The SARA Observatory
Southeastern Association for Research in Astronomy

SARA NORTH OBSERVATORY DIRECTOR'S REPORT
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by
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I. Introduction.

It is a great time to be in the SARA consortium! With our two research telescopes, one in the Southern hemisphere at Cerro Tololo, and one in the Northern hemisphere at Kitt Peak, we have a great deal of research and teaching power. Both telescopes have been functioning very well, with occasional problems here and there, but nothing too dramatic or time consuming. Our biggest problem is a situation we discovered at the last board meeting: with the new NOAO method of charging for ROAs, we cannot financially keep up with the costs of having ROAs. At this board meeting, our primary concern is how we are going to alter the ROA system so that we can afford to have them for nights when we really need their eyes and ears. We have received some very good feedback from the ROAs about our situation and we will take into account all of their ideas and recommendations when we discuss the ROA situation at the board meeting.

Recent repair work on the dome and the installation of new contact rings proceeded with the minimum of lost time, and we are grateful to ACE for their hard work on the project. ACE also dealt with the failure of the UPS that resulted in a few lost nights since the bottom portion of the slit cover operates hydraulically and cannot be closed by hand. We are all looking forward to the new Leach CCDs and ACE Spectrographs that have now been ordered.

I also wanted to comment on the positive publicity the opening of SARA South has received across the country. I have, since seeing Bill and Ron's beautiful pictures of various sources with SARA south, started adding "fun pictures" as a part of my observing nights. This is a nice way to actually photograph all those cool objects that I never personally observed before since they were not of interest to my quasar research programs, but always admired in pictures. So I spent about an hour a night taking images of several objects in different filters, then playing around with color combining them. My undergraduates are very happy to play with the color balance until we get a decent

looking picture. I posted a few of them on my Facebook page and got a lot of positive comments from former students and others who ran across them. I also sent my picture of Cygnus A to some people over in the outreach office to use as a background on their computers as a thank you gift for advertising the star parties. They apparently took the picture and put it out there in the media since my wife ran across an article in the Buffalo news featuring my picture of Cygnus A! The title was "Astronomer images colliding galaxies" as if I had discovered it! The problem is that my picture, very amateurish at best, is about 10% as good as those of Bill and Ron! So I got a chuckle out of that. However, the publicity and mention of SARA and SARA south was very good.

II. Research at SARA North

Due to lack of time, I did not have a chance to eek out any interesting science from member, but I will say everyone seems to be doing great science with the telescopes and will pick this feature up next time.

III. Telescope Usage.

Once again only 74% of the nights were accompanied by observing reports (65% last time around). Please, everyone, submit observing reports whether there are technical problems, weather problems, whatever, ***if you are assigned a night, submit a report***. I could in principle go back and find out who doesn't submit reports, but instead of taking the time to do that (I don't get paid enough!), lets just try and comply with the requirement. The table below describes the telescope usage at KPNO.

Month	Nights reported\\Nights available	Nights observations were made	Nights lost to weather	Nights lost to technical problems[1]
April	18/30	11	7	0
May	24/31	21	2	1
June	26/30	25	6	0
July	11/15*	5	6	0
August	0	0	0	0
September	19/30	10	5	4
Totals	98/136=72%	72 73% used	26	5

*Modified for early shutdown in Mid July.
[1]Does not reflect actual hours lost, just full nights lost to technical problems.

IV. Telescope Problems.

The slip rings in the SARA dome and the contactors have been replaced. They were wearing out, endangering the smooth operation of the dome. So Peter and ACE replaced them and modified the dome contactor system so we can now close the dome at any azimuth. The control card manufacturer has changed the control card design, so we

invested in new control cards so our system can be undated as ACE changes and improves. We also had a significant UPS failure; leaving us with a problem should the KPNO power grid fail. The lower shutter operates only in hydraulic mode, i.e. no hand crank to close it should the power fail. So, without a backup UPS, if a sudden storm knocked out the power, the ROAs could not even hand crank the dome shut. Thus we instituted a rule that if precipitation could occur within 24 hours, the dome should not be opened until we replaced the UPS. The UPS was placed on special rush order, but still took well over a week to get there. We lost several days of observing due to that problem, and Peter disabled the lower shutter until the UPS arrived so observers could open the upper shutter, but not the lower one. For the most part, the observatory operation has been very reliable.

V. Instrumentation.

- **Cameras**

1. The U42 came back better than ever. The cooler is much better allowing us to cool the CCD to a much lower temperature (-35to -40C). The only problem was the pattern in the bias images that never goes away, but does remain more or less stable. We are beginning to notice a communication problem between the computers and the CCD camera. It is not clear whether it is a software problem in the camera, in Maxim DL or somewhere else, but the problem has recently escalated. It is responsible for many hours lost and needs to be dealt with in some fashion.

2. We would like to continually thank Butler University for the use of their Apogee camera that was sent to Chile as the primary CCD there until we get a new one. There is still no backup camera for either SARA North or SARA South.

3. **ETSU** placed the order for the two Bob Leach CCD cameras recently and the expected delivery date may be as early as January or February. The SARA-N camera is easily mounted and ACE will install it as soon as it arrives. The SARA-S camera will have to be shipped down, and perhaps we need to have ACE fly down to install it. The ACE spectrographs have also been ordered and possible delivery dates are between the end of May and mid-June. The new cameras will be the prime instruments and we will keep the U42 as a back-up for SARA North, but the Finger Lakes currently on SARA South will undoubtedly go back to Butler. The details concerning the CCDs will be discussed at the board meeting.

- **Computing facilities**

We had a problem with the CCD camera computer filling up with images. As a general rule, please control you personal directories. Although the SARA computers has large discs, some users get as many as 800 images in a night, so please be wary of the burden you are placing on the computing facilities and empty your directories on a regular basis, especially if you take large numbers of images.

- **Weather Station**

  The weather station is currently working well.

- **All Sky Camera-** The all-sky camera has been functioning well. It is very nice to be able to see the sky while observing. It would be nice to be able to set it to automatically update, but frankly that would be shutter wear and tear when it is not really necessary, so in my opinion it is fine the way it is. ***OBSERVING NOTE:*** Occasionally it does refuse to operate, and it is necessary to go to the ACE computer, open an internet browser window, click on favorites and open the "APC_rack_PDU" web site. From there you can cycle the power on and off for the all-sky camera and it usually comes back up. This is a common thing that some observers do not know!

- **Dome Cameras -** The cameras are situated well and are very helpful.

- **SARA North ROA's –** We have added on a new ROA, Richard Barchfield, and would like to welcome him to the SARA group. As pointed out at the last board meeting, the current ROA funding is at an unsustainable level for our meager budget. The new MOU makes it much more expensive for us to use an ROA. We have, as mentioned in the introduction, solicited opinions from SARA board members and the ROAs as to how we might adjust the current situation and reduce the ROA burden on the budget, while still maintaining a healthy and happy relationship with the Kitt Peak staff. This is an incredibly difficult situation and I will refrain from talking about it here, as it will be the primary focus for discussion at the SARA board meeting this coming week.

VII. Future.

These are some of the challenges we face starting this week and in the near future. The most difficult is undoubtedly the ROA problem, and perhaps the recent camera problems. Help is on the way in the form of the Leech cameras.

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