

**MINUTES OF THE Aerospace Nuclear Science and Technology Division (ANSTD) MEETING
AMERICAN NUCLEAR SOCIETY
Room 313, Westin Diplomat Resort and Spa, Hollywood, FL
Sunday, June 26, 2010 12:00 PM to 2:00 PM**

Shannon Bragg-Sitton called meeting to order and roll call.

See attached attendance list. Quorum established via voting members in attendance and proxy votes assigned, as noted in the attendance list.

Introductions

Student Conference

Students from Georgia Tech and University of Nevada – Las Vegas (see sign-in sheet)

- Presentation from Amy Varallo for Student Conference at Georgia Tech: Record attendance and participation, tours were filled. 4 or 5 papers were presented in the aerospace track by students at the conference.
- UNLV Student conference: Las Vegas, April 12-15, free wifi and food provided at UNLV (not the hotel, to encourage improved participation). Career fair Friday and Saturday. Poster session will be Saturday night and many technical sessions. Tours will be on Sunday: Nevada Test Site, Atomic Testing Museum, UNLV campus and Medical facility tour. Need judges from the divisions. A concern was brought up for presenting at student conference and at national/topical meetings. Student conferences only have short abstracts, so publication in a journal or at another meeting (in longer format) is not of concern.

Announcement of incoming members. Jeff King, Allison Miller and Rob O'Brien.

Technical Sessions, 2011 Winter meeting (Washington DC):

Two ANSTD Sessions Planned:

General: 2 papers now submitted and 1 more is being submitted; need to solicit additional papers

Tutorial: Panel – need to invite speakers, Tutorial on Nuclear Space Propulsion Technologies.

- NTP work had been at an increase (NEP could be an alternative). Mike Houts could discuss his work at NASA MSFC, Russian work as well (IPPE) (Lee Mason and the fission surface power system was mentioned). Aerojet could be included - Ron Samborski (testing and fuel fabrication).
- Steve Howe will be the chair for the panel.
- Interest from people from India or China? China might have some work with Russia but not likely as a contact.

Joint Session with Reactor Physics Division (ANSTD as cosponsor)

- Reactor physics design and analysis for compact power systems for terrestrial and space applications (Organizers: Blair Bromley and Pavel Tsvetkov (RPD); Shannon Bragg-Sitton and John Bess (ANSTD))
- Need to check on papers. Could look into combining the two sessions in case of limited paper participation.

Future tutorial suggested by Robert Singleterry –

(not present; proposal presented by Shannon Bragg-Sitton)

- Space Radiation and Protection (preliminary plan: Nov 2012 in San Diego).

- Is there another topic that would offer a larger impact? Hardware industry might be able to benefit from a session on environments and radiation effects concerns, high altitude vehicles. Could offer a broader topic on human space flight. Need 100 word summary and will submit next June. Blair Bromley offered space radiation and dose conversions and include RPSD. Radiation effects on other components and materials. Space Radiation Damage and Shielding (adding these words might be able to offer a larger audience). Accelerator Physics community might be interested in contributing. Robert plans to offer a tutorial on tools used for calculations.
- Need to make suggested changes to draft description provided by Robert.
ACTION: Shannon will mark up the draft and send it out to Robert and the EC committee for review.

Topical meetings –

- **Nuclear and Emerging Technologies for Space - February 2011, Albuquerque, NM**
 - Profit – 50% went to ANS, 25% local section and 25% to division (\$16,800).
 - 189 participations and 90 papers. Would like to reduce registration costs. Will plan to have the meeting in Albuquerque for 2013.
- **NETS-2012: March 21-23, 2012, The Woodlands, TX**
 - The 2012 meeting will be embedded topical in the Lunar and Planetary Science Conference (LPSC, March 19-23, 2012). Steering committee met at NETS2011 meeting and the results was to have the meeting with LPSC, which is organized by the Lunar & Planetary Institute with significant NASA support.
 - Attendance at LPSC will be about 1500 people, NETS will be a very small part of the large conference.
 - The joint meeting will take advantage of radioisotope propulsion systems work (June 2011 marks the 50th anniversary for the use of radioisotopes in space applications).
 - Thumb drives will be handed out at the meeting, including all submitted papers. NETS papers (extended abstracts) will be a top level folder in the proceedings and will be listed in a separate program book, such that it is not lost in the broader program.
 - NETS sessions will begin Wednesday afternoon and run through Thursday and Friday. Registration costs will be about \$250 and will allow entrance to the full LPSC meeting (Monday – Friday).
 - The meeting will have an exhibit. Cost is expected to be about \$1500, providing 2 full registrations.
 - Student registration at a reduced rate will be available as well.
 - Wed evening NETS kickoff event. Program chairs George Schmidt and Len Dudzinski. Publications submissions will be separate from the main LPSC submissions. The LPI IT group will manage all submissions, but NETS will provide paper reviews and will organize the NETS program.
 - Extended abstracts will be used for this meeting. George Schmidt has suggested that we select top papers to submit to a journal. Abstracts are limited to 2 pages, 10 point font, per LPSC template. Same technical tracks as 2011. Deadline: December 8th,

one submission round. Need to ensure that people submitting papers know final deadlines and true deadlines will not budge. August first announcement and second announcement for LPSC; NETS will announce sooner. LPSC paper submissions open in November, but NETS paper submission can be opened earlier than the November timeframe.

- Feb 3 – NETS/LPSC program and abstracts will be posted on the LPSC website (with links from NETS site).
- Feb 21 FINAL paper deadline. This is when LPI sends everything to the publisher. However, all NETS program listings will be required by Jan 10 and final versions of papers will be needed approximately a week after that.
- ANSTD will not see any profit from the meeting (Class II non-financial cosponsorship from ANS). LPSC will have a box on their registration to show who is registering for NETS specifically. Hotel does not do government rate, room rate is \$189.00. ANS National Program committee approved the Class II meeting. Website is very preliminary and will be updated soon.

<http://anstd.ans.org/NETS2012.html>

- LPI Presentations are 10 minutes, NETS will be ~20 minutes. Highlighted times for poster sessions (no conflicting oral sessions); refreshments to bring in viewers. Could make announcement at sessions to highlight related posters and when they will be presented. 30 minute coffee breaks to foster discussion.
- Shannon brought up to offer an introductory session to discuss fundamentals because of the difference in backgrounds. Can hold this tutorial Wed afternoon.
- Rob O'Brien and Blair Bromley would like to be added to the paper reviewers list.
- Session Chair Volunteers:

**** Suggestion / Goal:** Model our website such that a search for “Space Nuclear” provides the NETS or ANSTD pages as the first hit. How?

- Post abstracts, documents to the site
- Use Google docs
- Post previous year's papers
- Put “space nuclear” in the file names

- **NETS-2013**

Program committee wants a calendar placement approved 2 years in advance (NETS 2013). Would like paperwork in by July 11 program meeting in Chicago. ANSTD might consider moving the topical around to different cities. British group would like to have the meeting in 2014, US might be limited in their participation. Steve Howe made the recommendation to move to Las Vegas or Huntsville, AL as alternative locations. Albuquerque was discussed as the primary option, as this location was suggested as a repeat venue by many of the NETS 2011 attendees.

Consensus was to have NETS in Albuquerque, NM 2013. Need to see about Albuquerque (local section involvement). Tom Conboy, David Ames and Greg Lucas were recommendations for local involvement. It is a good idea to have consistency in dates. Will keep with mid February dates.

ACTION: Shannon will coordinate preparation of calendar placement paperwork for NETS 2013 to be held in Albuquerque. This will be worked with Marty Sattison, ANSTD Program Chair (unable to attend EC meeting).

Information Only: Other meetings to be aware of:

- STAIF II: Frank Mead and Paul Murad (March 2012)
- Same time of year as SPESIF and passing out the info in regards to using STAIF. ANSTD has discussed bringing in other topics to include the other communities but committee members were not inclined to include topics. Both STAIF-II and SPESIF focus on low TRL technologies.

Need to send out EPSR comments to ANS IT group to offer suggestions.

- Database synching and paper submission problems.
- Chair of division should be able to see listserv participants. Also be able to see what listserv you are on as a member.
- Need to be able to handle co-authors correctly; example was paper charges going to students when co-author should have been the contact (identified as “contact author” in the submission).
- Other issue is abstracts disappear for full paper submission. Need sorting options based on reviewers and be able to see who has been assigned to what papers.

Metrics assessments:

Looking for suggestions. Class I, III and IV meetings are needed. But ANSTD cannot support all of the various topical meeting requirements to be out of the yellow in the subject area.

Board of Directors meeting summary –

Strategic planning of ANS: Strengths and weakness of ANS. Ready to make big changes in ANS Governance.

Voting – Special Committee on Nuclear Non-Proliferation –

Eric Loewen will not appoint committee and group would like to become a technical group. They need 18 or 20 divisions to support the group. ANSTD does not see any conflicts with the mission of the division but do see collaborative efforts. The 35 members of the Special Committee are active and have done a lot with the committee. They have had 15 sessions and 6 positions statements (2009-2010).

❖ **Motion to approve the NNSS, seconded and approved.**

Honors and Awards:

Look into setting up honors and awards from the Division. Shannon came up with a few new awards (see below). Discussions covered best paper awards for the topical meetings (in addition to best paper awards already provided at the student conferences). Suggestion was made to award schools or laboratories rather than just the individuals. Look into Young Members Group award to division. Look into student involvement and encouraging students to participate.

Shannon’s thoughts on ANSTD Awards from November 2010 minutes:

- Formalize a Past Chair Award (division administered) – plaque cost, ~\$55
- Formalize Best Student Paper Award at student conferences (division administered)
- Establish a Best Paper Award for topical meetings (division administered)

- Establish an award in one of the other suggested award bins created by the Honors and Awards Committee (Service / Leadership (SL); Excellence / Achievement (EA); or Student / Young Person Recognition)
- Possible ideas might include:
 - Key Contributions to the Modern Application of Nuclear Power to Space Travel (SL or EA)
 - Exceptional Dedication to the Advancement of Nuclear Technology to Space Power and Propulsion (SL or EA)

This topic to be discussed further via electronic meeting (email).

ANSTD Scholarships

Income from the NETS 2011 meeting allows us to discuss potential student scholarships. These could be awarded on a year-by-year basis for now, but ANSTD should look into potential of endowing a scholarship.

This topic to be discussed further via electronic meeting (email).

Membership:

2009 – 2010 Membership was 501 – 522, now membership is 563 (preliminary number for this year). Topical meeting appears to have resulted in a boost in our membership.

Division Strategic Plan & Succession Planning

ANSTD Strategic Plan needs to be updated. Shannon will send out previous strategic plan (updated 2008), with initial mark-ups for discussion. Goal is to approve a new strategic plan before November.

Student Liaison

Current student liaison is Eric Alderson (also the ANSTD Webmaster). Eric will be graduating soon and a replacement is needed. Wes Deason (BS NE at TAMU, starting grad school at Oregon State in Fall 2011, current intern at CSNR) was suggested and agreed upon. Steve or Shannon to discuss with Wes.

YMG Liaison

Current liaison is Heather Chichester. Heather would like to move on from this position. John Bess was appointed as the new ANSTD liaison to YMG. YMG had not yet met at the time of the ANSTD meeting, so no updates to report.

ATTACHMENTS

Tutorial: Space Radiation Protection (initial draft discussed at EC meeting)

One of the mission disabling problems in any deep space mission is space radiation. Currently, the science is not well understood and a science-based solution is not well in hand. Therefore, reliance on engineering solutions is needed to keep us in Low Earth Orbit (LEO) and to other destinations at the edge or outside of the earth's protective magnetic field. Radiation protection is accomplished via time, distance, and/or shielding. The distance we have no control over. Time is a matter of propulsion, and shielding is currently mass (although we are looking at magnetic-based shielding and engineering the human to resist it better). This tutorial looks at what space radiation is, why it is important to space travel, and how we can protect ourselves against it. A cursory look at active shielding and drug-based shielding will be discussed, but the focus will be on mass-based shielding. This tutorial will cover the physics of what is going on, engineering-based tools available, and hands-on design experience with real codes. The codes will consist of MCNP6 and OLTARIS/HZETRN. **NOTE: Codes are ITAR Controlled; hence, US persons only – Citizens, green card holders – will be able to attend, with proof required. Alternate codes such as SPENVIS and GRAS/MULASSIS could be adopted to drop the ITAR requirement, but the specific code selection remains to be determined.**

Timing: ~November 2012 meeting?

Need to invite Robert Singleterry to conduct this tutorial ASAP. Invitation letter to include:

The Executive Committee Aerospace Nuclear Science and Technology Division (ANSTD) of the American Nuclear Society (ANS) would like to invite an expert from NASA LaRC to provide an engineering and design based tutorial on space radiation protection at the 2012 Winter Meeting of the American Nuclear Society. This letter is directed to you, Robert, because of your position as an Executive Committee member of both the ANSTD and the Radiation Protection and Shielding Division (RPSD), your almost 30 years continuous participation in National and local ANS, and your standing at LaRC as a space radiation engineer.

PAGE 1 AMERICAN NUCLEAR SOCIETY DIVISION FINANCIAL REPORT 12/31/10			
AEROSPACE NUCLEAR SCIENCE & TECHNOLOGY			
	BUDGET 12 MONTHS 2010	ACTUAL 12 MONTHS 2010	PAGE 2 REF.
BUDGET FUNDS			
CARRY FORWARD FROM 2009	4,872	4,872	
2010 MEMBER ALLOCATION	1,002	1,002	
DIVISION INCOME 2010	1,680	0	1
TOTAL BUDGET FUNDS	7,554	5,874	
BUDGET EXPENSES			
NEWSLETTERS	0	0	2
AWARDS, PLAQUES	400	255	3
NATIONAL MEETING COSTS	0	0	4
DIVISION OFFICER EXPENSE	0	0	5
STUDENT SUPPORT	1400	1,600	6
SCHOLARSHIP/NEED FUNDING	0	0	7
OTHER EXPENSES	0	0	8
TOTAL EXPENSES	1,800	1,855	
EXCESS (DEFICIENCY) OF BUDGET FUNDS OVER EXPENSES	5,754	4,019	

PAGE 1 AMERICAN NUCLEAR SOCIETY DIVISION FINANCIAL REPORT 3/31/11			
AEROSPACE NUCLEAR SCIENCE & TECHNOLOGY			
	BUDGET 12 MONTHS 2011	ACTUAL 12 MONTHS 2011	PAGE 2 REF.
BUDGET FUNDS			
CARRY FORWARD FROM 2010	4,872	4,019	
2011 MEMBER ALLOCATION (\$2 each)	1,002	1,044	
DIVISION INCOME 2011	1,680	0	1
TOTAL BUDGET FUNDS	7,554	5,063	
BUDGET EXPENSES			
NEWSLETTERS	0	0	2
AWARDS, PLAQUES	400	0	3
NATIONAL MEETING COSTS	0	0	4
DIVISION OFFICER EXPENSE	0	0	5
STUDENT SUPPORT	1400	0	6
SCHOLARSHIP/NEED FUNDING	0	0	7
OTHER EXPENSES	0	0	8
TOTAL EXPENSES	1,800	0	
EXCESS (DEFICIENCY) OF BUDGET FUNDS OVER EXPENSES	5,754	5,063	