

OTC Meeting, Friday April 16

14:30 UTC (7:30 Tuc, 8:30 Soc, 10:30 CV & GB)

Call-in (CV 209 Hub): 434-972-7268

Agenda:

1. OTC Membership: Darrel Emerson, 5 mins.
2. Charges from Fred: Darrel, 5 mins
3. Prioritization of projects, 5-year plan: Tony Kerr, 10 mins
4. NRAO Environment: Rick Fisher, 10 mins
5. CDL. Training for next generation: John Webber, 10 mins
6. OTC action list. What's needed when, to be done by whom?
All, 10 mins
7. Next meeting? How often? Email? Darrel, 2 mins

Present:

Barry Clark, Larry D'Addario, Darrel Emerson, Rick Fisher,
Tony Kerr, Dick Sramek, John Payne, Dick Thompson & John Webber.

1. Membership. Lee King has retired, so we no longer have any mechanical engineering expertise in our group. There was general agreement that we should have access to such expertise, at least to call on as a resource, although it may not be necessary for our mechanical expert to be present at every meeting. Darrel agreed to contact Lee again to see if he might still be interested in continuing with the OTC, but if not, to invite Art Symmes (Lee's replacement at NRAO) to join the OTC.

2. Charges to the OTC from Fred Lo, from messages to Darrel a few days before this meeting:

"I think the most critical issue here is how to prioritize and position NRAO R+D activities with a view to the future. You need to keep up with the discussions that Rick Fisher has been having with the CDL, the future instrumentation plans for the GBT, the ALMA R+D areas (e.g. now that the Japanese may not be able to provide band10 by 2012, this will open up an opportunity for other groups to demonstrate alternate band10 sources), SKA developments,...

Issues such as how to compete for external funding and a plan to establish the next generation in engineering R+D need to be addressed. e.g. how to support young people like Groppi and Brisken. How to recruit more people like them? How to reorganize NRAO/CDL approaches to include training of the next generation ?

How is the NRAO going to maintain a leadership position in the important areas of radio astronomy R+D?"

I received this further note from Fred, on the charges to the OTC.

"Re the OTC charges, in the absence of an Observatory Technical Leader, the OTC has to play a more pro-active role. Given the prior OTC effort that resulted in a comprehensive "wish list" that went into the AUI proposal, now it is important to formulate an actual plan for the future, looking ahead 5 years and 10 years, which will require a prioritization of importance and urgency, so that that we can actually move forward under

a more limited budget scenario."

Discussion of the OTC:

Rick mentioned the collaboration with the CDL on the next generation of GBT receivers and signal processing. Digitization would be at the frontend, to make systems more frequency independent, have better baselines etc. This is a move to improve post-digitization processing, forming couple of teams to do this. John W. agreed it was very desirable to make efforts in these directions. Make digitization as close to the frontend as possible. The main problem at the CDL is lack of people resources, and lack of money in general. Larry asked John W. about the long term future of the digital group at CDL. They're finishing up ALMA correlator, but what happens after Escoffier retires? Can we maintain a viable group working on digital signal processing? John W. said there is candidate digital engineer from Sandy Weinreb. We lose Ray 2 years from now, meaning we won't have anyone equivalent to Ray at all in NRAO. This ties in with the "training for next generation" issue. We need to address this for fiscal 2005, to get someone in this area employed soon at NRAO. Larry agreed we should pursue getting young bright people into observatory. However, we also need senior people with leadership skills and vision, to mentor the younger engineers.

3. Tony Kerr discussed **prioritization of projects**. We were asked to refer to Section 4.6 of our engineering & technical development document, presented to Fred last year, including Darrel's spreadsheet. Note that Rick's initiative is not in that list. Band 10 for ALMA was however already in the list. We had estimated 54 people + 3M\$/year. BUT the eventual AUI proposal was 25 FTEs with 4.2-4.5 M\$ for equipment and contracts.

John W. commented that we had little representation of long term developments, such as support for the SKA. Nor had we mentioned array-type technology, with the potential cost reduction possibilities.

The OTC needs to come up with a revised version with our list.

Dick Thompson commented that, in the field of digital developments, we already have the necessary laboratory equipment, but were short on people time.

We need revised list of priorities for development, near term and long term. Near term should include realistic GBT work. Also SKA and signal processing. Rx development bands.

Larry: NRAO was involved in SKA proposal to NSF last year. BUT NSF told NRAO we couldn't have any of the money from that SKA proposal. John W. says some things, such as foundry runs, might nevertheless come from an SKA grant.

4. NRAO Environment

Rick said he had the feeling that R&D effort is withering away. Only 5 new programs since 1999. How to address this? NRAO should support a "Research Engineer" title. Besides the salary, Research Engineers would require, unlike astronomers, some 10s of thousands of \$ per person for hardware. John W.: we have lost bright young engineers because of lack of support for engineering activities. We need to make such support part of our culture. We should encourage young people with mentorship. Get people wound up on Engineering Research.

In practice, some of us have had that privilege, but the job function has never been formalized. Larry points out that the function is similar to that of System Scientist.

Dick T. said that Research Engineering work has to be related to specific future NRAO plans. Rick says we should recognize that people like this are valuable to observatory, whatever they do. Dick says there's risk of non-RA work being done, of less direct benefit to RA. John W.: we should recommend that some formal language be associated with research engineers, to authorize them to do research work that may not be directly in line of some particular project. Available money in the last decade has been with construction projects, long term goal-oriented. We need something on paper to acknowledge that more academic research engineering is valuable. Larry points out you need hardware and technician support too, more so than the support needed for pure astronomers. John W.: there should be a pot of money to support Res. Eng. like this. Dick T.: An example might be the development of lower powered, cheaper cryogenic systems - e.g. highly relevant to SKA. Larry: having viable research effort in cryogenics is an area where the observatory is lacking. We should have a small team there because it's so important to the observatory. Dick & Larry both agree it needs to be a team working on this, not an individual.

How could all this be funded? Could be funded by reducing the number of astronomers on the NRAO staff!

John W.: development money might come from NASA grants for specific things. E.g. Dept. homeland security. There are alternate funding possibilities. Rick: we could benefit from university collaboration, which opens up more grants that we could in principle apply for. Barry: comment on environment. There are several folks up to eyeballs in work now, who in year or two, after EVLA & ALMA effort taper off, will need tasks. We need to think what to do with them. Suggest increasing use of inter-site projects. Extending model to other forms of engineering might be profitable. Larry: Fred's "One Observatory" was pushing in that direction. Larry was pleased to see close collaboration between GB & CDL, but the concept needs to be extended.

Larry suggested that at least the administrative barriers should be lessened or removed.

Darrel said he thought that our video conferencing could be improved, including possibilities of video conferencing from

individual offices, rather than being restricted to specific conference rooms. The OTC might make recommendation to help inter-site communication. Larry says removing administrative barriers removal would make a bigger impact.

John W: senior people may know what's going on at other sites, but junior people don't.

5. Training for the next generation.

John W.: We have had 3 new Ph.Ds in last few years. Ed Wollack was working on ALMA, but found time to get grant. Other 2 or from U.Va, including a Bradley student, had also been absorbed into ALMA. All working on project-oriented stuff. It's hard to get young people in, but not being able to assign to research oriented projects, rather than specific projects. Need to recruit bring young people.

John P. says we've got a similar person in Tucson, Groppi, working on OMTs. Possible application for high freq sub-mm receivers. Tony would like to work with Chris on band 10. BUT we don't have money. We should work on this to be ready for ALMA proposal.

John W.: should be on priority list for higher receiver development. Also ALMA ops budget, some part of which should go into R&D now.

6. ACTION LIST

Darrel will organize replacement mechanical engineering expertise for the group.

Tony will lead effort on reprioritization of the research topics in our earlier OTC document. Everyone should send Tony suggestions on priorities and additions. John W will send info on SKA.

Darrel volunteered to identify the latest version of the March 31 2003 spreadsheet that was part of our OTC document.

Rick will get together an "NRAO Environment" statement.

John W. will write some words for possible alternative funding options.

7. Future meetings:

It was agreed we will try to hold an OTC telecon about once every month in future, with email communication between the group in between telecons.

Notes by DTE.