, Dale Webb <dwebb@nrao.edu>, Jeff Kingsley <jkingsle@nrao.edu>, Peter Napier <pnapier@nrao.edu>  
Subject: 12 Meter

Hi Paul,

This topic seems to have blown up out of all proportion, and facts have become distorted. I've received a message about this from Loris Magnani (Jeff or I will be talking to him this weekend when he's back at KP), Dale Webb has received a somewhat irate telephone call from Buddy Powell at Steward Observatory, and you've just received the message from Peter Strittmatter.

We had been intending for about a couple of years to test out, on the NRAO 12 Meter Telescope, the optical pointing telescope to be used on the ALMA prototype antennas at the VLA. The optical telescope will be tied to the backup structure, rather than as with the current 12 M optical system to the end of the feed-legs.

Attaching the ALMA optical telescope to the backup structure inevitably means cutting a hole in one of the panels. The telescope is a 4-inch refractor, so the hole needs to be about 5 inches in diameter. This represents 0.01% of the surface of the radio telescope. The tests will be of the ALMA data acquisition system, optical telescope (CCD) control, software, mount stability, and a comparison of the tracking and pointing stability and reproducibility with the existing 12 M optical telescope, whose characteristics are well known. We expect the ALMA test system to represent the true radio pointing of the telescope much more closely than the existing 12 M optical pointing telescope.

Our plan is, after completion of the ALMA optical pointing tests at Kitt Peak, to remove the ALMA system prior to its installation on the ALMA prototype antenna at the VLA site. We anticipate the tests being completed before we hand over the telescope to whoever may take over responsibility for the telescope. The plan HAD been that we would then have moved the existing 12 M optical telescope from the prime focus to the position vacated by the ALMA optical telescope. The plan IS now that we would not move the existing 12 M pointing telescope, but would replace the 5-inch diameter section of panel removed from the panel back into position; it would be held in place with epoxy or some simple clamp.

Being aware that this might have become a sensitive issue, we have intended to write a report to you outlining our plans, to get your approval before we cut metal. However, exaggerated rumours seem to have started circulating. The tone of what I'm hearing seems to be that, "since NRAO doesn't care about the telescope any more, we think we can cut a hole anywhere we please, and it doesn't matter if it wrecks the performance of the telescope because it'll be someone else's problem, not ours." I'm sure you know that nothing could be further from my sentiment; although NRAO is not to be operating the telescope after July, I believe there is a great deal of useful science to be done with the telescope. I would like to see NRAO's investment (and our engineers' efforts over the years) continue to be put to the best possible use, for the benefit of science.

The issue has now become political. Advice please!

Cheers,  
Darrel.

Subject: 12 Meter

Date: Fri, 12 May 2000 17:39:25 -0700 (MST)

From: Darrel Emerson <demerson@NRAO.EDU>

To: pvandenb@NRAO.EDU

CC: Jeff Mangum <jmangum@NRAO.EDU>, Dale Webb <dwebb@NRAO.EDU>, Jeff Kingsley <jkingsle@NRAO.EDU>, Peter Napier <pnapier@NRAO.EDU>

Hi Paul,

This topic seems to have blown up out of all proportion, and facts have become distorted. I've received a message about this from Loris Magnani (Jeff or I will be talking to him this weekend when he's back at KP), Dale Webb has received a somewhat irate telephone call from Buddy



Powell at Steward Observatory, and you've just received the message from Peter Strittmatter.

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The issue has now become political. Advice please!

Cheers,

Darrel.

Subject: 12 M Telescope

Date: Fri, 12 May 2000 17:16:51 -0700

From: Darrel Emerson <demerson@NRAO.EDU>

Organization: NRAO

To: pvandenb@NRAO.EDU

Some additional correspondence.

Cheers,  
Darrel.

----- Original Message -----

Date: Thu, 11 May 2000 13:53:39 -0400 (EDT)  
From: loris@milan.physast.uga.edu

Dear Darrel,

I have just finished the first of two observing runs on the 12 meter (the next one runs from Saturday to Tuesday). Everything went well (we don't need the MAC, so we haven't suffered from its glitches). However, while I was up here I heard a rumor that some of your engineering staff is thinking of cutting a hole in the reflector surface to accommodate an optical telescope for pointing tests. Now, normally, how you run the 12-meter is not my business, but these are not normal times for the 12m. As a member of the consortium which is going to submit a proposal to the NSF to continue operations here, I find it highly distressing that something like this is being contemplated. I think you should give very serious consideration to this issue before embarking on it. I am leaving the mountain within the hour but I will be back on Saturday evening for my run and I will be here through Wednesday if you wish to discuss this further.

Best Regards,  
Loris Magnani

Subject: 12m holes  
Date: Fri, 12 May 2000 13:28:13 -0700  
From: Peter Strittmatter <pstrittm@as.arizona.edu>  
To: demerson@NRAO.EDU  
CC: pvandenb@NRAO.EDU, bpowell@as.arizona.edu

Dear Darrell,

I hear from Buddy Powell that NRAO intends to cut a hole in the 12m reflector in order to do some optical pointing tests. I also gather that the hole would remain for anyone taking over the telescope. If the preceding statements are true, I can only say I would view it as an act of enormous bad faith - as well as little utility to any other project - to do this within a few weeks of handing over the 12m to another scientific user group. As you know Steward is attempting to form a user consortium to continue 12m operations. I therefore request that no such hole be cut - and in any event, that no such action be taken without prior consultation with the NSF (the owners of the 12m) and prospective users groups. Thank you for your cooperation in this matter  
Peter Strittmatter

Subject: FW: NRAO 12-meter telescope  
Date: Fri, 5 May 2000 09:47:04 -0400  
From: "Breckinridge, James B" <jbreckin@nsf.gov>  
To: "Dickman, Robert L" <rdickman@nsf.gov>,  
"pvandenb@nrao.edu"  
<pvandenb@NRAO.EDU>

> -----Original Message-----

> From: loris [SMTP:loris@milan.physast.uga.edu]  
> Sent: Friday, May 05, 2000 9:50 AM  
> To: jbreckin@nsf.gov  
> Subject: NRAO 12-meter telescope

>

>

> Dear Dr. Breckinridge,

>

> As an active radio astronomer (I will be using the 12-meter next week!)  
> I urge you to institute a coherent policy for dealing with 12m  
> takeover proposals in a fair and timely manner. The tempestuousness of  
> the proposed closing date by NRAO should not preclude the NSF from  
> dealing with the situation.

>

> Additionally, it would be helpful to get NRAO to inventory and tabulate  
> the spare parts and test equipment which would be part of any transferral  
> of the 12-meter operations.

>

> Thank you for your time,  
> Loris Magnani  
> Associate Professor of Astronomy  
> University of Georgia  
> Athens, GA

>

>

>

>

> Azh nazg durbataluk, azh nazg gimbatul,  
> Azh nazg thrakataluk agh burzum ishi krimpatul!

>

> -- J. R. R. Tolkien --

>

Subject: [Fwd: [Fwd: Email/Understanding]]  
Date: Thu, 27 Apr 2000 08:46:48 -0400  
From: Jim Desmond <jdesmond@NRAO.EDU>  
To: pvandenbout@NRAO.EDU

-----  
Part 1.2 Type: message/rfc822  
Encoding: 7bit

Subject: [Fwd: revised 12 Meter system description]  
Date: Mon, 24 Apr 2000 15:17:19 -0700  
From: Darrel Emerson <demerson@NRAO.EDU>  
Organization: NRAO  
To: jbreckin@nsf.gov  
CC: rdickman@nsf.gov, pvandenb@NRAO.EDU, jmangum@NRAO.EDU

Hi Jim,

Here are 4 paragraphs (provided for me by Jeff Mangum) that I think cover what you need for the 12 Meter Telescope solicitation. If there's anything else, please let me know.

Regards,  
Darrel Emerson.

---

#### General Description:

The NRAO 12 Meter Telescope began as the 36 Foot Telescope, the telescope responsible for the birth of millimeter-wavelength molecular astronomy. During a period of explosive growth in this new area of astronomical research dozens of molecular species known to exist in the interstellar medium were first detected at the 36 Foot. In 1984, the telescope's reflecting surface and surface support structure were replaced and the 36 Foot was re-christened the 12 Meter. Subsequently, the scientific program has evolved from one dominated by observing programs in astrochemistry to one with a broader mix of studies of molecular clouds and Galactic star formation, evolved stars, astrochemistry, and external galaxies. The 12 Meter Telescope is the only millimeter-wavelength telescope in the U.S. operated full-time as a national facility. More than 150 visitors make use of the telescope annually. It offers users flexibility and the opportunity to respond quickly to new scientific developments. The Observatory maintains low-noise receiving systems covering all atmospheric windows from 68 GHz to 300 GHz. Operational reliability throughout is emphasized. Flexible spectral line and continuum backends allow the observer to match the instrument to the scientific goals. The development of multi-beam receivers and the efficient On-The-Fly (OTF) observing technique has inaugurated a new era of high-speed source mapping on angular scales complementary to those of the millimeter-wave interferometers. The telescope control system offers great flexibility, efficiency, and convenience, and provides a proven remote observing capability.

#### Present Instrumentation:

Telescope -- The basic specifications of the 12 Meter Telescope, its site, receivers, and spectrometers are:

12m diameter paraboloid enclosed within an astrodome  
Longitude: -111 deg 36 arcmin 53.475 arcsec  
Latitude: +31 deg 57 arcmin 11.99 arcsec  
Elevation: 1914 meters (6280 feet)  
Pointing Accuracy: 5 arcseconds

## Receivers --

As many as four receivers are mounted simultaneously at offset Cassegrain foci on the telescope. Receiver selection is by means of a rotating central mirror and can be accomplished in seconds. The receivers are configured remotely from the control room with a computer-aided tuning system. The standard receiver system at the 12 Meter Telescope consists of a 4 K closed-cycle cryostat containing up to 8 SIS mixer detectors. The 12 Meter Telescope optics can accommodate four such receiver systems simultaneously. A complete set of dual-channel SIS receivers is operational over the entire 68 - 300 GHz range.

## Spectrometers --

The Observatory maintains two spectrometer systems: filter banks and an digital correlator called the Millimeter Autocorrelator (MAC). There are 8 filter bank spectrometers with resolutions ranging from 30 to 2000 kHz. The MAC consists of 8 independent tunable IF sections and a maximum of 16384 channels per receiver channel. The MAC can be configured to 1, 2, 4, and 8 independent sections. The frequency spacing per channel is variable in steps of two continuously between 781.2 kHz and 6.1 kHz for each of two IF's. The MAC produces a maximum of 800 MHz of data from samplers which operate at 1.6 GHz, but the maximum instantaneous bandwidth is limited by the receiver IF bandwidth, which is currently about 600 MHz.

Subject: 12m Closure (fwd)  
Date: Sun, 23 Apr 2000 10:11:36 -0700 (MST)  
From: Darrel Emerson <demerson@NRAO.EDU>  
To: pvandenb@NRAO.EDU

Hi Paul,

I imagine you've already seen this. Just in case not, here's a copy.

Cheers,

Darrel.

----- Forwarded message -----

----- Begin Included Message -----

Dear 12m Colleagues,

As you all know, the NRAO has announced its intention of closing down the 12m telescope effective July 31st, 2000. As you also know, many of us feel this is a bad decision for U.S. millimeter-wave astronomy and we all hope that the NRAO will reverse its decision.

In the meantime, we have learned that the NSF will entertain a proposal from an independent consortium to continue operating the telescope. Since we believe it is very important to keep the 12m in operation for the community until at least one of ALMA and LMT are in operation, we are considering submitting such a proposal to the NSF. In our opinion, over the next five

year or more, the 12m will remain an important factor in keeping the US mm-wave research effort flourishing, in enabling students to enter the field and ensuring that the US astronomy community is ready to exploit ALMA and LMT when they are completed. The 12m also provides essential zero-spacing data for interpreting interferometer observations from BIMA and OVRO.

The proposal would be submitted through the Steward Observatory of the University of Arizona. The reason for this choice is that the UA is the local university already operating telescopes on Kitt Peak. It also has a significant activity in mm- and submm-astronomy through its share of the HHT/SMT (Heinrich Hertz Submillimeter Telescope). As you can see, however, a number of individuals from other institutions are participating in this proposal and we would welcome others. We are also open to institutional participation by other universities or research organizations. This must clearly be a community effort.

Our goal is to maintain operations of the 12m for at least another 3-5 years and to do so at approximately the same level of performance as was provided by NRAO. We would also propose to make limited instrumental improvements where these would provide significant gains in capability. We understand from Paul Vanden Bout that the NRAO/ALMA engineering staff located in the Steward Observatory building on the UA campus would be able to provide advice and occasional assistance especially in the transition phase. These are, in the main, the staff currently responsible for operating and improving the 12m.

Based on the information we have received so far, and comparing with our SMT experience, we believe the 12m could be operated at its present level for approximately \$1 million per year. This is roughly 50 percent of the NRAO's current annual costs - which of course included new developments for and beyond the 12m.

While some of the observing time (say 25 percent) would be reserved for those participating in developing this proposal and in running the telescope, we would suggest that evaluation and ranking of community proposals (75%) be carried out through NRAO, which has all the necessary mechanisms in place. (Paul Vanden Bout has indicated his willingness to do this). The UA would also be willing, under this proposal, to consider increasing the fraction of its HHT/SMT it makes available to the outside community for work at frequencies of 230 GHz and higher. This would permit greater efficiencies in observations at these frequencies due to the higher elevation (10,400 ft) of Mt. Graham where the HHT/SMT is located. It might also permit some simplifications in the operation of the 12m, for example, through reduction in the number of systems required to be operational simultaneously.

We would appreciate your input on any or all of the following questions:

- 1) Do you consider it important to keep the 12m in operation until better systems become available to the community?
- 2) Would you be willing to contribute to writing the science section of the proposal?
- 3) Do you have - or expect to have - students who would use the 12m?
- 4) Are there other approaches to keeping the 12m open that you would favor?
- 5) Would your institution be interested in participating in this proposal?

6) Would you view access to the HHT/SMT as a benefit for your science program?

Responses should be e-mailed to: 12mgroup@as.arizona.edu.

Thank you for reading this letter. We thank you in advance for your response.

John Bieging (Arizona)  
Phil Appleton (Iowa State)  
Ed Churchwell (Wisconsin)  
Todd Clancy (Space Science Institute, Colorado)  
Alyssa Goodman (Harvard)  
Carl Heiles (U.C. Berkeley)  
Loris Magnani (Georgia)  
Lucy Ziurys (Arizona)

----- End Included Message -----

Subject: item for AAS Newsletter of 2000 June  
Date: Mon, 10 Apr 2000 13:44:59 -0600 (MDT)  
From: Joan Wrobel <jwrobel@ao.nrao.edu>  
To: lscholz@as.org  
CC: bclark@zia.ao.nrao.edu, julvesta@zia.ao.nrao.edu,  
jwrobel@zia.ao.nrao.edu, mgoss@zia.ao.nrao.edu,  
pjewell@zia.ao.nrao.edu, pvandenb@zia.ao.nrao.edu, stg@jb.man.ac.uk

2000 April 10

Dear Ms. Scholz,

The NRAO requests that you run the following item in the AAS Newsletter of 2000 June. Please feel free to contact me if you have any questions about this item.

Regards,  
Joan Wrobel  
NRAO, Socorro NM

(begin item)

=====

### CALL FOR NRAO OBSERVING PROPOSALS

Astronomers are invited to submit proposals for observing time on the NRAO Very Large Array (VLA) and Very Long Baseline Array (VLBA):

| Instrument | Deadline         | Observing Period    | Note                        |
|------------|------------------|---------------------|-----------------------------|
| VLA        | ..... 2000 Oct 1 | 2001 Feb - 2001 May | B config/max baseline 11 km |
| VLBA       | ..... 2000 Oct 1 | 2001 Feb - 2001 May |                             |

There is no call for proposals to the 12 Meter Telescope, as it is to be closed at the end of the current observing season, 2000 July. The NRAO 140 Foot Telescope was closed in 1999. It is expected that the

new Green Bank Telescope will be operational late this year or early 2001; a call for proposals will be made at a later date.

The NRAO and the European VLBI Network jointly handle proposals for observing time on the Global VLBI Network. The deadline is 2000 Oct 1 for the sessions in 2001 Feb and May/Jun.

Further information on NRAO instruments and proposal submission routes is available from the NRAO home page at [www.nrao.edu](http://www.nrao.edu).

=====  
(end item)

Subject: Re: Proposal  
Date: Mon, 10 Apr 2000 10:40:03 -0700  
From: Peter Strittmatter <[pstrittm@as.arizona.edu](mailto:pstrittm@as.arizona.edu)>  
To: Paul Vanden Bout <[pvdandenb@NRAO.EDU](mailto:pvdandenb@NRAO.EDU)>

Paul,  
Thanks for the quick reply. Ranking is exactly what I had in mind. We would do the actual scheduling. Thanks again.  
Peter

Paul Vanden Bout wrote:

> Peter -- No problem with first paragraph. Regarding the allocation of time,  
> I have a detail question: we could easily referee and rank the proposals.  
> Actual scheduling would involve a lot of work and direct interaction with  
> your people. I take it that is not what you had in mind; a simple  
> refereeing and ranking and provision to you of the reports is OK. Paul  
>  
> Peter Strittmatter wrote:  
>  
>> Paul,  
>>  
>> This is a follow up on our previous discussions (and on my email of  
>> 3/20) concerning a possible consortium proposal to take over the 12m.  
>> The leaders of the effort are about to send out an email to other  
>> interested parties. The contents are still being iterated but one of the  
>> paragraphs contains the following statement, which is my recollection of  
>> one of our phone discussions. Could you confirm that this is OK - or let  
>> me know how it might be changed. (I will not be a signatory to the  
>> letter but I was the source of the information so I thought it better to  
>> check).  
>>  
>> "We understand from Paul Vanden Bout that the NRAO/ALMA engineering  
>> staff  
>> located in the Steward Observatory building on the UA campus would be  
>> able to provide advice and occasional assistance especially in the  
>> transition phase. These are, in the main, the staff currently  
>> responsible for operating and improving the 12m."  
>>  
>> Also, we discussed the possibility of having existing NRAO committees  
>> evaluate the proposals for "community access" time. This would operate  
>> in essentially the same way as NOAO currently assigns HET and MMT time.



>> May I assume that you have no problem with this?

>>

>> Peter

Subject: Re: Proposal

Date: Mon, 10 Apr 2000 11:38:49 -0400

From: Paul Vanden Bout <pvandenb@NRAO.EDU>

To: Peter Strittmatter <pstrittm@as.arizona.edu>

Peter -- No problem with first paragraph. Regarding the allocation of time, I have a detail question: we could easily referee and rank the proposals. Actual scheduling would involve a lot of work and direct interaction with your people. I take it that is not what you had in mind; a simple refereeing and ranking and provision to you of the reports is OK. Paul

Peter Strittmatter wrote:

> Paul,

>

> This is a follow up on our previous discussions (and on my email of  
> 3/20) concerning a possible consortium proposal to take over the 12m.

> The leaders of the effort are about to send out an email to other  
> interested parties. The contents are still being iterated but one of the  
> paragraphs contains the following statement, which is my recollection of  
> one of our phone discussions. Could you confirm that this is OK - or let  
> me know how it might be changed. (I will not be a signatory to the  
> letter but I was the source of the information so I thought it better to  
> check).

>

> "We understand from Paul Vanden Bout that the NRAO/ALMA engineering  
> staff

> located in the Steward Observatory building on the UA campus would be  
> able to provide advice and occasional assistance especially in the  
> transition phase. These are, in the main, the staff currently  
> responsible for operating and improving the 12m."

>

> Also, we discussed the possibility of having existing NRAO committees  
> evaluate the proposals for "community access" time. This would operate  
> in essentially the same way as NOAO currently assigns HET and MMT time.  
> May I assume that you have no problem with this?

>

> Peter

Subject: Proposal

Date: Sun, 09 Apr 2000 11:28:42 -0700

From: Peter Strittmatter <pstrittm@as.arizona.edu>

To: pvandenb@NRAO.EDU

Paul,

This is a follow up on our previous discussions (and on my email of  
3/20) concerning a possible consortium proposal to take over the 12m.  
The leaders of the effort are about to send out an email to other  
interested parties. The contents are still being iterated but one of the

paragraphs contains the following statement, which is my recollection of one of our phone discussions. Could you confirm that this is OK - or let me know how it might be changed. (I will not be a signatory to the letter but I was the source of the information so I thought it better to check).

"We understand from Paul Vanden Bout that the NRAO/ALMA engineering staff located in the Steward Observatory building on the UA campus would be able to provide advice and occasional assistance especially in the transition phase. These are, in the main, the staff currently responsible for operating and improving the 12m."

Also, we discussed the possibility of having existing NRAO committees evaluate the proposals for "community access" time. This would operate in essentially the same way as NOAO currently assigns HET and MMT time. May I assume that you have no problem with this?

Peter

Subject: Request

Date: Thu, 6 Apr 2000 06:15:13 -0700 (PDT)

From: Anneila Sargent <afs@astro.caltech.edu>

To: afs@mmstar.caltech.edu, gab@gps.caltech.edu, pvandenb@NRAO.EDU

Dear Paul,

At present we do not support air travel for observers at OVRO but we usually pay room and board for up to two observers and we provide a car to drive to and from Pasadena. In cases of need, we also support observers staying in Pasadena to do data reduction.

Total costs to the grant are of order \$15,000 and typical number of non-OVRO people-trips is about 33.

I suspect that the number of people-trips might go up to 40 --50 if we tried very hard. In fact, I'd say it is unlikely we could add more than 10. If we say 40 people, support for room/board/car would increase to \$18,000. If we add a typical airfare of \$500, that's another \$20,000.

So to make our program look at all like the NRAO program would be and increase of \$23,000 at least -- if we have to load it with overhead that's about \$35,000 increase.

Of course there is a small problem in that we don't have support staff really and rely on the postdocs, students, for that. It's one reason why I don't think we could accomodate too many more people. If we were going to get serious about replacing 12-m functionality, I think we'd HAVE to add a support person -- at typical cost.

Let me know if you need any more details!  
ciao!

Anneila

Subject: 12 Meter Closing

Date: Mon, 03 Apr 2000 15:34:52 -0400

From: Billie Rodriguez <brodrigu@NRAO.EDU>

Since the announcement on February 22 that the 12 Meter Telescope is to be closed at the end of the current observing season, July 2000, I have received a number of e-mail messages, yours included, expressing concern. I have delayed answering these messages until it was possible to report on developments since the announcement. Let me begin by thanking you for your thoughtful message.

It is clear from these messages that the closure of the 12 Meter will be a loss to the astronomical community. The messages I have received cite the frequency coverage, On-the-Fly mapping capability, usefulness for obtaining zero spacing data for interferometric imaging, ability to track comets, importance to millimeter-wavelength very long baseline interferometry, and suitability for studying planetary atmospheres. That the 12 Meter has a high standard of operation as an open facility is also clearly important to its users.

We had known and planned since the proposal to build the Millimeter Array that the 12 Meter would be closed someday. Why is it being closed sooner than would have occurred in an ideal world? After years of stagnant budgets and the toll that has taken on Observatory operations, and with prospects for a continued flat budget, we were simply forced to cut the scope of our operations. That situation has not changed, and the plan remains to close the 12 Meter at the end of July this year.

ALMA activities in Tucson will continue and about half the 12 Meter staff, largely technical, will be transferred to the ALMA project. The remaining 12 Meter operational staff have been notified that their employment will end at the end of July.

There have been some expressions of interest from other organizations in running the 12 Meter as a university facility. NRAO is working with these groups to provide information on the costs associated with various aspects of operation of the telescope and other operational considerations. The 12 Meter is the property of the NSF, and any disposition of the 12 Meter requires NSF approval.

Should these proposals to run the 12 Meter as a university facility fail, we would be prepared to place items of instrumentation at existing university facilities if it would benefit the user community. To that end, a poll has been taken of 12 Meter users to guide us in such placement. I am grateful for the response to the poll and a summary is in preparation.

The operators of the existing university facilities have been asked if they can increase the observing time made available to outside users. And a study is being made of the cost of supporting travel costs for additional outside users at these facilities. The same request will be

made to operators of foreign telescopes; there already is a program at NRAO of travel support to these telescopes.

As news becomes available on these developments, it will be published in the NRAO Newsletter and posted to the NRAO web site.

Sincerely,

Paul Vanden Bout

Subject: [Fwd: Newsletter]

Date: Fri, 31 Mar 2000 13:33:57 -0500

From: Paul Vanden Bout <pvandenb@NRAO.EDU>

To: Tony Beasley <abeasley@NRAO.EDU>, rjohnson@NRAO.EDU, psmiley@NRAO.EDU

Tony -- Note the changes since the last version. Paul

----- Original Message -----

Subject: Newsletter

Date: Thu, 30 Mar 2000 21:11:59 -0500

From: Bob Dickman <rdickman@nsf.gov>

Organization: National Science Foundation

To: Paul Vanden Bout <pvandenb@NRAO.EDU>

CC: Hugh Van Horn <hvanhorn@nsf.gov>, "G. Wayne Van Citters"

<gvancitters@nsf.gov>

Go ahead with the (corrected) announcement for the Newsletter as sent by Hugh. Please note that my alternate title is Grand Hypergalactic Admiral of the Outer Dark.

Bob

WHAT WILL BECOME OF THE 12 METER?

It may be possible that some organization other than the NRAO would like to operate the 12 Meter. The NRAO is ready to advise prospective 12 Meter operators regarding the telescope. Interested parties should contact J. Desmond, Associate Director for Administration [jdesmond@nrao.edu, 804-296-0315] for information on costs of elements of operation. Information on the performance of the telescope and its instrumentation, and other operational considerations can be obtained from D. Emerson, Assistant Director for Arizona Operations [demerson@nrao.edu, 520-882-8250].

The 12 Meter facility is owned by the National Science Foundation. All questions concerning the disposition of the 12 Meter and its associated instrumentation should be directed to R. Dickman, Radio Facilities Unit Coordinator, NSF Division of Astronomical Sciences [rdickman@nsf.gov, 703-306-1822].

Paul Vanden Bout

Subject: Re: Request

Date: Thu, 30 Mar 2000 17:48:18 -0800 (PST)

From: Tom Phillips <phillips@submm.caltech.edu>  
To: Paul Vanden Bout <pvandenb@NRAO.EDU>

Hi Paul,  
The answers to your questions:

1. CSO has about 100 outside visits/yr (some people come more than once).
2. All receive subsistence/lodging support at about \$62k/yr.
3. About 15 receive airfare support at about \$18k/yr.
4. About 25 more visits might be possible and if they all received airfare and subsistence/lodging support the extra cost would be about \$45k.

All the above estimates include Caltech overhead.

Tom

On Wed, 29 Mar 2000, Paul Vanden Bout wrote:

> Dear All:  
>  
> Were the NRAO to consider subsidizing travel costs to university  
> facilities, in an attempt to mitigate some of the damage caused by the  
> closure of the 12 Meter, it would be good to know what the expense would  
> be. Would you be willing to estimate the following:  
>  
> -- what you presently spend in a year to subsidize travel by outside  
> users to your facility (both total costs and number of user-trips);  
>  
> -- what the increase would be were you able to accomodate more  
> outside users asking for time due to the closure of the 12 Meter (this  
> is obviously dependent on the amount of such time you could make  
> available).  
>  
> Many thanks,  
>  
> Paul  
>  
>

Subject: Re: Request  
Date: Thu, 30 Mar 2000 03:52:16 -0800 (PST)  
From: Anneila Sargent <afs@astro.caltech.edu>  
To: pvandenb@NRAO.EDU

Hi Paul,

I'm in Florence right now and it is BLISS! We are eating and drinking too much but I am hoping to compensate by walking 25-30 mins Uphill to work and then jogging down home. Franco will be at your meeting on ALMA (the coordinating committee) next week he says. I'm

glad I don't have to deal with European users -- Malcolm Walmsley has just described having to spend ages placating John Richer about Rx priorities -- why don't they get real?

About the funding of outside visitors: we cover room and board plus car to OVRO when necessary but never airfares. I am having geoff B. get numbers for visitors, likley cost of fares and so on and will get back to you. I will keep the fraction of users at 50% -- don't think we can go much over that but funding to visit might make a difference to quite a few.

If there are any crises -- or even lovely gossip -- I can be reached at 39 055 2752 258 (office)  
or 39 055 2344 524 (home)

usually here until 6;30--7:00 pm and home from dinner by 10 pm

ciao!  
Anneila

Subject: Request  
Date: Wed, 29 Mar 2000 15:05:53 -0500  
From: Paul Vanden Bout <pvandenb@NRAO.EDU>  
To: leo blitz <blitz@gmc.Berkeley.EDU>,  
Anneila Sargent <afs@astro.caltech.edu>,  
Peter Schloerb <schloerb@comet.astro.umass.edu>,  
phillips@submm.caltech.edu

Dear All:

Were the NRAO to consider subsidizing travel costs to university facilities, in an attempt to mitigate some of the damage caused by the closure of the 12 Meter, it would be good to know what the expense would be. Would you be willing to estimate the following:

-- what you presently spend in a year to subsidize travel by outside users to your facility (both total costs and number of user-trips);

-- what the increase would be were you able to accomodate more outside users asking for time due to the closure of the 12 Meter (this is obviously dependent on the amount of such time you could make available).

Many thanks,

Paul

Subject: Newsletter re ALMA in Tucson  
Date: Wed, 29 Mar 2000 13:44:59 -0500  
From: Robert Brown <rbrown@NRAO.EDU>  
To: bturner@NRAO.EDU, smarks@NRAO.EDU  
CC: mrafal@NRAO.EDU, pvandenb@NRAO.EDU

Barry,

I am attaching a WordPerfect file of the article you requested for the Newsletter regarding ALMA activities in Tucson. The text of this article is taken from a letter Marc Rafal wrote to all the ALMA staff. I added only the introductory paragraph. Marc is properly the author of the article and, as you can see, I have so attributed it.

Proceed as you have planned to include this article in the Newsletter. However, if Marc objects to it being in the Newsletter, then I expect you will remove it. Or stated another way, don't go to press with the Newsletter including this article unless and until you get the OK from Marc. I'm sure you understand.

Thanks,  
Bob

-----  
Name: newsletter\_rafal\_300.wpd  
newsletter\_rafal\_300.wpd Type: Corel WordPerfect 8 Document  
(application/x-unknown-content-type-WP8Doc)  
Encoding: base64

Subject: 12m - results to date  
Date: Mon, 27 Mar 2000 13:26:20 -0500  
From: Tony Beasley <tbeasley@nrao.edu>  
Organization: NRAO  
To: Paul <pvandenb@cv.nrao.edu>, brodrigu@nrao.edu

-----  
Name: 12  
12 Type: Plain Text (text/plain)  
Encoding: 7bit

Subject: NRAO 12-meter telescope  
Date: Fri, 24 Mar 2000 10:05:14 -0700 (MST)  
From: "William F. Hoffmann" <hoffmann@as.arizona.edu>  
To: hvanhorn@nsf.gov  
CC: cheiles@astron.Berkeley.EDU, giacconi@ui.edu, pvandenb@NRAO.EDU,  
rdickman@nsf.gov

Dear Hugh,

I would like to add my voice to the expressions of concern about the closing of the NRAO 12-meter telescope on Kitt Peak.

With the large investment in the mm array in Chili beginning, it makes no sense to me to terminate the one NOAO facility where both the scientific users and technical staff are dealing with the same wavelength range, scientific issues, and receiver technology appropriate for the array. During the long construction period for the new array, it is important to keep this very relevant activity going.

Also, as a unique and very productive NRAO facility, this seems to me the wrong place to cut in the face of a budget crunch.

Sincerely

Bill Hoffmann  
Steward Observatory, University of Arizona

Subject: [Fwd: FW: 12m telescope]  
Date: Fri, 24 Mar 2000 09:54:05 -0500  
From: Bob Dickman <rdickman@nsf.gov>  
Organization: National Science Foundation  
To: Paul Vanden Bout <pvandenb@NRAO.EDU>

THIS IS BEING RE-SENT AS A RESULT OF PROBLEMS WITH NSF'S FIREWALL. HUGH SENT THIS TO YOU ON WEDNESDAY.

-----  
Part 1.2 Type: message/rfc822  
Encoding: 7bit

Subject: Closure of the NRAO 12m telescope  
Date: Wed, 22 Mar 2000 15:38:59 -0500  
From: "Donald Lubowich" <DLUBOWIC@AIP.ORG>  
CC: giacconi@ui.edu, pvandenb@NRAO.EDU, rdickman@nsf.gov

Dear Dr. Van Horn,

As a faculty member at a small school not part of any consortium, I rely on the National Observatories in order to conduct my astronomical research. I am distressed that you have decided to close the NRAO 12-m telescope-particularly with such short notice. It should have been operated at least until the end of 2000 and an open meeting at the next AAS meeting should be held to discuss this closure. Our community prides itself on the way we have carefully formulated 10 year plans that prioritize our future astronomical needs for telescopes, satellites, computers, adaptive optics techniques, etc. These committees have represented all the diverse branches of astronomy and have been able to come to a consensus as to the goals of astronomy.

Important work can still be done at the 12m. My paper based entirely on data taken with the 12m has recently been accepted for publication in Nature. The 12m telescope is the only telescope fully accessible to the astronomy community and the only one appropriate for lower frequency work (70 - 230 GHz). It is one of the only telescopes that can observe at 72 GHz where the J = 1-0 lines of DCN and DCO+ are located. For example, IRAM does not have any receivers that can observe below 84 GHz.

Telescopes such as CSO give priority to high frequency and submillimeter observations because it was designed for these frequencies and therefore located in Hawaii.



Sincerely yours,  
Professor Donald Lubowich, Hofstra University and  
Senior Scientist, American Institute of Physics

Subject: Message re Tucson  
Date: Wed, 22 Mar 2000 14:58:51 -0500  
From: Paul Vanden Bout <pvandenb@NRAO.EDU>  
To: ldaddario@NRAO.EDU

Larry -- Thanks for the thoughtful message regarding Tucson. I think we all agree that we cannot wait for more than a year to make a decision regarding longer term ALMA work in Tucson. I am hopeful that the issue will be resolved very soon.

The division of the Tucson expenses into ALMA and Observatory operating budgets might require a contribution from the latter to make things work, but it is not obvious to me that this is required by any general principles.

The character of the Tucson will evolve in time to another state, inevitably. While there may be no pressing reason to rush that, nor do I see any compelling reason to maintain the status quo. What we want is a focus on ALMA. If we can achieve that in Tucson, would we compromise that advantage merely because it is more difficult elsewhere?

Sorry for the delay in responding. Stay tuned - real progress has and is being made on these issues. Your advice is always welcome.

Cheers,

Paul

Subject: Re: 12m closing down. (fwd)  
Date: Tue, 21 Mar 2000 11:09:03 -0500  
From: Paul Vanden Bout <pvandenb@NRAO.EDU>  
To: "E. Marcelo Arnal" <arnal@irma.iar.unlp.edu.ar>

Dear Marcelo:

I did get the message, and have been saving it with others to answer. Stay tuned.

Paul

E. Marcelo Arnal wrote:

> Dear Dr. van den Bout,  
> Almost three weeks ago, I'd sent you an e-mail inquiring about  
> the future fate of the 12m NRAO millimeter dish. Since I've got no reply  
> yet, I'm beginning to wonder whether this e-mail ever reached you. Below  
> you'll find the original message.  
> Looking forward to hearing from you at your earliest convenience,  
> Marcelo Arnal

>  
> \*\*\*\*\*

> \* Dr. E.M. Arnal \*  
> \* Instituto Argentino de Radioastronomia (IAR) \*  
> \* C.C. # 5, 1894 Villa Elisa, Argentina \*  
> \* =====> Phone/fax : +54-221-4254909 \*  
> \* =====> Phone: +54-221-4740230 \*  
> \* =====> e-mail: arnal@irma.iar.unlp.edu.ar (IAR) \*  
> \* =====> e-mail: arnal@fcaglp.fcaglp.unlp.edu.ar (La Plata University) \*

> \*  
> \*\*\*\*\*

> ----- Forwarded message -----  
> Date: Tue, 29 Feb 2000 16:46:58 -0300 (ARST)  
> From: "E. Marcelo Arnal" <arnal@irma.iar.unlp.edu.ar>  
> To: pvandenb@nrao.edu  
> Subject: 12m closing down.

> Dear Dr. Vanden Bout,  
> I've just got the news about the closing down of the Kitt Peak 12m  
> dish. In connection with this:  
> 1) Are there any plans to reinstall this observing facility  
> elsewhere either within States or beyond its frontiers?  
> 2) In case the answer to the former question were " no", do you  
> think it should be possible to relocate the telescope, and all its  
> associated equipment ( I'm thinking of somewhere within Argentina,  
> CASLEO? ) under certain conditions?. They could be established in some MOU  
> (or a sort of).

> This thoughts came across my mind, and perhaps they make no  
> sense, but I couldn't resist the temptation of asking you about this.

> Just for completeness, could you provide me with rough figures  
> about the budget needed to run the 12m facility?

> In the hope of hearing from you at your earliest convenience,  
> Marcelo Arnal

> \*\*\*\*\*

> \* Dr. E.M. Arnal \*  
> \* Instituto Argentino de Radioastronomia (IAR) \*  
> \* C.C. # 5, 1894 Villa Elisa, Argentina \*  
> \* =====> Phone/fax : +54-221-4254909 \*  
> \* =====> Phone: +54-221-4740230 \*  
> \* =====> e-mail: arnal@irma.iar.unlp.edu.ar (IAR) \*  
> \* =====> e-mail: arnal@fcaglp.fcaglp.unlp.edu.ar (La Plata University) \*

> \*  
> \*\*\*\*\*

Subject: 12m matters  
Date: Mon, 20 Mar 2000 18:13:19 -0700  
From: Peter Strittmatter <pstrittm@as.arizona.edu>  
To: "Hugh M. Van Horn" <hvanhorn@nsf.gov>, pvandenb@NRAO.EDU

Dear Hugh and Paul,

This is a follow-up to our 12m discussions. I very much appreciate you

both being so candid with me. There is much confusion on this topic, so your openness is very helpful. To make sure that we have understood each

other, I thought it worthwhile to write down my current understanding and to ask you to correct any errors I have made.

As far as Steward Observatory's position is concerned, our position is summarized in the email (attached) that Tom Wilson and I sent to Neal Evans in response to an enquiry from him (also attached). Our view has not changed. In the meantime, some people have suggested that Steward might participate in operating the 12m in order to avoid immediate closure.

While we still believe the best option is for NRAO to continue operations, we (as interested locals) are prepared to become part of a new operations group, provided that the task is in fact tractable. This depends on us being able to retain the services of key personnel - which in turn requires that we are able to pay them.

My understanding from our discussions over the last few days is that we all agree that closure of the 12m would represent a significant loss to US mm-wave astronomy. I believe we also agree that the extremely rapid closure has created enormous difficulties for many users -especially students. It also makes more difficult any effort to set up alternative operations arrangements. I gather that at the moment you both feel that it is impossible for NRAO to resume operations but are willing to do what you can to help other potential operators. At present, the NSF does not feel

that it could make any special provisions to maintain operations on an emergency basis. It would, however, be willing to entertain a proposal to continue support of the scientific effort at the telescope. The earliest such a proposal could be funded - assuming that it was deemed worthy - would be in FY 2001.

While all this sounds reasonable enough, it means that at least some key personnel - the operator/technicians who have received notice as of July

31st - will be lost. It seems to me that - assuming we wish to see continued operations of the 12 m as a first rate mm-wave facility for the US community - creative minds should be able to come up with a solution to this short term problem. I would be happy to discuss this further if you think it worthwhile.

Again, please correct me if I have misstated the situation. In the meantime thank you for your insights into the 12m problem.

Best wishes,

Peter

\*\*\*\*\*

Email to Neal Evans from T. Wilson and P. Strittmatter in response to Evans' enquiry (see below)

Dear Neal

Many thanks for your email of March 1 to Tom Wilson, in regard to the proposed closure of the 12m telescope on Kitt Peak and possible ways of minimizing the damage resulting from this action. We are responding on behalf of the SMTO and the University of Arizona groups but have reviewed a draft of this response with Karl Menten, the director responsible for the SMTO at the MPIfR .

Frankly, we were shocked by the precipitous decision to close the 12m and amazed that such a drastic step could be taken without proper consultation. Our view is that the 12m telescope is still a vital component of the U.S. millimeter astronomy program. There is obviously a

lot of sentiment, both among US universities and even members of NRAO, to continue operation of the 12 m. Equally clearly, there are opportunities for funding cuts elsewhere within the NRAO budget. Terminating the single mm-wave telescope at its disposal hardly seems a good way for NRAO to prepare for ALMA.

SMTO/UA have two groups of users who need the 12 m. telescope. The first is involved in 2 mm VLBI between the 12m and the SMT. This project is organized by Haystack observatory, and also involves MPIfR through Anton Zensus. The second group uses the 12m for 3mm and 2mm data, which complement shorter wavelength measurements made using the Heinrich Hertz Telescope of the SMTO. For many of these studies, the 12m receiver and backend systems are uniquely powerful among mm-wave observatories in this country; in our view, they generally out-perform those of even the 30 m IRAM telescope, although the latter compensates through its larger area. We, therefore, add our voices to those who feel that operation of the 12m telescope should continue and that the best group to do so is the current NRAO Tucson staff.

If NRAO cannot do this, the question becomes how to keep the 12m going by some other means. This could be accomplished, in principle, by a university consortium operating the 12m as a "university class" observatory. This might make the transition less abrupt since all the current equipment could be left in place and help the mm-community until

ALMA becomes a reality. It would certainly help the various groups that currently depend on the 12m for their research programs - and their students, who are vital to the success of ALMA. Depending on their access to receiver and backend expertise, this could even represent an opportunity for the future. In principle, we would be willing to discuss

cooperating with such a consortium and perhaps making SMT time available as part of a collaborative venture. This would obviously require some level of NSF support, which in our opinion would be justified, at least until the ALMA and LMT projects are further along. The question of maintaining continuity is critical here and we believe it is important

to come to some agreed course of action very soon if disaster is to be avoided.

Your letter suggests that the remaining "university" telescopes could fill the huge gap left if the 12 m closes. We believe this is unrealistic, especially on the time-scale that is required. Any claim to

match the 12m's combination of receivers and backends, climate, total observing time available etc. would be dishonest (and simply self-serving). The truth of the matter is that the 12 m has over 170 users and operates from 65 to 300 GHz with amazing efficiency. The potentially available facilities (CSO, FCRAO, SMT) are either equipped for work at higher frequencies and/or do not currently have the quality of instrumentation that would be necessary to make a significant contribution to covering the 170 users of the 12m. These users depend on state-of-the-art mm-wave receivers and stable backends, which would need to be provided at the alternate sites. Any solution of this type will take a considerable time to implement, even with NSF support. No one should be deluded into thinking that this approach offers a simple fix.

If closure cannot be avoided, a more practical approach would be to ramp

down the 12 m over a period of say 2 years and, in the meantime, build up university operations to accommodate the larger user pool. In this context, we would be willing to explore the possibility of making some portion (25%-33%) of the SMT time available to the mm-wave community. The SMT was, of course, designed and equipped to work at shorter wavelengths than the 12m but we believe that it would be possible for us to accommodate a modest fraction of the 12m work at least at 1 and 2 mm wavelength. It would, in principle, also be possible to implement observations at 3mm also although this is not in our current plans. To make this happen, we would obviously require NSF support for operations expenses (currently the SMT operations and improvement budget runs at around \$1.4 million per year and is shared between Steward and the MPIfR). In addition, it would also be essential to take over some of the 12m equipment. This would include the receiver systems (1-3mm) and the current filter banks (especially the 1MHz systems), which seem to give the best performance in the world for very high signal to noise observations. Clearly we, like anyone else, would need considerable initial assistance from NRAO's Tucson staff.

There is no obvious difficulty in reconciling our form of funding with support from NSF for community use of the SMTO system. Indeed, we would also like to see our science proposals supported on their merits by the NSF in much the same way as they do for other radio observatories, although the cost of direct operations for UA and MPIfR use are, and will continue to be, covered by those institutions. (Presumably this should be seen as a plus not a minus).

We hope that whatever happens, it will be the result of a careful, open and rational discussion, based on community need as the primary consideration. This is the spirit of the discussion above. Something has to be done quickly to recover from the current very unfortunate situation. We are, of course, willing to help in any way we can.

Finally, let us thank you for soliciting our input. . Please contact us if you have any questions.

T. Wilson

Peter Strittmatter

\*\*\*\*\*

Email from Neal evans to Tom Wilson

From: "Neal J. Evans II" <nje@strw.leidenuniv.nl>  
To: twilson@as.arizona.edu

Hi Tom,

As you know the 12 m is being closed on an unexpectedly short timescale.

I chair a committee for Paul (the Program Advisory Committee) and we are supposed to put together a short report on how the community can minimize the damage and prepare for ALMA. This includes short paragraphs on each private mm/smm observatory. The idea is to say whether one could cover some of the programs done on the 12 m, what extra resources might be needed, etc. The idea is to see if NSF would make some extra resources available. Because your telescope is funded differently, I leave it to you if you want to add something to this. If so, I need it fairly quickly (this week). It this is unclear, let me know by email or give me a call. I am on sabbatical in Leiden (31-71-527-5865).

Cheers,  
Neal

PS: congratulations on the TeraHertz line detection!

Subject: 12m closing down. (fwd)  
Date: Mon, 20 Mar 2000 15:45:52 -0300 (ARST)  
From: "E. Marcelo Arnal" <arnal@irma.iar.unlp.edu.ar>  
To: pvandenb@NRAO.EDU  
CC: rimorras@isis.unlp.edu.ar

Dear Dr. van den Bout,

Almost three weeks ago, I'd sento you an e-mail inquiring about the future fate of the 12m NRAO millimeter dish. Since I've got no reply yet, I'm beginning to wonder wether this e-mail ever reached you. Below you'll find the orginal message.  
Looking forward to hearing from you at your earliest convenience,  
Marcelo Arnal

\*\*\*\*\*

\* Dr. E.M. Arnal \*  
\* Instituto Argentino de Radioastronomia (IAR) \*  
\* C.C. # 5, 1894 Villa Elisa, Argentina \*

\* =====> Phone/fax : +54-221-4254909 \*  
\* =====> Phone: +54-221-4740230 \*  
\* =====> e-mail: arnal@irma.iar.unlp.edu.ar (IAR) \*  
\* =====> e-mail: arnal@fcaglp.fcaglp.unlp.edu.ar (La Plata University) \*  
\*  
\* \*  
\*\*\*\*\*

----- Forwarded message -----  
Date: Tue, 29 Feb 2000 16:46:58 -0300 (ARST)  
From: "E. Marcelo Arnal" <arnal@irma.iar.unlp.edu.ar>  
To: pvandenb@nrao.edu  
Subject: 12m closing down.

Dear Dr. Vanden Bout,  
I've just got the news about the closing down of the Kitt Peak 12m dish. In connection with this:  
1) Are there any plans to reinstall this observing facility elsewhere either within States or beyond its frontiers?  
2) In case the answer to the former question were " no", do you think it should be possible to relocate the telescope, and all its associated equipment ( I'm thinking of somewhere within Argentina, CASLEO? ) under certain conditions?. They could be established in some MOU (or a sort of).

This thoughts came across my mind, and perhaps they make no sense, but I couldn't resist the temptation of asking you about this.  
Just for completeness, could you provide me with rough figures about the budget needed to run the 12m facility?

In the hope of hearing from you at your earliest convenience,  
Marcelo Arnal

\*\*\*\*\*  
\* Dr. E.M. Arnal \*  
\* Instituto Argentino de Radioastronomia (IAR) \*  
\* C.C. # 5, 1894 Villa Elisa, Argentina \*  
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\*  
\* \*  
\*\*\*\*\*

Subject: Re: Image of the NRAO  
Date: Mon, 20 Mar 2000 11:27:46 -0500  
From: Paul Vanden Bout <pvandenb@NRAO.EDU>  
To: "Mark A. Gordon" <mgordon@NRAO.EDU>

Dear Mark:

I am sorry to hear that upset people are saying bad things about us. The statements you cite are false, of course, as you realize. Should we say we made a mistake because individuals choose to mis-represent the facts? I am not ready to do that.

More to the point, there appear to be efforts underway to continue the 12m as a university operation. That might make sense and I could support such a plan if it appeared to be sensible. It would require funding from NSF, which requires a proposal that receives good reviews. An obstacle to that, pointed out to me by several community leaders outside of NRAO, is that some of the people associated with this effort are trying to gain ground by throwing mud at the rest of radio astronomy and the NRAO. This is divisive, and I know people who have dis-associated themselves from the effort because they were offended.

Morale in Tucson among the NRAO staff is an issue of concern. I hope we can soon resolve the matters under our control and get beyond that.

Paul

Mark A. Gordon wrote:

> Dear Paul,  
>  
> I write to suggest that closing the 12m telescope may cause lots of harm to  
> the NRAO.  
>  
> In recent years, the usefulness of the national astronomy centers has been  
> increasingly questioned by the user community. I often hear complaints  
> about how the centers look after their own employees first and the community  
> second.  
>  
> No matter what the facts are, we tend to be judged by the support we give to  
> astronomers. Let me be frank. Away from ALMA and Users meetings that  
> include community  
> representatives, community astronomers criticise the NRAO for mismanaging  
> the GBT, for sustaining unnecessary expensive administrative/research  
> facilities in Charlottesville, for converting the VLA from a visitor  
> research facility into an internal research facility that competes with  
> rather than serves university research programs, squanders millions on a  
> software program (AIPS++) that is unnecessary and does not function, runs a  
> VLBA that sits idle about 50% of the time and is used primarily by  
> foreigners, and has turned ALMA into a complicated expensive venture.  
> Closing an over-subscribed, "lean and mean" facility like the 12 m adds  
> grist  
> to their mills of discontent.  
>  
> An unfortunate fall-out to the closure announcement is the creation of  
> terrible morale among the Tucson ALMA people. At least 50% of them are  
> actively looking for jobs elsewhere. They have lost confidence in NRAO  
> management and the NSF funding process. Some will be difficult to replace.  
>  
> Are we big enough to announce that we made a mistake?  
>  
> There has got to be a better way to absorb a \$2M shortfall in funds. I hope  
> that you can find one.  
>  
> Constructively intended,  
>



> Mark  
>  
> -----  
> Mark A. Gordon  
> National Radio Astronomy Observatory  
> 949 North Cherry Avenue, Bldg 65  
> Tucson, AZ 85721-0655  
> Tel: (520) 882-8250 x112  
> Fax: (520) 882-7955

Subject: Image of the NRAO  
Date: Sat, 18 Mar 2000 19:22:33 -0700  
From: "Mark A. Gordon" <mgordon@NRAO.EDU>  
To: "Vanden Bout A." <pvandenb@NRAO.EDU>  
CC: <hvanhorn@nsf.gov>, "Dickman R." <rdickman@nsf.gov>, <rgiacconi@au.org>

Dear Paul,

I write to suggest that closing the 12m telescope may cause lots of harm to the NRAO.

In recent years, the usefulness of the national astronomy centers has been increasingly questioned by the user community. I often hear complaints about how the centers look after their own employees first and the community second.

No matter what the facts are, we tend to be judged by the support we give to astronomers. Let me be frank. Away from ALMA and Users meetings that include community representatives, community astronomers criticise the NRAO for mismanaging the GBT, for sustaining unnecessary expensive administrative/research facilities in Charlottesville, for converting the VLA from a visitor research facility into an internal research facility that competes with rather than serves university research programs, squanders millions on a software program (AIPS++) that is unnecessary and does not function, runs a VLBA that sits idle about 50% of the time and is used primarily by foreigners, and has turned ALMA into a complicated expensive venture. Closing an over-subscribed, "lean and mean" facility like the 12 m adds grist to their mills of discontent.

An unfortunate fall-out to the closure announcement is the creation of terrible morale among the Tucson ALMA people. At least 50% of them are actively looking for jobs elsewhere. They have lost confidence in NRAO management and the NSF funding process. Some will be difficult to replace.

Are we big enough to announce that we made a mistake?

There has got to be a better way to absorb a \$2M shortfall in funds. I hope that you can find one.

Constructively intended,

Mark

-----  
Mark A. Gordon  
National Radio Astronomy Observatory  
949 North Cherry Avenue, Bldg 65  
Tucson, AZ 85721-0655  
Tel: (520) 882-8250 x112  
Fax: (520) 882-7955

Subject: ALMA Receivers  
Date: Fri, 17 Mar 2000 14:55:14 -0700  
From: John Payne <jmpayne@NRAO.EDU>  
Organization: National Radio Astronomy Observatory  
To: Marc Rafal <mrafal@NRAO.EDU>, Bob Brown <rbrown@NRAO.EDU>,  
Darrel Emerson <demerson@NRAO.EDU>, pvandenbout@NRAO.EDU,  
mpetty@NRAO.EDU

Dear Marc,

One of the fellows who works for me here in Tucson gave me a copy of the letter that you wrote him regarding his transfer to the ALMA project. I must tell you that I was somewhat dismayed at the contents as the conditions of employment outlined will, at least in my judgement make the completion of the test interferometer extremely unlikely. It seems to me that failure to complete the test interferometer will have a disastrous effect on the ALMA project and must not be allowed to happen.

It is unreasonable to expect a group of people to work on a very difficult project under extreme time pressure when a possible (likely?) reward on completion is to be either laid off or offered a transfer to a place they have no wish to be. Bob Brown's comment to me that the group in Tucson should "prove" itself by working hard is unrealistic and somewhat insulting. I have no interest in attempting to supervise a group under these conditions although I remain most enthusiastic about the test interferometer in general.

For various reasons I believe that the only group within NRAO that has a chance of completing the test interferometer is the present combination of the groups in Socorro and Tucson. I will not weary you with a complete list of reasons, although I would be happy to do so if you wish. The main reasons are a great deal of experience in the building of millimeter wavelength receivers and the building and maintenance of 4k systems. As regards the 4k systems in the CDL I should point out that those systems were designed, built and installed by people from my group here in Tucson. This is a point that is sometimes missed by visitors to the CDL.

I have to tell you that the prospect of the Tucson facility disappearing altogether is a very recent development. Last September a meeting was held in Tucson that concerned the division of work between the US and Europe. A very difficult matter to resolve was where the ALMA receivers would be assembled and tested. It was difficult because this job was regarded as one of the most significant parts of the ALMA construction. A detailed description of this task is not relevant to the present discussion: it is sufficient to say that it was regarded as a "plum" by the people at the meeting: myself, Bob Brown, Richard Wade and Wolfgang Wild. In order to solve the dilemma Richard suggested the concept of "Regional Centers"-one ( or more ) in Europe and

one in the US. These Centers would be responsible for the integration and testing of the receivers. The outcome of the meeting was that Tucson would give up the cryogenic development program being led by Larry D'Addario, that would be transferred to RAL in the UK and ,in return the assurance was given that the photonic development would remain in Tucson and that Tucson would be the US Regional Center. I was reasonably pleased at the outcome of the meeting and I believe Darrel was too. I was now able to assure everyone that, provided the ALMA construction was funded the Tucson site had a long future ahead of it.

It seemed to me at the time that this was a good solution. The ALMA receivers follow naturally from the experience of building the test interferometer.

The necessary infrastructure and capabilities are steadily built up in an un-interrupted manner and are ready when construction starts. Tucson has a fine labor pool and the building up of the staff should be easily managed.

Now, with 12m support ending the space available should be sufficient to support the integration and test facility so everything should fall into place quite nicely.

So what can we do? It seems to me that there is really only one course of action and that is for the NRAO management to honor the promise made last September. I strongly believe that the best course of action for the project is to announce that the plans for the construction phase on the US side involve Tucson as a Regional Center for receiver integration and testing to follow after the installation and testing of the test interferometer. Such an announcement will result in the group here being kept intact and will permit the completion of the test interferometer. This must be done soon. I happen to know that two key people are already interviewing for jobs so there really is some urgency here.

I will be in Charlottesville next week and would be happy to meet with you to talk this over.

Regards,  
John

Subject: Closing the 12-m Telescope

Date: Thu, 16 Mar 2000 11:56:56 -0500

From: "Michael J. Mumma" <mmumma@kuiper.gsfc.nasa.gov>

To: hvanhorn@nsf.gov, rdickman@nsf.gov, pvandenb@NRAO.EDU, giacconi@au.edu

CC: l.sage@naturedc.com, cheiles@astron.Berkeley.EDU,  
womack@r2d2.stcloudstate.edu

March 16, 2000

Dr. Hugh van Horn  
Division of Astronomical Science  
National Science Foundation

Dear Hugh -

While on an observing run, I learned of the proposed (sudden) closing of the 12-meter telescope on Kitt Peak. This would be disastrous for millimeter wavelength astronomy in the United States. The 12-m provides important access to this wavelength domain for our national astronomical community. The 12-meter telescope is crucial for studies of key molecular species such as methanol and carbon

monoxide, to name but two. These measurements provide essential information on the organic chemistry, kinematics, and structure of diverse classes of objects including comets, hot cores, dense clouds, and protoplanetary disks around young stars. These are some of the 'hottest' areas of astronomy today.

Access to the 12-m telescope is vital for training the next generation of young astronomers who will form the backbone of the future Alma user community. Shutting it down before Alma is operational is not wise, in my opinion.

I urge you and others to take the steps needed to ensure that the 12-meter remains open, fully supported, and accessible to the astronomical community.

best regards,

Mike

\*\*\*\*\*

Dr. Michael J. Mumma  
Chief Scientist, Planetary Research  
Laboratory for Extraterrestrial Physics  
Code 690  
Building 2 Room 150  
NASA Goddard Space Flight Center  
Greenbelt, MD 20771

voice: 301-286-6994  
fax: 301-286-0212

mmumma@lepvax.gsfc.nasa.gov

\*\*\*\*\*

Subject: 12 Meter Press Release  
Date: Thu, 16 Mar 2000 09:24:42 -0500  
From: Billie Rodriguez <brodrigu@NRAO.EDU>  
To: pvandenb <pvandenb@NRAO.EDU>

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Name: 12mnr2.wpd  
12mnr2.wpd Type: Corel WordPerfect 8 Document  
(application/x-unknown-content-type-WP8Doc)  
Encoding: base64

Subject: 12 m closing  
Date: Wed, 15 Mar 2000 11:27:43 -0600 (CST)  
From: Margaret Meixner <meixner@astro.uiuc.edu>  
To: rdickman@nsf.gov, pvandenb@NRAO.EDU, giacconi@ui.edu, hvanhorn@nsf.gov  
CC: Margaret Meixner <meixner@astro.uiuc.edu>

Dear Hugh van Horn, Bob Dickman, Paul vanden Bout and Riccardo Giacconi,

I am concerned about the closing of the 12 m telescope. I have relied on using the 12m to obtain zero spacing flux maps for my BIMA data. I am a regular user of BIMA and the 12 m to study the mass loss from evolved stars. I have a PhD student currently using both of these facilities for his PhD Thesis.

In the long run, I understand that closing the 12m will occur. But don't you think July is a little too soon? Perhaps when there is light at the end of the tunnel on the ALMA project is an appropriate time. In any case, consulting the 12 m users may be useful in determining when to close the 12 m.

Sincerely,

Margaret Meixner  
Assistant Professor  
Univ. of Illinois  
Dept. of Astronomy

Subject: Closure of 12m  
Date: Wed, 15 Mar 2000 15:01:43 +0300  
From: Vyacheslav Slysh <vslysh@ASC.rssi.ru>  
To: pvandenb@NRAO.EDU, hvanhorn@nsf.gov, rdickman@nsf.gov  
CC: giacconi@ui.edu, l.sage@naturedc.com, cheiles@astron.Berkeley.EDU

I was deeply upset by an announcement from NRAO about planned closure of 12m telescope at Kitt Peak. This was one of the most efficient telescopes in terms of scientific production, more efficient than 30m Pico Veleta telescope. One may recall discovery of redshifted CO emission made first at Kitt Peak by VandenBout and Bob Brown a couple of years ago. We at Astro Space Center in Moscow were happy users of 12m , with 5 papers produced. We were the first to successfully use 12m in the remote observing mode via Internet making our observations from our office in Moscow, about 6000 km away. Of course ALMA will replace 12m at a much higher level but this will happen in 5 to 10 years. Meanwhile 12m telescope could serve to the astronomical community not only in the USA but also in many other countries leading to establishment of new links between scientists. Also ALMA will not cover the Northern sky where many interesting objects are located, like Andromeda Nebula or W3OH. I hope that the decision to close 12m telescope will be reconsidered and its lifetime will be extended for at least 5 years.

With best regards,  
Viacheslav Slysh  
Deputy Director,  
Astro Space Center,  
Lebedev Physical Institute,  
Moscow, Russia

Subject: The 12m telescope should continue to work!  
Date: Tue, 14 Mar 2000 00:50:15 -0500 (EST)  
From: Vladimir Strel'nitski <vladimir@altair.mmo.org>  
To: rdickman@nsf.gov

CC: giacconi@ui.edu, pvandenb@NRAO.EDU, hvanhorn@nsf.gov

Dear Drs. Dickman, Giacconi, Vanden Bout, and Van Horn,

We would like to join our voices to the quickly growing chorus of those who are shocked by the short-notice decision to close the 12-m telescope.

Besides other arguments against this action, which, we are sure, you have lately received from many users, we would like to mention the unparalleled capabilities of the 12-m telescope for TEACHING young people radio astronomy. So much in this instrument is perfectly suited for this important task: its unique record of big discoveries, its modern receiver technology, its perfectly working remote observational regime, and its user-friendly team of operators and other staff.

We do not know much about other REU sites, but the Maria Mitchell Observatory was able to introduce to the basics of observational radio astronomy 18 REU students during the last 3 years -- via a concrete, team research project, performed both remotely and at the site. Two student presentations at the AAS meetings and a paper with four student co-authors, being prepared for the Astronomical Journal, are the results of this project. Many of the student participants were skeptical about radio astronomy before our observations. They completely changed their attitude after the observations.

The closure of the 12m, at the climax of its performance, will cause a serious harm to the present and, via the loss of potential specialists, to the future of the American radio astronomy. We are sure that none of the "measures" being discussed can really make up for this loss.

Sincerely,

Peter B. Boyce  
Chair, Astronomy Committee,  
Maria Mitchell Association

Vladimir Strel'nitski,  
Director, Maria Mitchell Observatory

Subject: 12m as developmental tool for ALMA  
Date: Sat, 11 Mar 2000 11:41:59 -0800 (PST)  
From: tamara helper <thelfer@toby.Berkeley.EDU>  
To: pvandenb@NRAO.EDU

CC: giacconi@ui.edu, rdickman@nsf.gov, hvanhorn@nsf.gov,  
agoodman@cfa.harvard.edu, ishapiro@cfa.harvard.edu,  
jmoran@cfa.harvard.edu, lgreenhill@cfa.harvard.edu,  
dwilner@cfa.harvard.edu, pmyers@cfa.harvard.edu, mreid@cfa.harvard.edu,  
heiles@astron.Berkeley.EDU, lada@astro.ufl.edu, jpwillia@tuc.nrao.edu,  
bania@INANNA.BU.EDU, reach@ipac.caltech.edu, phy132@ukcc.uky.edu,  
sage@naturedc.com, turner@astro.ucla.edu, jbieging@as.arizona.edu,  
lziurys@as.arizona.edu, welch@astron.Berkeley.EDU,  
Leo Blitz <blitz@gmc.Berkeley.EDU>, Stuart Vogel <vogel@astro.umd.edu>,  
awootten@NRAO.EDU, demerson@NRAO.EDU, afs@astro.caltech.edu,  
churchwell@astro.wisc.edu, nje@astro.as.utexas.edu,

11 March 2000

Dear Paul,

I am writing to express my concern over your recent announcement to close the NRAO 12m telescope. I am aware that other individuals and groups have written you regarding the impact of the 12m's closure on current millimeter research and on the training of future millimeter observers, and I fully endorse those letters. In this note, I would like to emphasize that the On-the-Fly mapping capability at the 12m is uniquely well suited for studies of combining single dish and interferometric maps, and I urge you to consider the operation of the 12m to be a critical tool for ALMA development.

As you know, the extraordinary demands for excellent pointing accuracy, surface accuracy and gain stability on the antenna design for ALMA are driven by the needs for mosaicing and collecting reliable single-dish data. This is because at millimeter and submillimeter wavelengths, interferometers routinely resolve out flux from large structures. For example, from recent simulations that I have done, a gaussian source that is only 7 arcseconds FWHM that is mosaiced by ALMA at 345 GHz, a frequency expected to be routinely used at ALMA, will have its peak flux intensity attenuated by 5% unless total power data are introduced. In addition to attenuating the source flux, deconvolution limitations caused by the incomplete sampling may introduce false structures into the maps. Without the addition of total power data, these effects will seriously limit the image fidelity.

Current simulations are not up to the task of realistically modeling the recovery of large-scale structures through data combination. When experts in the field simulate mosaiced observations for ALMA, the single dish data is invariably introduced in the highly idealized way of including a single, total power ( $uv=0,0$ ) point. While the simulations are encouraging, they are also entirely unrealistic, since they do not include the real-life problems that are caused by imperfect pointing, a variable and perhaps unknown primary beam shape, and other instrumental and atmospheric effects. Equally important, I know of no example where real single-dish data is incorporated in an interferometric map using this simplistic technique -- my experience shows that it just doesn't work for BIMA+12m data. Instead, there are various techniques that work in the  $uv$ -plane or the map plane that depend not just on the idealized  $(0,0)$  point, but also on the short-spacing data measured by the single dish. Right now, the simulations and our real-life experiences are a long way apart from each other. It would take a nontrivial effort to simulate real-life errors for ALMA studies.

The On-the-Fly mapping capability at the 12m makes it absolutely unique in its suitability for studies of combining single dish and interferometric maps. This is because of the ambitious way the 12m staff has implemented OTF mapping, which helps meet the challenges of achieving good absolute flux calibration and good pointing accuracy. With OTF mapping, data collected over several days or even months (such times may be necessary for mapping large regions of the sky) have much smaller systematic errors than at a conventional, "point-and-shoot" telescope. Because an individual map is

completed in less than about 20 minutes, the pixel-to-pixel flux calibration is excellent, even in the final average of many individual maps. Also, since the telescope encoder positions are read every 0.01 seconds and folded into the spectra every 0.1 seconds -- a truly ambitious implementation -- the internal pointing consistency is excellent. As part of my research, I have further developed an algorithm to correct for long-term drifts in the single-dish pointing, a technique that would be impractical to use with conventional mapping techniques. Since systematic errors in the single dish data are arguably the current limiting factors in making accurate combinations, it is enormously helpful to have the 12m's OTF capability available.

While ALMA will depend on the successful introduction of single dish data, users of all four of the current millimeter interferometers as well as many of the centimeter observatories have all acknowledged and endorsed the addition of single dish data into their maps. I was particularly struck by this observation at the NRAO Mosaicing Workshop, held in July 1999 in Socorro, where an international group of about 30 experts in interferometric mosaicing met to discuss techniques for developing tools for making accurate mosaics. Without exception, the participants agreed that the incorporation of single dish data was essential for making accurate maps. This was particularly striking to me because of the rarity with which users currently actually do make zero- and short-spacing measurements to incorporate into their interferometric maps. Even now, there are only a handful of combined maps in the literature. The enthusiasm expressed at the meeting suggested to me that more and more groups are actively interested in collecting single dish data for this purpose.

As one of the PIs of the BIMA Survey of Nearby Galaxies, I am leading what I believe is the largest effort to date to collect single-dish data to incorporate into interferometric maps. From April 1998 through the present, our group has collected some 700 hours of 12m data to complement our BIMA SONG mosaics. I have also spent much of the past two years studying techniques for combining the BIMA and 12m data. As one of the 12m TAC referees commented regarding a recent BIMA SONG proposal, "This group is one of the few to really agonize over the questions of how to combine single dish and interferometer data reliably. Lessons learned from this exercise may be relevant for both the hardware and software design decisions for ALMA, or for the development of improved deconvolution algorithms." Even though our group is learning an enormous amount about combination techniques, I am under no illusions that this is a solved problem. There is no substitute for having more and more users study this issue using real data from a variety of simple and complex astronomical sources.

I believe that the growing interest in doing combinations at the current interferometers, together with the need for this technique for ALMA, combine to make a powerful argument for keeping the 12m open. I urge you to consider the unique OTF mapping capabilities at the 12m to be a critical tool for ALMA development and to find some means to continue to operate the 12m until other appropriate tools are available to the current and future millimeter communities.

Sincerely,



Tamara T. Helfer  
Research Astronomer  
UC Berkeley

Subject: Re: Draft Announcement - Comments solicited: AUI, NRAO, and NSF  
Date: Fri, 10 Mar 2000 17:10:45 -0700 (MST)  
From: Darrel Emerson <demerson@NRAO.EDU>  
To: Paul Vanden Bout <pvandenb@NRAO.EDU>  
CC: rdickman@nsf.gov, Riccardo Giacconi <giacconi@ui.edu>,  
Jim Desmond <jdesmond@NRAO.EDU>

Hi Paul,

I have no comments on your announcement. Quite apart from any formal NSF obligations, it's the right thing to do in the circumstances.

Cheers,  
Darrel.

On Fri, 10 Mar 2000, Paul Vanden Bout wrote:

> 10 March 2000  
>  
> MEMORANDUM  
>  
> To: R. Dickman  
>  
> From: P. Vanden Bout  
>  
> Subject: Announcement of Availability of 12 Meter Telescope for Another  
> Operator - 2nd draft  
>  
> This is a draft of an announcement that NRAO would place on its web  
> site, in the Commerce Business Daily, in an email message to all NRAO  
> users, in the NRAO Newsletter, and the AAS Newsletter. Please check  
> with the relevant auth