



NAAPO (North American AstroPhysical Observatory)

**"NAAPO News"
Volume 1 Number 6
(July 22, 1986)**

**NAAPO: Otterbein, Oberlin, Ohio University,
Manchester, Wooster, Denison!!!**

FIRST QUARTERLY CONSORTIUM MEETING

July 11 and 12 marked the first consortium quarterly meeting. In addition to the on-site regulars we were pleased to welcome Ed Sanford and Earle Hunt from Ohio University and Joe Snider from Oberlin.

The primary purpose of the session was to allow us to clarify some of our organizational structure, report progress and problems and answer questions posed by those who have watched the organization grow. It is evident that continual evaluation and restructuring must go on to meet the needs of the observatory and members of the consortium.

Four general sessions were presented followed by lively discussion. Topics considered included "Unique Capabilities of the 110-meter Antenna", "Future Configurations and Promise for the 110-meter Radio Telescope" and "The Role of a Consortium Member -- What do We Get? What is Expected of Us?" A general

sharing of ideas, resources, needs and expectations occupied the Friday evening session.

A number of questions and concerns were raised relating to the relationship of NAAPO to the telescope and Ohio State University. There will continue to be some rather peculiar interactions between the institutions but it seems there are ways to maintain coexistence without too much discomfort on either side. The principal problem now is the protection of observatory funds residing in various departments of the university from unauthorized appropriation. This is no small matter and eternal vigilance must be maintained.

Many suggestions were made as to how NAAPO member institutions may help in addition to supplying student interns to work at the observatory or on observatory projects at other sites. Extended loan of appropriate equipment and provision of management and research funding sites were among the major services offered by the group attending.

The question was raised as to what kind of financial support is expected from the member institutions. For the present, we are continuing to maintain the attitude that all support tendered will be graciously accepted, but that we do not foresee the establishment of a membership fee nor a direct solicitation of funds from member institutions. Attempts to obtain foundation support for the consortium will continue, but we hope the value of the experience for students will lead the member institutions to direct their existing undergraduate student research funds toward support of the students in our direction. This will serve as an indirect means of support for the program of NAAPO.

One fallout from the meeting was to discover which restaurants would tolerate our rowdy group long enough to serve us reasonably good food.

August 2, 1986

- AGENDA -

WORKING SESSION at Big Ear, conference room.

1. Introduction of new faculty, liaison persons:

Dr. Dwight Beery, Manchester College

Dr. Sandra Yorka, Denison University

2. Status Reports

a. Air Conditioner

b. Security Fence

c. Observing program

d. 11/23 software development

e. Horn Blinders and Equipment Cover

f. Zelenchuk Survey Comparisons

g. NAAPO membership

h. Data Scans (Abel)

3. Air Force Project

4. General Announcements

5. Adjournment

OBSERVATIONS RESUME

With the turn-on of the focus room air conditioner for the first time since last spring, we are getting ready for resumption of the observing program for Big Ear this summer. The plan is to start a resurvey at 1420 MHz of an area covered on the previous survey to assess the gain in sensitivity achieved over the past 10 years and to try to locate radio frequency variable sources. At the same time the ETI search will continue.

With resumption of the observing program comes the need to be doing something with the data as they accumulate out of the receiver. The reduction routines used in the original Ohio Survey were extremely labor intensive. It is the expectation that a resurvey will include the need for similar numbers of personnel. In addition there remains much to be done in terms of archival data to extract information discriminated against in the original survey. Part of this task is being organized by Marc Abel among other of his duties.

At any rate, we hope to be announcing the flow of some sort of data by the time the next issue of the newsletter hits the mails.

COORDINATOR'S CORNER

As the summer drifts along with high temperatures and high humidity the view from Big Ear is more serene than we like to experience. The past two weeks have produced some very notable events. As one whose responsibility includes the obligation to get things done, I have great reason to gain hope and encouragement from the hot season of summer.

Our summer interns from Oberlin on several occasions have expressed the frustration and disappointment of not being able to ". . do the science" on the projects. Such sentiments are loudest while struggling to avoid heat stroke under the noonday sun out on the ground plane. The rest of us have had similar feelings of frustration and disappointment because the temperature in the focus room has been uncontrollable. No amount of reference to Edison's torment about 90% perspiration and 10% inspiration seems to cure this condition.

Three things are imminently set to cure this condition. 1) The students are getting

their hands and minds into some real data and project-related tasks. 2) The air conditioner for the focus roan is within days (?) of complete installation and we should thus be back "on the air" by the end of this week! 3) Membership in NAAPO continues to grow. For those of us who have been working toward all these tentative goals take great pleasure in seeing things happen after such a period of seeming inactivity.

I would like to publicly commend Johnston-M and Eikhoff-M for surviving the horrible obstacle course we have laid out for them. As the first NAAPO guinea pigs they have in effect defined the way in which all that follow will progress in the program here at Big Ear. We have had a lot to learn this summer and they have been excellent teachers. I look forward to what we will be able to accomplish with multiples of these two fine interns.

Finally, I would like to acknowledge the source of my awareness of the possibility that the College of Wooster would be a prime candidate for membership in NAAPO. Joe Snider casually dropped the suggestion that I contact Jerry LaSala at Wooster with the offer to join. The mails are particularly slow to England where Jerry is presently enjoying a sabbatical at Cambridge. His enthusiastic, positive response indicates that Joe knew well of what he spoke. I am sure many of you have colleagues at neighboring institutions you could recommend for us to contact. NAAPO is a great opportunity for many undergraduate student interns.

PEB

LIABILITY - COVERAGE ON THE JOB

When you ask your students to engage in study or research that possesses some hazard -- are you covered when an accident occurs? You might want to investigate the faculty liability insurance offered by the Ohio College Association (OCA). See your college business manager or check, directly with OCA [(216) 464-6420].

Also check with your College or University to see how much they cover in the way of personal liability for faculty employed by them.

I have a copy of a Speciman Certificate if you are interested in seeing what is and is not covered.

P. Barnhart
(614) 898-1516

THOUGHTS OF A GUINEA PIG

The one bad thing about working at Big Ear, here in Ohio, is that it is in Ohio. This is one of the few places I know of where we can not only work and sweat in the hot Ohio summer sun, but also work and sweat in the humid Ohio summer rain.

I cling passionately to the fact that there is a small probability that a packet of air say twenty or thirty degrees cooler and several points less humid than the surrounding heat and humidity reservoir will envelope me throughout the day as I work. I dare not calculate that probability, for I have a hunch it will show that I'll have to wait for a time several orders of magnitude longer than the age of the earth. Hope is a funny thing.

In the meantime, we diligently work in the midst of a multitude of menaces--old, rusty barbed wire, poison ivy, wasps and hornets, Ohio State inventors, uncertain incipient room and board arrangements (which have been ironed out), flying golf balls, lack of an organized program of work for interns, and cute female golfers.

The summer has also had some very positive aspects as well -- namely, the opportunity to design new equipment, write challenging computer programs, and examine raw data from the telescope. I am grateful for the opportunity, and I trust that opportunities such as these will be made in abundance to future interns without the hassle of the aforementioned menaces (with the possible exception of the last one -- which is really more of a distraction than a menace anyway). Finally, roughly the same probability would apply to a rocket of air twenty or thirty degrees warmer and several points more humid.

Mark Eickhoff
Oberlin College Intern

NOT JUST SCIENCE -- PRACTICAL PROBLEMS AND POLITICS

When I first reported for duty at Dr. Barnhart's a few weeks ago, I was eager to learn, and ready to get started. But, at the same time, I was a little afraid of being given a paint brush and pointed towards the parabolic reflector. Since then, I have had to do a lot of manual labor involving both destruction (of weeds), and creation of a security fence and I accept this, as it is evident these are things that need to be done. This work, as well as the Saturday meetings, have given me firsthand experience in both the practical and political problems involved in operating a scientific institution (although I sense Big Ear may be unique in the way that it is run!).

However, I hope the basic mission of the telescope is not being overshadowed by such terrestrial concerns. Unexamined old data is piled high, whereas new data should be coming in; and I strongly agree with Dr. Barnhart that the development of a scientific program is vital.

To this end, I am happy to begin working on computer programs for a visual display, and the comparison of the Zelenchuk and Big Ear sky surveys.

I was encouraged to see so many good ideas brought up at the Consortium meeting, and I am very optimistic about the future contributions Oberlin and other institutions can make towards solving practical problems and doing scientific research at Big Ear.

Mark Johnston
Oberlin College Intern

News Notes

1. One of the outgrowths of our presentation at the 11-12 July meeting was the generation of a brief summary of how Big Ear got the way it is. This involved a considerable amount of dredging up of stored memories on my part. Recognizing my lack of total recall I decided I needed a refresher in recent history. I have therefore asked Bob Dixon for the loan of his newspaper clipping file in order to bring some semblance of order to the chaotic times surrounding the sale of the section of the Perkins hog farm upon which the telescope rests. I now have this material in hand and have promised to file it in chronological order and perhaps index the file. We will use Otterbein interns for this project. I will be happy to share the output of this effort with the NAAPO members.
2. Marc Abel is taking on the job of writing an "integer-square-root" program for the 11/23. This turns out not to be a trivial program and will certainly be a challenge to complete before the next issue of the newsletter.
3. Bob Dixon will be on vacation from the radio observatory from July 28 through August 18. We will hold all messages to him till he returns. He will be consorting with the Harp seals off the coast of Newfoundland and Labrador.
4. There are now three phone sets at the radio observatory site. One belongs to GTE and will be repaired by them when it breaks. The other two are "ours" and will be repaired by the radobs staff when they break. Handle with care. Under no circumstances are the settings for dial output to be altered. Those who alter will suffer the wrath of Bolinger-J - - and you know how painful that can be. The observatory phone number is still (614) 363-1597.
5. The 11/23 has gone down a couple times due to power failure in Dreese Lab. It seems to recover well when it is rebooted. We have to be aware that power failure at the telescope is going to occur while the instrument is unattended. Presumably when that happens the security service will call one of the responsible parties and we can minimize the down time.
6. (note from Bob Dixon) "I am investigating the possibility of tying the RO computers at Delaware into the new OSU campus-wide network now being installed. If we could do that, anyone in the world could send and receive data with

the observatory, using the various world-wide networks that already exist. Such a hook-up might also allow us to archive data on the OSU mainframe easily." [More on this later.]

LATE FLASH!

DENISON JOINS NAAPO

A late breaking phone call from Sandy Yorka, just back from Cerro Tololo, let us know that she and the Physics Department at Denison University want to join NAAPO. We welcome this sixth member of the consortium. Sandy will begin her orientation to the consortium at the 2 August working session. Welcome aboard!

WORKING SESSION -- JULY 5, 1986 at Big Ear

In attendance: Huck, Dixon, Abel, Bolinger, Barnhart, Ghosh, Eickhoff, Helwig, Johnston, Mikesell.

Agenda:

1. Telephone System:

Because of the high cost of the telephone system, switching to a better system was discussed. It was decided to cut the system back to one telephone, and then experiment with an independent intercom system. Abel has an intercom we could borrow to see if such a system would work.

2. Security System:

All those present were briefed on the new security system. Work continues to progress on the installation of the security fence.

3. Petty Cash:

A petty cash fund will be set up out of Otterbein College in the name of NAAPO. Establishment of this fund will make it easier to get funds for small needs of the telescope project. This fund will be maintained at Dreese Lab radobs office by Bolinger and/or Henderson in conjunction with the fund already set up there by Dixon.

Announcements:

Dixon and Barnhart reported on the conferences they recently attended.

Help was requested from all those who could attend the NAAPO consortium meeting on July 11-13 to be held at Big Ear.

WOOSTER LATEST TO JOIN NAAPO

We have just received word from Jerry LaSala that he is ". . . most certainly interested in becoming involved with the Consortium . . . and . . . active in the NAAPO's work." It is with great pleasure that we are able to thereby add the College of Wooster to the roster of institutions affiliated with NAAPO. This is the kind of response we have been building toward in the past several months and I am particularly pleased that the acceptances have been so enthusiastic.

In his letter (Jerry is spending a sabbatical leave at the Institute of Astronomy, University of Cambridge, U. K.) he indicates that he is ready and willing to get students involved in our program.

So, to the people at Wooster, a hearty WELCOME TO NAAPO! We will be getting in touch to arrange some visits both ways soon.

NAAPO NEWS

CORRECTION

It has come to the editor's attention that the Working Session reported in Issue 4 was incorrectly dated June 7, 1986; it is actually a report of the June 21, 1986 meeting.

LEWIS FARM POTENTIAL OBSERVING SITE

Some months ago, Dr. H. J. Lewis of Zanesville, Ohio offered a farm site for an alternate location for Big Ear operations. We have been considering a number of possible operations that might be carried out at the Morgan County location. Foremost at the present are suggestions to involve the site to develop some automated observing techniques.

Suggested programs include:

1. A solar H-alpha monitoring telescope using readily available interference filter equipment to feed a video recorder to produce daily records of surface features and flare activity. This would work in with some of the programs being devised by Joe Snider at Oberlin. Details of computer controlled observing facilities are available from IAPPPS.
2. Radio monitoring of Jupiter could be carried out on a routine, unattended basis.
3. Remote site monitoring for radio noise interference could be maintained to aid in isolating and perhaps prevention of rfi at Big Ear.
4. A solar radio monitor could operate on a daily basis in the automatic mode.

All of these programs could be run with a small investment in time and instruments. Each would provide a good project for undergraduate honors students. Consideration would have to be given to adequate housing and security at the site. These are not insurmountable problems.

We would be happy to discuss these or other suggestions for possible use of the available site. The location is reasonably accessible from Athens and the consortium members at Ohio University.

July 19, 1986

SUMMARY OF WORKING SESSION

Present: Dixon, Barnhart, Mitchell, Eickhoff, Bolinger, Huck, Abel

General announcements included:

1. Visit by Paulette Thomas of Wall Street Journal. As many as possible should show up to provide much grist for the journalistic mill.

2. Vacation plans were announced.

Dixon: July 28 - August 18

Eickhoff: July 21 - July 2?

Barnhart: June 1989

3. Dixon to Midwest Space Conference Oct 18

4. A tape is available of the Dixon WLW call-in show on SETI and UFO and other strange interests of the listening public. (Dixon proposes a fund-raising scheme involving Radio Astrology!)

Progress Reports:

1. routine progress is reported in most areas. Interns are beginning to get a handle on drawings for the horn blinders and equipment covers.

2. Immediate priority items include Air Conditioner, Repair of Sidereal Clock, Servicing or modification of the 50 channel power supplies, Bringing up the Speed-o-max to operation.

3. It was decided to begin the search of past data for anomalous events. This will be coordinated by Abel.

4. We should re-arrange the Hallway storage. It is required that Dixon be in on the decision-making process here!

5. We need feedback from the Air Force project regarding observing plans and equipment requirements.

Meeting Adjourned: 12:15 p.m.

NAAPO PIONEER - - BOB STEPHENS: IEI

One of the first "outside" volunteers to apply himself to the NAAPO project is a young Canadian pioneer by the name of Robert W. Stephens. Living in the "guest" room at the radio observatory office/lab complex, Bob carried out a number of tasks to refine the receivers at Big Ear in preparation for our attempt to record OH emission from Halley's Comet.

The spartan existence implicit in living on the observatory site probably served well to prepare him for the supreme adventure he carved for himself in setting up the Interstellar Electromagnetics Institute (IEI), a not-for-profit observatory at Hay River, Northwest Territories, Canada. Drawn to this far northern outpost by a pair of 75 foot high antennas declared surplus by the old Dew Line communications network, Bob moved in with a truck full of electronics equipment and supplies. His goal is to observe a 7 to 10 degree band of the sky accessible to the fixed antennas at lower culmination. His search is for evidence of extra-terrestrial intelligence and complements the search conducted at Big Ear.

Descriptions of the hardships one must face to even survive in that environment cause our problems of high temperature and humidity to pale in comparison. Mosquitoes and black flies (both carrying their own catsup) swarm in the summer. Balky furnaces that choke on their own fuel and must be cleaned every two hours in order to keep burning combined with a leaky fuel tank that drained away a complete shipment of fresh fuel makes our winter snow and slush seem like a Caribbean holiday.

As Bob is now on our mailing list we should receive from him an update on his situation. We will eagerly look forward to hearing from him to be able to pass along news of his adventure to the rest of our NAAPO fans.

BIG EAR HOSTS WSJ

NAAPO News missed another deadline yesterday because the editors slipped away to help entertain Paulette Thomas, a feature writer for the Wall Street Journal. Thomas was in town to explore Dixon, SET1, Big Ear and NAAPO. She absorbed volumes of information and we anticipate a lively spread sometime down the line.

A/C LIVES

About 2:00 p. m. July 22 the air conditioner came on and began cooling the focus room. Strip heaters in the hallway also came on and began heating the focus room. A beautiful example of Conservation of Energy!!!

NAAPO HEADQUARTERS

Please address your comments and questions (and material for the Newsletter) to:

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