Mark DeHart
Title: Nuclear Science and Technology at ORNL
March 22, 2004
Contacts:
Professors:
Dr. Yassin Hassan, Dr. Marvin Adams, Dr. John Poston, Dr. William Marlowe, Dr. Ron Hart, Dr. William Burchill

Students:
Kevin Clarno, Jae Chang, plus interaction with students during seminar

Summary:

I traveled to College Station, Texas to present a Seminar to the seniors and graduate students of the Nuclear Engineering Department of Texas A&M University on March 22, 2004. The Seminar was scheduled for 4:10-5:00 pm on that date, which gave me an opportunity to visit the department and meet with various faculty members during the day.

In discussions with these faculty members, I learned that there was really a general lack of familiarity with the nature/range of work within NSTD and ORNL as a whole. The NE department has ties with LANL, LLNL, KAPL, and Bettis Lab. They were also for the most part unfamiliar with various student worker programs available that would support students for a semester working with staff at ORNL. Not surprisingly, they were interested in potential for collaborative work.

We discussed the nature and size of projects at ORNL, and my opinion that teaming between ORNL and universities in pursuing funding is the best means to develop a collaborative technical program. Dr. Hassan discussed the difficulty in finding support for thermal-hydraulic research, his area of specialty. I described the nature of T/H work at ORNL as primarily one of technical support for larger projects, and that this one not one of the strong research areas within the lab.

The seminar was attended by approximately 80 students consisting of undergraduate seniors and graduate students, along with most of the department's faculty. The first half of my talk started with a very brief overview of ORNL, followed by more detail describing the three TIs within the division and their various areas of expertise. I focused primarily on NSADS simply due to my familiarity with activities in the TI. Slides for these subject areas were drawn primarily from slides obtained from Jeff Binder. For the second half of the presentation, I discussed ongoing reactor analysis methods and applications in projects within the Reactor Analysis group. I focused primarily on recent developments in lattice physics calculations using NEWT and TRITON. I also discussed the SCALE code system and some of its general capabilities. I then opened the floor for general discussion. There was a lot of interest in the upcoming release of SCALE 5 and two-dimensional depletion capabilities. Students also inquired about the availability of summer internships and the availability of internships and employment positions for foreign nationals. There was also some interest in health physics work available at

ORNL; the TAMU Nuclear Engineering department has a large health physics program. I discussed research work within NSTD that might be of interest to health physics graduate students, and confessed my ignorance of operational health physics at the lab, but that there is no doubt ample opportunity in this area at ORNL. Finally, one of the faculty members was curious how ORNL (specifically, me) came to develop work with Purdue University in lattice physics work for the NRC, and wanted to know why I selected to work with Purdue and had not approached TAMU. I discussed the evolution of that work, and discussed again the need for the faculty at TAMU to develop relationships with ORNL staff and to work jointly in seeking funding for new research ideas.

Along with the presentation, I laid out a variety of handouts developed by the division that reinforced much of the material of my presentation. I also provided several copies of the most recent ORNL Review, which contained articles on nuclear-related activities at ORNL.

Most of the handouts were picked up by students - I left the remainder with the department head as a resource for any interested students.

Following the seminar, I met with Dr. Burchill, the head of the nuclear engineering department. We discussed in a general sense the nature of collaborative work between ORNL and both industry and various universities. He is very interested in trying to develop relationships between ORNL and TAMU's faculty and staff. He mentioned a new, incoming faculty member who has research interests in lattice physics methods, who he would like to put in touch with me to try to develop a future relationship. I encouraged him to do so. He was also interested in opportunities for students in an internship/summer worker program, and I promised to try to keep faculty advised, but cautioned that they would need to be more proactive in seeking work for students, and that this kind of work would more naturally grow out of existing research relationships. I cited my personal experience in finding a summer position for a Purdue University student as a result of long term cooperative work with Purdue.

After returning to ORNL, I was contacted by Dr. John Poston regarding potential for a summer position at ORNL this summer. I advised him that it was probably too late to find anything for this summer, but encouraged him to send information on the candidate student to me and I would see what I could do.

Overall, I felt that the interaction had considerable value. We are an unknown quantity at TAMU, and I think I at least made people aware of the fact that we do exist, the nature of our work, and the fact that we will be looking for qualified candidates across the board in NSTD. I also see potential for establishing cooperative work should an appropriate research opportunity be identified, if we make the effort to stay in touch and grow a working relationship.