



# THE POINT SOURCE

A quarterly newsletter for employees of The National Radio Astronomy Observatory

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Winter 1995

## 1996 Budget Request - First Signs of Improvement?

As all of us know, 1995 is going to be a difficult year for NRAO. We received a small amount of additional money from the NSF and this enabled us to avoid the worst consequences outlined in the last issue of the *Point Source*. However, the basic plan we were forced to adopt remains in place.

The first glimpse of prospects for next year became available recently when the President released his proposed federal budget for 1996. While we can not start making plans on the basis of this news, there is a ray of hope contained in the President's numbers.

The proposed federal budget for 1996 contains a significant increase for the NSF Division of Astronomical Sciences and, in particular, for NRAO. Congress has been asked to increase the astronomy component of the NSF appropriation by 8%. Of this amount, the recommended funding for NRAO has been increased by 10.9%. In justifying the proposed NRAO funding increase, the Presidential budget states, "The increases are for operations and maintenance of

existing telescopes, instrumentation, enhanced operations of the Very Long Baseline Array (VLBA), and continued research and development of a large millimeter-wavelength interferometric array."

While the President's budget request for next year is encouraging, it most likely represents the absolute best that can be expected; indeed, a small requested increase would have been bad news. We should bear in mind that Congress has rarely appropriated the entire amount requested for NSF Astronomy in recent years.

We will not know the outcome for the 1996 budget for at least another nine months. In the meantime, we will continue operating along the same cautious lines previously announced and plan very conservatively for next year.

*Paul Vanden Bout*

### Where are they now?

*Andrew Goss, son of Miller Goss in Socorro, was an AUI Scholarship winner in 1990. He graduated from Cornell magna cum laude in 1994, majoring in South-East Asian Studies, with an emphasis on Indonesia. He is now in Indonesia and hopes to spend some time there getting to know the culture and improving his Indonesian language skills. In a year or two he hopes to start graduate school in Indonesian history.*

*Marin (Clark) Clarkberg, daughter of Barry Clark in Socorro, was an AUI Scholarship winner in 1984. She attended Reed College, majoring in Sociology. Barry writes that her graduation festivities were combined with her wedding. She is now working on her Ph.D. in Sociology at the University of Chicago, but refuses to discuss the completion date of her dissertation. Marion just announced that she is also expecting her first child in July.*

*Each year AUI awards three or more scholarships to the children of regular full-time and eligible part-time NRAO employees. If you know the whereabouts of an AUI Trustee Scholarship winner and would like to share their accomplishments with the readers of *The Point Source*, please contact me at [wmahle@nrao.edu](mailto:wmahle@nrao.edu) or (804) 296-0265.*

# Scientific news...

## Evidence of Black Hole Observed by VLBA

A dense whirling mass orbiting what is almost certainly a black hole has been discovered at the heart of an active galaxy some 21 million light years from Earth. The mass density estimated to lie in this central region is at least ten times greater than that of any other black hole candidate. The astronomical observations were made by an international team of Japanese and American astronomers, including Philip Diamond of Socorro, using the VLBA.

Black holes, so dense that nothing - not even light - can escape their gravitational fields, have long been thought to be present in the centers of active galaxies, where they would act as central engines driving a variety of exotic and energetic phenomena that are seen on much larger scales, such as jets and powerful X ray emission. NGC 4258, a spiral some 90,000 light-years across, is known to have jets of gas that are twisted into the shape of a helix emerging from the nucleus at speeds of 400 miles per second.

The team of astronomers used the VLBA to study a disk of

molecules deep within the nucleus of NGC 4258. The disk, tiny compared to the galaxy, contains heated water molecules that amplify microwave radio emissions in a manner similar to the way in which a laser amplifies light. The disk is oriented fortuitously so that pencil-like beams of microwaves are directed toward the earth.

These powerful naturally-occurring microwave amplifiers, called masers, were discovered in the galaxy in 1982. In 1992, Japanese researchers Nakai, Inoue and Miyoshi, using a radio telescope at Nobeyama, Japan, made the surprising discovery that some of the masers had very high velocities with respect to the galaxy. The large apparent velocities they observed could not be accounted for by the galaxy's normal rotation. At that time, the Japanese researchers suggested that the masers might be orbiting a black hole. Research using the technique of Very Long Baseline Interferometry (VLBI) provided preliminary support for this hypothesis. The VLBA, built specifically for VLBI, now has confirmed the hypothesis and allowed astronomers to paint a

surprisingly clear picture of activity in the depths of this galactic nucleus.

Miller Goss comments, "This is a sensational result, showing the excellent science that comes from skilled use of the highest-resolution instrument available to astronomers... It's particularly nice to see such valuable contributions coming from the early use of the VLBA."

James Moran, of the Harvard-Smithsonian Center for Astrophysics in Cambridge, MA and a member of the discovering team of astronomers, said that the VLBA correlator, the special-purpose processor that combines the data from each telescope and forms the heart of the multi-antenna radio telescope, "is at least 50 times more powerful than any previous correlator. It is really awesome to see the data zip through the correlator. As a system, the VLBA represents a major advance for the field in terms of data capacity, sensitivity, dynamic range and ease of use."

## New Employees

### Green Bank

Grace Buzanoski, Student Support  
Christopher Norris, Student Support  
Amy Petticrew, Student Support

### Tucson

Eugene Conner, Op. & Maintenance

### Socorro

Legena Briest, Electronics  
David Thomas, Array Operations  
David Wunker, Array Operations  
Lisa Young, Student Support  
Fang Zhou, NASA/S-14640 (FO)

## Departures

### Green Bank

Edmond Meinfelder, III

### Socorro

Terri Bottomly  
John Conway  
K.S. Dwarakanath  
Chitra Gokhale  
David McDonald

### Tucson

William Latter  
James Lynn  
Joseph Rizzo

12/1/94 - 2/1/95

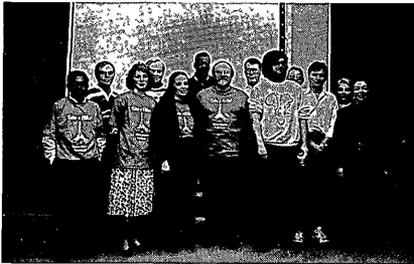
# Scoping the sites...

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## Charlottesville

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○ Congratulations to Nancyjane Bailey for being selected Chairman of the Central Virginia Section of IEEE. Nancyjane's plans for the year include assisting the newly formed local chapter of the Microwave Theory and Techniques Society and the Electronic Devices Society. She is also looking into ideas for a workshop this spring.



*Charlottesville Take a Hike! participants didn't win the contest, but still got great exercise (see below)*

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## Green Bank

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○ The fall wellness program in Green Bank and Charlottesville was the Take a Hike! program. This program was designed to encourage employees to begin a regular program of walking. Walking is a particularly good exercise for a variety of reasons, including walking can be paced to suit the individual's level of fitness, it requires no special equipment or other expense, and, since it takes no special athletic ability, almost anyone can do it.

The program was made even more interesting by the challenge between the two sites. Whichever site "walked" to the most VLBA antenna sites won a free healthy lunch for its participants. Green Bank walkers traveled a total of 3151 miles "visiting" Hancock, North Liberty, Los Alamos, and Pie Town while Charlottesville's employees walked 2564 miles. Tucson and Socorro employees may have the opportunity to participate in a walking program. Employees should contact Nancy Clarke or Ina Cole if they are interested.



*Green Bank walkers celebrate their success.*

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## Socorro

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○ Socorro AOC employees had the opportunity to learn more about eating healthy at lunchtime. Employees were asked to bring their *usual* lunch to a program called **Meeting the Lowfat Challenge: Choices, Choices.** Employees brought everything from burritos to fresh fruit. A nutritionist helped them evaluate their own lunchtime habits and to look for ways to make improvements. They discussed everything from sandwiches to condiments to complements. Fatfree frozen yogurt and lowfat cake was provided for dessert and participants agreed that there are a lot of healthy choices for lunch!

○ VLBA employees have had the opportunity to attend stop smoking and using smokeless tobacco and weight management seminars.

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## Tucson

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○ The area code for Tucson will change from 602 to 520 on March 19. Also, the phone numbers at Kitt Peak will change in April. The new phone numbers will be announced when they are available.

○ Recent improvements at Kitt Peak include sidewalks to the dormitory and library; an improved site power system; new storage containers which free up work space; continued improvements and upgrades in instrumentation, hardware and software; and the revised display at the Visitor's Center. The display is expected to be completed this spring.

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## Photography hobby 'develops' 12 Meter photos

*by Nancy Clarke*

In the next few months, several of William Hale's 12 Meter photographs will be reproduced as postcards and featured in the NRAO display at the newly renovated Kitt Peak National Observatory Visitor's Center. Bill, an Administrative Aide in Tucson, is a self-taught amateur photographer. His 12 Meter shots are quite beautiful, but he said they were very difficult to take. The white glare of the telescope dome made for difficult light metering and color processing. "I've probably taken 10 rolls [of the 12 Meter] to get 10 pictures I would say I liked," Bill said. "Timing and luck are very important in any successful picture...you only have seconds to get what you want."

As a child, Bill's love of photography was kindled by the spectacular landscape and wildlife shots of National Geographic magazine. "The photographs are what I love; it's the results I like," he said.

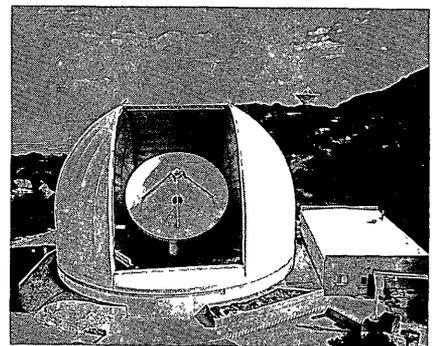
Bill's photos of the 12 Meter have produced other great results for NRAO's Tucson Operations. In 1993, Bill entered one of his 12 Meter telescope photographs into the "Colors of Tucson" amateur photo contest. Bill's entry, entitled "Yearning to Learn," took an Honorable Mention in the "Human Touch" category.

Bill says there are several things beginning photographers can do to enhance their hobby. Practice and experience are key ingredients in walking away with a great picture. "You have to know what to expect. It's not good enough to frame a shot and take it," Bill explained. He also suggested changing lenses frequently because this gives photographers more freedom with their shots.

Another key to success is knowing what kind of film to use. Bill recommends using slide film. Since the images do not have to be transferred from negatives to print paper, it gives truer color.

According to Bill, the most important thing a novice photographer can do is find a dependable developer. When you use the corner drug store for processing, the "developer doesn't know what you want to do [with your photograph]. Processing is totally automatic and your photographs will probably be stuck in with 50 other people's." Bill suggests that instead of relying on the corner drug store, beginners should take the time and effort to establish a relationship with one specific photographic studio.

So, shutterbugs, arm yourselves with Bill's hints and start clicking away. Who knows where your hobby might take you?



*The 12 Meter Telescope in Tucson  
Photo by Bill Hale*

# Personnel news...

## Q&A

### **Why insurance claims are processed internally**

A couple of employees have recently asked why it is necessary to submit their medical insurance claims to the Personnel Office before they are processed by Connecticut General. Some have suggested that this is an invasion of their privacy and the process adds to the time it takes to receive their reimbursement.

The reasons we continue our practice of assisted processing are quite simple: It is a service appreciated by the vast majority of our employees and it saves all of us money. Despite the wide use of computer processing in the insurance industry, the potential for human error is still significant, particularly with an insurance policy as complicated as the pre-1992 plan which covers 75% of our employees and all of our retirees. The AUI/NRAO plan that covers most of us is not an off-the-shelf product. It has evolved over more than 30 years and contains many unique coverage provisions which are best described as non-standard in the insurance industry.

That's where the special service rendered by Billie Jo Mattox in the Charlottesville office and Ina Cole in the Socorro office really pays off. Billie Jo and Ina examine each claim before it is submitted to Connecticut General to ensure that all the necessary information has been entered. By correcting incomplete claims at the local level the time it takes to receive reimbursement from the insurance company is shortened considerably. In addition, many of our retired employees need extra help in dealing with complicated claim forms and keeping their claims in order.

Perhaps more importantly, NRAO verifies each voucher to make certain that each claim has been paid in accordance with our insurance contract. Hardly a week goes by that some error

is not detected, perhaps an underpayment to an employee, an overpayment to a provider, or a claim improperly rejected. Over the course of a year these mistakes, most of which would not be detected, add up to a considerable amount of money. Fortunately for NRAO employees, we have representatives who know the policy better than the insurance company and who can resolve claim problems for us all with speed and efficiency.

As for the privacy matter... our insurance files are handled with probably even greater care than employee personnel files. They are kept under tight security and access to them is limited strictly to those with a need to know. That list consists of Billie Jo for Charlottesville, Green Bank, and Tucson claims; and Ina for Socorro and VLBA station claims. Only when there is a major problem is any file referred to the Personnel Manager. Old claim files are not retained, they are disposed of by secure means after a couple of years.

So, could our insurance claims be processed without local assistance? Of course. Would it be in either the employees' or the NRAO's best interest to discontinue this service? We don't think so. Quite literally this is a service that pays for itself in the savings generated for our employees and the NRAO. We pride ourselves on the special assistance we have provided to our employees and retirees and as long as the kudos continue to vastly outnumber the complaints we'll plan on leaving things the way they are.

Monroe Petty  
Personnel Manager

**WANTED:**  
*News from the VLBA sites for the Point Source. Please call or email news to the editor.*

## Suggestion

### **Save on Subscriptions**

A Charlottesville employee suggests that, in these hard economic times, employees save the NRAO money by combining magazine and journal subscriptions. When several employees in the same areas read the same publication, money could be saved if one publication were ordered and circulated, rather than ordering a separate publication for each individual. Many employees already follow this practice, and should be commended for it.

If you have suggestions for ways to save money, please forward them to your supervisor or to the *Point Source* editor.

## FYI

*Benefit Statements* will be distributed in March. If you need to make a change in your address or beneficiaries, contact your local personnel representative.

On-line information on *Fidelity Investments* is available through WWW. The address is <http://www.fid-inv.com>.

## Notes from the Editor

### **Suggestion email Box**

If you would like to make a suggestion to improve the operation of the NRAO or to improve worklife, submit the suggestion to me in the Personnel Office or send email to [wmahle@nrao.edu](mailto:wmahle@nrao.edu).

## Q&A

If you have a question you would like answered or a topic you would like addressed in this publication, please submit it in writing. All questions and topics will be referred to the appropriate person. Responses will be published in the next issue, as space is available.

Wendy Mahle, Editor



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