



NAAPO (North American AstroPhysical Observatory)

"Signals"
Volume 7 Number 4
The NAAPO Newsletter
(September 10, 1991)



Editor:

Earl W. Phillips, Jr.
7893 Thornfield Lane
Columbus, Ohio 43235
614-764-0476

Published by:

Paul J. Hurm
Box 8
Hamilton, OH 45012
513-786-1605

NAAPO Coordinator:

Dr. Philip E. Barnhart
Dept. of Physics/Astronomy
Otterbein College
Westerville, Ohio 43081
614-898-1516

MEETING NOTES FOR 3 AUG 1991

The meeting began at roughly 10am. Those in attendance were: **Barnhart, Phillips, Brown, Murdock, Hanson, Schumacher, and Ferryman.**

Phillips reported on his battle against light pollution. Local residents have started a petition drive to overturn Liberty Township Trustees' recent decision to allow Carl Nourse, of Quality Chevrolet, to build a dealership almost directly across the road from the observatory (see last issue). Others interested in developing the area have expressed interest in trying to be "good neighbors" to the observatories.

Barnhart reports that he will not be at the 8/17 meeting. We also need more letterhead envelopes donated. He has tried to contact **VanHorne** several times without success, as he was the one responsible for the last donation. **Tom**, where are you?

Brown reports that he has moved the flat reflector. He has also been playing around with the 11/23s in an attempt to learn more about them. He now has one functional in the RO office building, complete with a printer. He feels that he can now safely perform software development, sysgens, data reduction, etc offline on this machine.

Schumacher reports that he knows of someone at the Limited that wants to donate yet another 11/23. **Hanson** stated that he could fit it in his station wagon, so he and **Schumacher** will arrange to pick it up.

Hanson reports that he will be attending a class on how to run an 11/750. We are getting one of these donated, so his new found knowledge will come in quite handy. He is also working on getting the card-to-tape project off the ground again, and has found a potential new volunteer to manage the project.

The meeting broke at roughly noon, with most going off to their respective tasks.

MEETING NOTES FOR 17 AUG 1991

The meeting began at roughly 10:20 am. Those in attendance were: **Dixon, Barnhart, Phillips, Campanella, Schumacher, Brown, Janis, Hurm, and VanHorne.**

Barnhart reports that we have a new Flag of Earth, and would like it flying today. **Phillips** volunteered to attach it to the flagpole. **Barnhart** pleaded again for a soda administrator, and would really like someone to volunteer to the post. He then suggested we do a preprint publication of **Dixon's** "On the Detection of Unknown Signals" as part of the series of preprints we've done over the years. **Dixon** feels he'd have to "spruce" it up a bit first.

Dixon gave a report on his experiences at the USA/USSR S.E.T.I. conference held at Santa Cruz. He told of the aesthetics of the campus, and the overall politeness and civility of the people there. He then pointed out that the optical shop of Lick Observatory is located there, and he toured the facility. He states that there are some amazing things going on in the way of optics there. He said that there were several luminaries at the conference: Carl Sagan, Philip Morrison, Jill Tarter, Frank Drake, Freeman Dyson were among them. He then told of how the Flag Of Earth was hung behind the panel of speakers at the press conference, and of how he presented one of them to some of the Russians there. **Dixon** then told how he was invited to give a talk to a conference of Science and Elementary teachers coincidentally holding their meeting at the same time. It was a big hit, and many expressed interest in ordering the Flag of Earth.

Brown reports that he has been removing articles he feels useless from some of the rooms in the RO office building. Also, he and **VanHorne** have moved the flat, and ran into a problem. The last 2 bays developed a hydraulic problem, and are currently set at a 1 degree different declination than the rest. He then stated that he has been able to perform many sysgens on the 11/23 he has installed and running at the RO office building, and invites anyone with a yearning to do things on an 11/23 to use that one.

The meeting broke at roughly 12:30 pm, with most going off to their respective tasks.

COORDINATOR'S CORNER

Coordinator's Comer will return in the next issue.

GLEANINGS FROM THE E-MAIL BAG

From: **Bob-Dixon**@osu.edu

Subject: VAX

Date: Mon, 22 Jul 1991 15:58:34 GMT

It was decided at our Saturday meeting that we will get the vax. **Steve J** please contact **Cedrick Sze** and make the arrangements to move it from Baker to Dreese. Several people volunteered to help. **Garret Van Cleef** (sorry if I spelled it wrong), **Phil** (I think) and so on. Also we need to look at what else they have. Let's get it asap.

As a second project, not to hold up the first, we need to do more clearing out of Dreese 805. Inventory all the boards in the computers other than the 11/44. Keep those that are useful. Keep power supplies etc that could be spares for the other computers. Throw out the rest.

Bob

From: **Bob-Dixon**@osu.edu

Subject: ESL Observations

Date: Mon, 22 Jul 1991 17:50:49 GMT

ESL will be making observations at the telescope for 3 weeks in August, and again for some period in October. **Steve Brown** has the details of this.

Bob

From: **sbbrown**@magnus.acs.ohio-state.edu (**Stephen B. Brown**)

Subject: Re: ESL Observations

Date: Mon, 22 Jul 1991 19:36:42 GMT

The details I have (on schedule, anyway) are exactly what **Bob** said. I don't know the exact dates. However, their observations will require the flat to stay stationary and I have warned Dr. Young that he can only count on this if he arranges with me in advance, so I expect him to contact me with exact dates before long.

I do know some details of the observational program. They will be making scatter measurements of foliage (and possibly targets under foliage) north of the telescope, using an antenna and receiver mounted on top of the flat. The only reason for using the telescope is to get a high vantage point which lets them move their system east-west. I think that they are going to use aperture synthesis, using measurements from many points along the top edge, which is why they require the flat be stationary (they don't care what the declination setting is, as long as it doesn't change for three weeks.)

I have mentioned to the ESL staff that the land north of the telescope is not owned or leased by OSU, and I've left it to them to make whatever arrangements with the landowner they deem necessary, about putting targets among the trees.

Steve B.

From: **James L Bolinger**

Subject: 11/23+

Date: Thu, 25 Jul 1991 02:32:12 GMT

Garret VanCleaf and I spent about two hours working on the 11/23+, along with chatting with **Chuck, Steve, and Tom** concerning other RO matters. No progress on the 11/23+ as yet. Unable to get the console monitor to work, even. Will try again.

From: **Stephen B. Brown**

Subject: Flat Move

Date: Thu, 25 Jul 1991 04:09:59 GMT

The new declination setting for Big Ear is -23 degrees.

Steve B.

From: **Stephen B. Brown**

Subject: Re: Flat Move

Date: Sat, 27 Jul 1991 13:21:19 GMT

My last update was brief, because it was posted very late in the evening. I'll elaborate now, and commend the extraordinary efforts of some of our volunteer staff.

On Wednesday evening (July 24th), I met with **Tom Van Horne** at the RO. Despite some unforeseen hangups, we moved the entire flat reflector twice, a total of two degrees in declination. The current declination setting is -23 degrees.

We had hoped for a larger move, but we were delayed a couple of times. First, we had to pause while **Tom** went to get new batteries for the radio sets we use. Then, we had a long delay while I fixed a couple of leaks in the pneumatic system. We plan another large move in the near future.

While I was climbing lockposts, I took the opportunity to replace the lightbulbs at the top of the lockposts. Seven of the nine bays now have working lights. This makes a dramatic difference in the night-time appearance of the telescope.

Thursday (July 25th) morning, I met **Tom Hanson** at a BancOhio office on the east side. There we loaded an 11/23 system, an empty rack in matching style, and 24 RL01 diskpacks ('frisbees') into his station wagon, and another 16 disk packs into my car. We transported all of this up to the RO.

We formatted many of the packs, and checked them for bad blocks. Most of them went without a hitch. While we were doing this, **Tom** asked about the RL02 drive which is connected to the focus room 11/23 now. I said, "The operating system can identify it as an RL02, but can't access the disk pack in the drive without doing a sysgen."

He asked, "How do you know?"

I said, "I've tried it, with many variations." And I had, I really had. However, at

Tom's urging, I repeated the experiment. Lo and behold, this time it worked fine. I formatted, bad'ed, and initialized the pack in the RL02 drive, and ended up with an empty, 10 megabyte file system mounted. I have not exercised it completely, but it appears that it may not be necessary to do a sysgen on the 11/23 in order to upgrade it to RL02s.

(I don't know what I did wrong the first time I tried accessing that RL02, or what was different this time. Also, I can't explain why the sysgen procedure requires that you specify whether a drive is an RL01 or an RL02, if the operating system can determine that at run time.)

Then, we turned our attention to the 11/23 computer we had brought up. Making a long story short, we cabled up a terminal, plugged the system in, replaced a power supply which failed about 5 minutes after turning it on, and booted it up. Because an extra copy of the RSX-11M distribution set and started a sysgen. It was then late in the evening, so we left it chugging away on sysgen.

Thus, there is now a second 11/23 operating at the RO. It is very similar in configuration to the focus room system, and is suitable for administration, backups, sysgens, and software development off-line. It is located in the office building. The configuration of the new 11/23 is: 11/23 processor with MMU, 64kW (128k bytes) of memory, 8 serial ports, and 2 RL01 disk drives.

I anticipate using one of the extra cabinets we have to add RL02s to the new system. When I get hold of more of the appropriate cables, I'll add at least one more terminal and a printer. If we can get a working, printing terminal up there, I'll plug that into the console (instead of the VT 102 we're using now.) I think that it should be possible to get the thing up to 128kW of memory. That's the news for now.

Steve B.

From: **Stuart A Kingsley**
Subject: Tuesday afternoon's meeting
Date: Sun, 28 Jul 1991 21:00:07 GMT

I will be attending this week's meeting and will give a brief description about the findings of my Amateur Optical SETI study, and how I see we can involve the

Perkins telescope.

The May/June issue of The Planetary Report has an article entitled "The Search for Extraterrestrial Intelligence and Perestroika". Part of the article contains an interview with Vladimir S. Strelinskiy who has co-authored papers suggesting that ETIs might make use of the moment of opposition to ensure that a narrow beam aimed at a star would be detectable at a target planet approaching opposition.

From: **Stephen B. Brown**

Subject: News from the front

Sunday (July 28) at the RO, I double-checked the declination setting. When we completed the move last Wednesday evening, it was getting dark and we weren't certain we'd sighted the targets exactly right. The Electrosience Lab has evidently been preparing for their experiments next month, as the ladder had been moved and a trolley has been mounted next to it on the top edge of the flat. I had to shift the ladder and trolley to the east — they were obscuring the view of the targets on bays 8 and 9.

Working on the latest 11/23 computer, I completed the sysgen and booted the new operating system. I was able to get the system to the point where I could format an RL01 pack, check it for bad blocks, and initialize a file system on it. I was unable to run the BRU (backup and restore) utility, however — the system complained, "Segment too small". I'm not sure yet how to remedy this. The documentation is very terse on the intermediate steps between completing the sysgen and actually getting a useful system, especially for the RL01 distribution set. For instance, it says nothing about how to get DCL running on the target system. However, I think these hurdles are small compared to getting the system running at all.

I also inventoried the components in the other donated systems. The computer from Hausman steel is unexceptional — it's got an 11/23 cpu, 2 32kW memory board, a single serial port, a printer driver card, and an RLV11 RL01/RL02 controller. It's also got a Motorola memory card with 64kW of memory on it, so the system has the full 128kW (256 kbytes) of memory possible with an 11/23. It came with the documentation for the Motorola memory card — we could expand it to a full 128kW if we could lay our hands on another 18 appropriate 64kbit DRAMs.

The other system in the office building (I don't know where it came from) is more interesting. It's got a DEC 128kW memory card and an RLV12 RL01/02 controller. This is significant because the RLV12 uses only one slot in the backplane (the RLV11, which we have in most of our systems, uses two slots). There is another RLV12 in the (Foster grant) 11/23 in the focus room.

Steve Brown, N8HFI

From: **Bob-Dixon@osu.edu**
Subject: Calif Conference
Date: Thu, 1 Aug 1991 16:30:20 GMT

My plane leaves at 11 am this Saturday, so I will not be at the meeting. I return the following Saturday evening.

Chuck Klein and I are working to complete the paper in camera-ready form. Many others are helping along the way; otherwise we would likely be lost.

Bob

From: **Stuart A Kingsley**
Subject: Santa Cruze Conference
Date: Fri, 2 Aug 1991 02:32:37 GMT

Today I received another copy of the NASA SBIR solicitations, this time from Dr. Kent Cullers at the SETI Institute. It looks like Kent is trying to encourage me to respond to his RFP, even though he only gave me a week in which to respond!

Tomorrow I am sending Kent a copy of my Amateur SETI Report. I will be posting it to the Santa Cruze Conference in case Kent wishes to use any of the material for his Friday talk. I have notified him in a cover letter that **Bob Dixon** is "interested" in the concept of Amateur Optical SETI, and that Kent might like to speak to **Bob** about it during the conference.

I am presently modifying my Summary Sheet and have added a shaded-box which

gives a short description of my background and involvement with the OSU Group. I have provisionally written that: "**Dr. Stuart A. Kingsley** is a volunteer with the SET Group at the Radio Observatory, Ohio State". Is that O.K. with you **Bob**, or your you prefer another choice of words?

I have added my university and CompuServe email addresses after my home and company address which is in very small print at the foot of page 1.

Stuart

From: **Stephen B. Brown**

Subject: News from the front (8/1/91)

Date: Fri, 2 Aug 1991 14:27:55 GMT

Yesterday, (August 1st) I completed formatting all of the disk packs donated by BancOhio, completing our side of that agreement. I used the system they donated for this.

Then I tore apart the new system, which we had just got running, and all the other systems in the office building.

I removed one of the DLV-11J four-port serial cards from the BancOhio system. This left two slots in that backplane for me to fool with.

From the Hausman Steel system, I took two things: A 64kW memory card, and a serial port expander. This last is just cabling and hardware to convert the little card edge connectors on the serial cards into ordinary Db-25 serial port connectors. This will make it much easier to connect more terminals to the system. Both of these went into the BancOhio system.

From the third 11/23 system in the office building, I took the printer interface card. I put this into the BancOhio system too. I also hauled the LA180 printer (what good's a printer card without a printer) out and connected it up to the BancOhio system.

Then I put the BancOhio system back together and powered it back up. The system ran fine. It was able to use the extra memory immediately, even though it had been sysgen'd for only 64kW (the total is now 124 kW). This is, I guess, one of the

miracles of an MMU. Of course, it complained about the missing serial ports, and couldn't see the printer port.

I then started a sysgen for the new configuration. Interestingly, the autoconfigure option for sysgen (which is supposed to figure out what's in your system automatically) failed this time, although it worked fine last week. Sysgens take a long time, and I left before it completed.

Tom Van Horne came by, and we moved the flat reflector. The Big Ear is now pointed at -20 degrees declination.

From: **Phillip E Barnhart**

Subject: old pc boards.

Date: Sat, 3 Aug 1991 21:55:06 GMT

Do not discard old pc boards. There may be a salvage potential for them. I have sent some of the Foster boards to a reclamation guru for the grand sum of \$0.80 a pound. Box them and we will haul them away.

PEBarnhart

From: **Stuart A Kingsley**

Subject: Recent phone conversation with Bob Arnold, SETI Institute

Date: Sun, 4 Aug 1991 15:32:21 GMT

I spoke with Bob Arnold, the PR guy for the SETI Institute, on Thursday evening. During our conversation he remarked that John Billingham had a large number of copies made of the viewgraph hard-copy I had left with them after my talk last April. It now appears that a lot of people in different parts of NASA have or are, becoming familiar with what I have to say about Optical SETI.

On Friday I sent a copy of my Amateur Optical SETI report to Dr. Kent Cullers at the Santa Cruze USA-USSR SETI Conference Center. Hopefully, Bob and Kent will have the opportunity to discuss the idea of the proposed Perkins Optical SETI Observatory when they meet.

I would like **Earl Phillips** and **Walt Mitchell** to start giving serious consideration to what we should put into our NASA/NSF Proposal. I need information about what we need to do to upgrade (automate) the Perkins telescope for remote and unattended operation. I will also need biographical information from you and **Bob Dixon**, plus other boiler plate info on the OSU facilities.

Thanks to **Steve Janis** for returning the material I loaned him on Tuesday.
Stuart

From: **Stephen B. Brown**
Subject: News from the Front (8/2 and 8/3)
Date: Mon, 5 Aug 1991 16:51:42 GMT

Friday (August 2nd) I was once again working on the newest 11/23 computer at the RO. The sysgen I had started before leaving the RO on Thursday failed late in the process, due to read errors on one of the disk packs. (When I subsequently reformatted that pack, the bad utility found a bad block, which had not shown up the first time. I'm very glad we have plenty of spare packs now!)

I tried various ways of restarting the almost-complete sysgen, but they all failed, usually because of lack of space on the sysgen packs. I tried to free up space, but eventually deleted something essential. In the end, I had to go back and make fresh copies of the distribution packs and start over.

I was careful to preserve the saved answer file from the incomplete sysgen. With this saved answer file, it's possible to do most of sysgen without operator intervention. This way, most of a sysgen (phases I and II, anyway) can be completed overnight.

I was able, during this process, to confirm that the LA180 printer I'd added Thursday indeed works.

There was a good deal of time when the system was busy (copying disks, compiling an operating system, &c.) and I wasn't. So I went to the cabinet from Hausman steel (from which the CPU had already been removed) and rearranged the two RL02

drives left in that cabinet so that they would be suitable as the 3rd and 4th drives on the other system. I moved this cabinet into the office where the operating 11/23 is and cabled the two together. For a variety of reasons, the two RL02's didn't initially work in their new environment. However, read on.

Before leaving Friday, I modified the saved answer file for sysgen to reflect the two RL02 drives which I'd added. I also corrected the I/O addresses for the serial card in the system (I had taken the opportunity, while the system was torn apart to let me cable up the additional drives, to pull the remaining serial card and check the guess I'd made. I'd guessed wrong.) Then I started a sysgen, which I was (fairly confident) would complete successfully overnight.

On Saturday (August 3rd) I discovered the sysgen had indeed completed phases I & II successfully, so I started up phase III (wherein things like editors, format, and other sundry utilities are installed.) This only takes an hour or so.

Phil Schumacher, Tom Hanson, and Earl Phillips, and I hooked up some terminals to the additional serial ports. This served two purposes: we could check the working state of the various terminals in the office building; and we could confirm that I had successfully built a multi-user operating system.

We left a total of 3 terminals hooked up to the new 11/23. All of them are VT100 series. 2 of them, the console and one other, are in the same room as the rest of the system. The other is in the conference room (as suggested in Saturday's morning meeting.)

It was also suggested in the meeting that these VT100s be replaced with newer VT130 series terminals from Dreese. This would give us newer terminals at the RO and free up these VT100s for sale. I will look into how many terminals are available in Dreese.

Meanwhile, sysgen phase III completed. This made the disk formatting and manipulating utilities available on the new system. Using these, and with some head-scratching, poking around, and reading the manuals, I got both RL02 drives to work. At least I was able to format a disk pack, check it for bad blocks, initialize a file system on it, and mount the result, using both drives. More exhaustive tests will follow.

Recapping, we now have a system at the RO with the following configuration:

- 11/23 uP
- 124 kW memory
- 4 serial ports connected to 3 VT100 series terminals
- 1 printer port connected to an LA180 printer (300 cpm)
- 1 RLV11 disk controller:
 - drive 0: RL01
 - drive 1: RL01
 - drive 2: RL02
 - drive 3: RL02
- And a functional, multiuser operating system (although it is still lacking frills like DCL or help.)

I have had several goals in the process:

1. to gain experience in hardware and software configuration in the 11/23 architecture. In particular, to be able to do a sysgen successfully.
2. more generally, to have a system on which RO staff can learn about 11/23's safely, without jeopardizing the main system.
3. to have a testbed for doing things like disk formatting, backups, sysgens, and software development without tying up the focus room 11/23.
4. to have a system for testing and debugging hardware without interfering with the main system.
5. lastly, to actually use the plethora of donated equipment we have accumulated.

All of these goals are nearly achieved, so I'm open to suggestions for the future direction of the system(s). Here are my plans for the next couple of weeks:

1. complete the system generation process by adding DCL, &c. There are six disks in the distribution set & I've only used three so far, so I'm missing a lot of software. The documentation is very hazy on the post-sysgen steps.

2. the 11/23 cpu in the system donated by Hausman steel apparently has an FPU (floating point.) I'd like to install this, so that the new system will look more like the focus room system.

3. I want to build an operating system which will boot from RL02 drives and rearrange the drives in the system so the boot device is an RL02. This is in anticipation of building an operating system for the main 11/23 with all RL02s instead of RL01s.

4. Make the console device capable of hardcopy, in order to be able to document the sysgen procedure. There are several options. A serial printer could be added to the console VT102. A Decwriter could be substituted. **Phil Barnhart** is going to look into the getting an HP terminal (HP-2621P, I presume) with hardcopy (thermal printer) from Otterbein.

Other possibilities include:

1. Adding floppy drives to the new system. This would mean upgrading either the memory or the disk controller to free up a slot in the backplane, but we have hardware to do both.

2. A serial connection between this new machine and the focus room system.

3. A separate project is upgrading the focus room system to an 11/23+ or 11/73. This will require a new operating system and, perhaps, modifications to some of the existing software. The new system could be used for some of this. I invite other suggestions. In particular, this new system is available to other members of staff. If you have a project to try, or want to learn more about the 11/23 in a fool-proof environment, that's just what this is for.

Steve Brown, N8HFI

From: **James L Bolinger**

Subject: signal detection schemes

Date: Thu, 8 Aug 1991 00:37:14 GMT

This week I am taking a short course in measurement uncertainty, which makes

extensive use of statistical mathematics.

One problem in taking measurements is deciding if the individual measurements are truly meaningful or if some thing went wrong with the test procedure. It turns out that virtually all measurements will have some variation that is a normal (gaussian distribution), the same as white noise. In fact, it is white noise — the same as comes out of the big ear when you turn on the loudenspaekerswitchenoner, and the measure of the variation is given as a multiple of sigma.

For many years our SETI detector has used this same multiple of sigma to detect a significant deviation from the noise level, which is presumably a signal. In measurement uncertainty the idea is to determine if an 'outlying' measurement is statistically plausible or is more likely due to a bad test.

In class the other day, there was mentioned a mathematical method for determining this, which I immediately recognized as having an application to SETI and also to ARGUS, as opposed to using an arbitrary level such as 3 or 5 sigma.

I have not had time to study it, but think it should be investigated. Of course it may turn out to be too sensitive for our use. I will look in to it more when I can. If anyone else wants to, it is named after its inventor and it called the Grubb test. That is all I know at this time.

Jim

From: **Stephen B. Brown**

Subject: Flat move

Date: Thu, 8 Aug 1991 14:54:18 GMT

The Big Ear's declination is now -15 degrees.

Steve Brown, N8HFI

From: **Steve Janis**

Subject: Dreese Computer Equip.

Date: Thu, 8 Aug 1991 23:51:01 GMT

Gene Sapp said he is planning on having a truck come to Dreese to haul away unwanted equipment. It seems we are not the only part of the EE Dept. that has stacked up a lot of old equipment. Gene did not say specifically when this would happen, but we should move the VAX and any other valuable pieces back inside 805, so they do not get hauled away by mistake.

This might also be a good time to try to get rid of some of the items in Dreese if they are no longer needed.

SJ

From: **Bob_Dixon@osu.edu**
Subject: USSR/USA Conference Report

The conference and surrounding events were wonderful. Our paper was well received. I have many interesting news items to pass on, but I don't have time to write a long report here. Instead, I can report at this Saturday's meeting. I will not have any photos back by then, and I have lots to show. If we would like to wait for the photos, it could be at the next meeting following this Saturday. They will be slides, and I can bring my projector and screen. Can we make the meeting room adequately dark?

Bob

From: **Bob_Dixon@osu.edu**
Subject: 11/23 progress
Organization: The Ohio State University
Date: Mon, 12 Aug 1991 16:19:21 GMT

Glad to hear of all the progress **Steve Brown** is making. I'll try to answer some of the questions. But above all, we **MUST** find all the tutorial and conference materials I accumulated over the years about RSX and 11/23s, and get it to Steve. That answers all the questions he has been asking plus much more. When last seen by me it was on my desk in 805 Dreese, but several rearrangements have taken place since then, and I don't know where someone may have moved them. They were in a

cardboard box.

I remember going thru all the same mysteries **Steve** is struggling with now, but have forgotten most of the answers, about things like STK and MCRSRC. RMS is an alternative file system for RSX. It is very big, powerful, harder to use, and lots more overhead than what we have now. It is mainly for database and business applications. We don't need it for what we do. I think it also needs big disks to work well.

Fortran IV is the old version of Fortran, long since superseded by Fortran 77. DEC keeps the old one around for compatibility reasons, but nobody uses it. Fortran 77 requires a floating point computational element to run at all. That element can be either a chip that plugs into the cpu card (which is a slow microcode implementation, we used to use it, and still have the chip), or a separate board which plugs into the chip socket (much faster, and is now in the focus room 11/23).

We do not have any VT130s, and I never heard of that number. We do have some VT103s, however. These are the same vintage as the VT100s. They differ in that they can be stand-alone computers in their own right. They contain dectape drives, and a 4-slot Q-bus backplane. You can insert a cpu, memory, etc and make a real computer out of it. At one time we considered using them as satellite processors, developing the code on a larger system, and then downloading it. We have download software for them. The VT-103 also contains a VT-100 terminal.

Not all VT-100s are the same. Some of ours contain various optional enhancements. I think we put the Advanced Video option into some or all of the VT103s. I vaguely recall that allows some additional screen functions not normally present. The options are plug-in cards etc. The VT-100s also have external video input, so one might be able to superimpose characters on top of video from some other source like a camera or VCR.

The VT100 and VT103 manuals explain all that.

Bob

From: **Bob_Dixon@osu.edu**

Subject: WINGDING

Date: Mon,12 Aug 1991 16:25:24 GMT

Please recall that I previously posted a note here saying that we will be hosting a WINGDING on August 18 at 2pm. You and your families, significant others etc are all invited. Due to circumstances of being out of town etc I have not had a chance to send you all formal invitations, even though I did get them printed up. I'll try to bring some to our Tuesday meeting.

This is a very informal and wild event involving jungle croquet, volleyball, swimming, eating, etc. Brats will be cooked by **Chef Robert**. Bring a dish to pass if possible, otherwise just come. Wear a hat, as there will be a hat judging contest (If you don't wear a hat, you have to wear one of mine or else be a judge of the contest.)

Please let me know asap if you are coming and how many people you are bringing, so we can buy the Brats, etc.

Bob

From: **Bob_Dixon@osu.edu**

Subject: Recent Findings

Date: Tue, 13 Aug 1991 18:12:21 GMT

I read some newly published papers on the plane to Calif, and 2 were very interesting and potentially useful for our Argus design.

1. We have always assumed that the Argus elements would all be polarized the same way, or have dual left and right circular at each point. This article shows that a better way is to half the elements left circular, and the other half right circular. This improves the ability to resolve objects, and to reject unwanted signals.

2. We have assumed that our array design will be chosen to get the best sky coverage, lowest sidelobes, fewest elements, lowest cost etc. This second article shows that array geometry affects the computing power needed to do the beamforming, and hence we may wish to choose the design for minimum computing power.

Bob

Sender: **Bob Dixon** <rdixon@magnus.acs.ohio-state.edu>

Date: Wed, 14 Aug 1991 17:22:47 GMT

This is about the donated VAX memory. **Steve J** please send him a thanks letter.

Bob

Received: from rcgl1.eng.ohio-state.edu

Mon, 12 Aug 91 13:53:28

From: GRATZ@rcgl1.eng.ohio-state.edu

Subject: 11/750 memory

To: rdixon@magnus.acs.ohio-state.edu

I have two 1 meg. memory boards that should work on a VAX 11/730 or 11/750. They were manufactured by Monolithic Systems. We have no use for them here at RCGL. If you would like them let me know and I will send them your way.

Conrad Gratz

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Designed by Jerry Ehman

Last modified: February 17, 2004