

**ANS Fusion Energy Division  
Executive Committee Meeting Minutes**

3:00 pm to 5:00 pm PST

November 7, 2010

Capri 113

Las Vegas, Nevada, Riviera Hotel and Casino

**Attendance:**

Nermin Uckan, FS&T editor, uckanna@ornl.gov  
Jim Stubbins, visitor, jstubbin@illinos.edu  
Keith Rule, FED executive committee, krule@pppl.gov  
Mark Tillack, FED executive committee, mtillack@ucsd.edu  
Robert Martin, visitor, martin@fusion.ucsd.edu  
Dennis Youchison, visitor from IEEE, dlyouch@sandia.gov  
Laila El-Guebaly, newsletter editor, elguebaly@engr.wisc.edu  
George Miley, visitor, ghmiley@illinois.edu  
Ken Schultz, Board of Directors liaison, ken.schultz@gat.com  
Brian Dyke, student visitor, brian.dyke@gtans.org  
Amy Varallo, student visitor, amy.varallo@gtans.org  
Alexandria Stephenson, student visitor, Alexandria.stephenson@gtans.org  
Minami Yoda, Minami@gatech.edu --- FED Vice-Chair  
Lee Cadwallader, lee.cadwallader@inl.gov ---FED Chair  
Mark Anderson, manderson@engr.wisc.edu --- FED Secretary/Treasurer  
Paul Humerickhouse, paul.humrickhouse@inl.gov ---FED executive committee  
Michael Mardenfeld, visitor, mmarden@pppl.gov

by phone: (phone line was not good and we lost connection during the meeting)

Lance Snead, sneadll@ornl.gov --- FED Past Chair

Shahram Sharafat, shahrams@ucla.edu --- FED executive committee

Lost Lance Snead and Shahram Sharafat at 3:30 pm.

**ITEM 1.**

Lee Cadwallader called the meeting to order at 3:05 pm. The meeting agenda is attached.

**ITEM 2.**

Mark Anderson stated that the meeting minutes for the summer meeting were approved and were on the web if anyone would like to review them further.

**ITEM 3:**

Mark Anderson gave a summary of the TOFE budget (budget sheet included as appendix 1.) Balance at the end of 2009 was \$17,485.00 which was carried forward to 2010. In 2010 we received member allocations of \$1,658.00 and we received funds from the 2008

TOFE of \$19,114.00. Expenditures for 2010 totaled \$4,206.00 as of the meeting, leaving a total of \$34,051.00 in the budget. The budget will be approved via email vote.

**ITEM 4:**

Mark Anderson presented the names of the students that the FED awarded a \$500 travel grant for the TOFE.

**Filippo Genco**  
Graduate Student  
Purdue University

**Michael Hvasta**  
Graduate Student  
University of Wisconsin Madison

**Ahmad Ibrahim**  
Graduate Student  
University of Wisconsin-Madison

**Dara Navaei**  
Graduate Student  
UCSD

**Jordan Rader**  
Graduate Student  
Georgia Tech

**Leigh Winfrey**  
Graduate Student  
NC State University

The final selection of students to be given travel assistance funding were made by Lee Cadwallader and Lance Snead since there were students in the running from both UW-Madison and Georgia Tech (Mark Anderson and Minami Yoda did not cast a vote). There was some discussion on the disbursement procedures for the funds. The students were each mailed a check from ANS national in the amount of \$500 and were told that this should be used for travel to the TOFE to present their paper (each student was the first author on a paper). It was suggested that a note be sent to the faculty advisor of each student informing them of the fact that their student had received travel funds. Mark Anderson sent out a note during the Executive Committee meeting. Mark verified that all the students that received the travel funding were present at the meeting.

**ITEM 5:**

Three students from Georgia tech were present to discuss the 2011 Student Conference:  
Brain Dyke, [brian.dyke@gtans.org](mailto:brian.dyke@gtans.org)  
Amy Varallo, [amy.varallo@gtans.org](mailto:amy.varallo@gtans.org)  
Alexandria Stephenson, [Alexandria.stephenson@gtans.org](mailto:Alexandria.stephenson@gtans.org)

The students presented the participants with a copy of the tentative agenda for the student conference which will be held in Atlanta, Georgia on April 14-17, 2011. They anticipate 500-600 students to attend and will have technical tracks that follow the ANS national divisions. There will be a career fair and recruitment opportunities. The full agenda can be found at <http://gtrans.org>.

The students were thanked for attending and presenting their conference information. They left the meeting.

Following the students' departure there was a discussion on the amount that the FED would contribute to the student conference.

Lee led the debate:

Minomi Yoda commented that she might not be present at the meeting for much time but some of her students would present papers.

Nermin Uckan- mentioned that there was typically not much fusion but rather plasma science

Minami Yoda: Can we use funds for a certain group?

Liala: ask for history of fusion participation in the Student Conference.

Lee - support at traditional level and give them the typical \$500

Nermin - graduate students in fusion typically go to APS, TOFE, SOFE - student conference mainly serves as a student's first look at a conference

Keith- perhaps the advisors involved in a Student Conference should submit requests to Divisions for money.

There was a move to donate \$500.00, with a vote to be confirmed via e-mail.

#### **ITEM 6.**

Mark Tillack gave a report of the status of the website improvements (<http://fed.ans.org/index.shtml>) and said that he would like the Executive Committee to look at them before he posts it. <http://fed.ans.org/tofe.shtml>, <http://fed.ans.org/chairs.shtml>

Mark mentioned that he started to gather information on previous TOFE's; when and where they were held and published, record of volumes, list of Chairs for the TOFE - history and memory... Carl Henning led the first embedded topical in 1982.

Ken Schultz mentioned that he might have some archives on this and will take a look at his records.

Mark mentioned that the Calendar of Events on website - is not up to date and is very similar to several other calendars. Mark suggested that we just have a link to a more current calendar that lists major fusion conferences. Some suggestions were voiced, to set up a link to the FIRE web site, or the UW web site. This was thought to be a good idea and it was decided that the committee would leave it up to the Webmaster -- to link to an active calendar.

Mark Tillack also suggested that we use a common TOFE website like the 19<sup>th</sup> TOFE used, so that all of the TOFEs have the same look and feel, and each TOFE would be archived on the ANS web site. He suggested that perhaps we can use the TOFE 19 as a template or to get the UW TOFE for a template. The General Chairs of future TOFE's should contact FED webmaster for the template.

Laila commented that some people did not receive an email notification of the meeting and suggested that we add permanent people involved in FED business to the e-mail distribution list in addition to the FED Executive Committee. Laila offered to put together an email list.

**ITEM 7:**

Nermin Uckan gave an update of the publications issues - Journal and Newsletter: Nermin submitted a report on the publications to the newsletter and will send a copy of her report to the journal committee to Mark Anderson to include in minutes (appendix 3).

All 20 issues of Fusion Science and Technology journal are closed for this year. The ITER summer school wanted to publish, so this leaves Jan 2012 as the next available submission date, due to overwhelming paper submission. This is not typical and due to the fact that every 6 years the TOFE and TRITIUM conferences coincide. In addition this year there was the ITER summer school submission.

Nermin can do an emergency issue -- dependent on interest and complaints of lag time in publication of articles.

Laila gave a summary of the newsletter and said that a draft was sent out. There will be a few additions to the newsletter, including the results of this week's 19<sup>th</sup> TOFE. The newsletter will be distributed in December.

**ITEM 8:**

Neil Morley was not present at the meeting but sent out the following summary and it was read at the meeting by Mark Anderson.

The Outstanding Achievement and Technical Accomplishment FED awards were considered this year by the honors and awards committee (N. Morley, chair; J. Blanchard, J. Sethian, R. Raffray, L. Cadwallader (as FED Vice Chair at the time)).

Two nominations for OA award were Professors Robert Odette and Osamu Motojima. The packages were distributed to the committee by email and voted upon by email. The vote was for Robert Odette (note also that it was found that Professor Motojima is not a current ANS member and has been so only intermittently over the past 10 years). The recommendation and nomination package for Professor Odette was sent to the Lee Cadwallader for dissemination and vote by the Executive Committee. The recommended award language is below.

"The Outstanding Achievement Award is the most prestigious award of the FED and is presented to an ANS member in recognition of exemplary individual achievement requiring professional excellence and leadership of high caliber in Fusion Science and Engineering. The award to Professor Robert Odette is made in recognition of his long standing membership in the ANS and his seminal contributions in the field of radiation material science and the understanding of fusion materials over many years of research. Of particular note is his work on (i) the scientific underpinnings of the Master Curve description of ductile-to-brittle transition temperature shifts of irradiated metals, (ii) his development of models to track the transport and fate of helium and the development of helium-tolerant nano-structured ferritic steels, and (iii) the implementation of novel irradiation effects experiments, including the development of a 'helium-implanter' concept that enables exploration of microstructural evolution at fusion relevant helium to atomic displacement ratios."

Two nominations for TA award were Professor Akiro Sagara and Dr. Alice Ying. The packages were distributed to the committee by email and voted upon by email. An outside evaluation by Rick Kurtz was solicited so that N. Morley, who works with Dr. Ying, could recuse himself from the vote. The vote was for Alice Ying. The recommendation and nomination package for Dr. Ying was sent to the Lee Cadwallader for dissemination and vote by the Executive Committee. The recommended award language is below.

"The Technical Accomplishment Award is presented in recognition of an exemplary technical accomplishment requiring professional excellence of a high caliber in the Fusion Science and Engineering. The award this year to Dr. Alice Ying is made in recognition of her substantial and original contributions to many key aspects of ceramic pebble bed blankets, particularly experiments and modeling of time-dependent thermomechanics interactions and deformation of ceramic breeder and beryllium pebble beds."

Eight draft papers were submitted to the H&A committee chair for the Outstanding Student Paper Award. The papers were evaluated by the committee and 5 finalists selected. Several attendees at the TOFE have been solicited to attend the presentations of the finalists, review the various presentations, and send their evaluation sheets back to the H&A committee chair for tally. The chair will notify Lee Cadwallader of the winner Wednesday afternoon. Alternately, if someone at the TOFE itself wishes to volunteer to collect and coordinate the reviews, this could be easier than have H&A committee chair Morley do it remotely. Lee Cadwallader took this responsibility.

FED Chair Lee Cadwallader will present the three awards at the Awards Reception on Wednesday evening. The award plaques have been sent to the TOFE with Shahram Sharafat. The award checks will be requested after the TOFE by the Secretary/Treasurer. Both OA and TA awardees will attend the Reception.

The Honors and Awards Committee chair Neil Morley wishes to find a replacement for himself on the committee if any current or outgoing Executive Committee member is interested. It is not a particularly arduous position but is a very important one for the FED. Please contact Neil Morley if interested.

An email vote was conducted during the TOFE and the Outstanding Achievement and Technical Accomplishment awards were approved to be given to Robert Odette and Alice Ying. Contact FED secretary for voting records.

It has been called to the attention of the Chair that the Vice-Chair should sit on the H&A committee, not the FED Chair. Neil Morley thought Lee Cadwallader was still the Vice-Chair when he was asked to sit on the committee. This situation has been rectified.

The 5 finalists for the outstanding student paper at the TOFE were:

Mills  
Robinson  
Martin  
Winfrey  
Garrison

Due to the fact that Garrison was not the first author and this was one of the few stipulations for including papers, that student was not considered for the award this year. Based on judging by Anderson, Blanchard, Tillack, Yoda, Sharafat, and Cadwallader, Mr. Brantley Mills (Georgia Tech) was chosen for the award. His paper was titled "Experimental and Numerical Investigation of Fin Enhancement for Gas-Cooled Divertor Concepts," by B. Mills, J. Rader, D. Sadowski, M. Yoda, and S. Abdel-Khalik.

Lee Cadwallader mentioned that the Atomic Energy Society of Japan gave funds to the TOFE that could be used for the best student paper cash prize of \$500. In future years if the AESJ continues to give funds the award may be increased and nomination of AESJ students would be considered.

**ITEM 9.**

Farrokh and Shahram were not at the meeting due to phone issues and preparation of the 19<sup>th</sup> TOFE, so there was no report on this meeting.

Lee Cadwallader stated that he had talked to Dave Rasmussen at ORNL and that Dave was willing to organize the 20th TOFE as a stand alone meeting in Tennessee. At present the cities of Memphis, Gatlinburg, or Knoxville are being considered. Lee and Dave are working on getting calendar placement in September 2012 with the ANS National Program Committee.

Wayne Meier was not present to give an update on the 15<sup>th</sup> International Conference on Emerging Nuclear Energy Systems (ICENES), to be held in San Francisco on May 15-19, 2011. However, there were flyers announcing the meeting at the TOFE. See the website for details, <http://www.icenes2011.org/>

**ITEM 10:**

Dennis Youchison petitioned the FED Executive Committee to allow co-sponsorship of the TOFE meeting by IEEE since many of the researchers attend both meetings and many of the same issues are discussed in the meetings. IEEE did not request any funds from the TOFE meeting but wanted to have a seat on the organizing committee and the distribution lists for the TOFE. The details of the co-sponsorship are in the appendix and the subject was tabled until the Executive Committee had time to review the documents and learn what types of memorandums of understanding ANS would require. Dennis was on the FED executive committee for 1992... He is presently the Chair of the IEEE fusion technology committee. The IEEE NPSS committee meeting in Knoxville voted for co-sponsorship of TOFE. Mutual agreement between IEEE and ANS would have to be approved by ANS headquarters along with FED approval.

Mark Tillack and Ken Schultz were in favor of this co-sponsorship and there was some discussion of combining the SOFE and TOFE. However, there would be important considerations, especially in funding since the TOFE is the prime revenue source for the ANS - FED.

Lee Cadwallader was going to check to see what the next steps would be if we decide move forward with the co-sponsorship.

Discussion:

George Miley - not sure if we go to the ANS program committee - go to organization ... We would need to go to ANS headquarters.

Ken - likes the idea --- need to share the meetings, there are too many meetings... need to merge, have one joint meeting every two years.

Dennis - likes the idea but need to work on this... this might be a first step.... FED might want to reciprocate and co-sponsor SOFE.

Discussion on this topic -

Mark Tillack- articulate on what we are giving up? Only thing is we are requiring is allowing some technical decisions - great thing to move forward with. Suggests that TOFE also reciprocate to sponsorship of SOFE.... one or two sessions chaired by IEEE.

Dennis - will send email to Mark Anderson... Mark will place the information in the meeting minutes.

Mark Tillack - IEEE long term strategic thinking that they want interest in nuclear.

Lee - table this discussion until we look at memorandums of understanding, and look at paperwork. Need to review before we vote.

**ITEM 11:**

Lee Cadwallader gave a scholarship update - need at least \$60,000 money earmarked. Lance Sneed asked to form a committee to investigate ways to raise the capital. The FED has earmarked \$25k from the FED budget to use toward a scholarship. Postpone additional discussion to next committee meeting so that Lee can present a list of names of persons to serve on a scholarship committee.

**ITEM 12:**

Lee Cadwallader gave an update on the FED rules - ANS said that we have to write division rules since we have adopted the Standard Bylaws. Lee put together a set of Division rules based on the old FED bylaws from 2003 and the new Rules template from the ANS Bylaws and Rules Committee. Lee would like to suggest people to send comments and he will present an updated Rules document at next meeting. Some discussion indicating that the Rules should include the job description/ responsibilities of the officers and details on the awards.

**ITEM 13:**

Lee Cadwallader gave an update on the slate of candidates for next election - trying to find 4 candidates for the three seats. Working with Lance --- Mark will get list from Lance and distribute to the Executive Committee (all ANS members). Need to submit candidates at this meeting. In June 2010 the FED executive committee voted to adopt 2 year terms for the Chair and Vice-Chair. Current officers will show up on ballot as a vote of confidence for the second half of their terms. Mark Anderson agreed to serve as Secretary/Treasurer for one more year to align the terms of office.

**Discussion:**

Laila - issue of possible people to accept 8 years of service as Secretary/Treasurer, Vice-Chair, Chair, and Past Chair. There are issues with getting people to accept this term for so many years.

Lee - it is in the Division Rules and if the Rules are approved then we will need to follow them.

Lee - any comments on the rules should be sent directly to Lee and he will incorporate them.

**ITEM 14**



New business --- pamphlets sent by Tom Row. He is trying to establish a legacy for Alvin Weinberg. ANS is seeking donations from divisions and from members for the memorial to Alvin Weinberg. See details at: <http://www.ora.org/weinberg/fund.html>.

Mikey Brady-Raap - from the National Professional Divisions Committee. She, and Jim Stubbins, stated that ANS committee officers and members are leading sessions on Saturdays at the National meetings. She stated that they are there to help and recommended that officers come to the meetings.

**ITEM 15** – Lee Cadwallader adjourned the meeting at 5:05 pm.

## Appendices

### Budget

| Budget funds           |                |               |               |               |               |               |               |               |               |               |               |               |  |
|------------------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--|
| Year                   | 2007           | 2008          | 2009          | 2010          | 2011 est.     | 2012          | 2013          | 2014          | 2015          | 2016          | 2017          | 2018          | Comments   |
| Carry forward          | 19,947         | 18,248        | 18,021        | 17,485        | 32,001        | 10,759        | 5,459         | 13,659        | 12,859        | 12,059        | 6,759         | 14,959        |  |
| Member allocation      | 801            | 1610          | 1658          | 1658          | 1658          | 1600          | 1600          | 1600          | 1600          | 1600          | 1600          | 1600          |  |
| Division income        | 0              | 0             | 0             | 19,114        | 4500          | 0             | 9000          | 4500          | 0             | 0             | 9000          | 0             | 2010 tofe estimate<br>ANS gives the FED \$30/published TOFE paper at embedded TOFEs. Assume 19 <sup>th</sup> TOFE is embedded. \$19,114.11 from 2008 TOFE received in 2010. Assume profit from 2010 TOFE at \$4500 and \$9000 from 2012 received in 2013 |
| <b>Total budget</b>    | <b>20,748</b>  | <b>19,858</b> | <b>19,679</b> | <b>38,257</b> | <b>38,159</b> | <b>12,359</b> | <b>16,059</b> | <b>19,759</b> | <b>14,459</b> | <b>13,659</b> | <b>17,359</b> | <b>16,559</b> |  |
| Budget expenses        |                |               |               |               |               |               |               |               |               |               |               |               |  |
| Newsletters            | 0              | 0             | 51            | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0             |  |
| Awards, plaques        | 500            | 1,500         | 64            | 1,605         | 0             | 1500          | 0             | 1500          | 0             | 1500          | 0             | 1500          | TOFE years, 2 Prof. awards + 1 Student paper award.  |
| National meeting costs | ~500           | 600           | 779           | 324           | 600           | 600           | 600           | 600           | 600           | 600           | 600           | 600           | Est. \$300 per phone setup at June and November ExComm meetings  |
| FED officer expenses   | 0              | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0             |  |
| Student support        | 650            | 3,800         | 1300          | 3,800         | 800           | 3800          | 800           | 3800          | 800           | 3800          | 800           | 3800          | TOFE years have 6 x \$500 for fusion student travel assistance. Donate \$300 to nuclear student travel support to ANS Winter Meetings. For student conference support \$500  |
| Scholarship/NEED funds | 500            | 500           | 0             | 500           | 500           | 500           | 500           | 500           | 500           | 500           | 500           | 500           | Typical \$500 NEED donation yearly.  |
| Other expenses         | 350            | 500           | 0             | 27            | 25500         | 500           | 500           | 500           | 500           | 500           | 500           | 500           | \$300 "other expenses" are rarely used. 2007 was Landis Challenge II support for a teacher workshop at the June 2007 ANS Summer Meeting. 2011 has earmark for held for scholarship funds   |
| <b>Total expenses</b>  | <b>~2,500</b>  | <b>6,900</b>  | <b>2,194</b>  | <b>6,256</b>  | <b>27,400</b> | <b>6,900</b>  | <b>2,400</b>  | <b>6,900</b>  | <b>2,400</b>  | <b>6,900</b>  | <b>2,400</b>  | <b>6,900</b>  |  |
| <b>Closing balance</b> | <b>~18,248</b> | <b>12,958</b> | <b>17,485</b> | <b>32,001</b> | <b>10,759</b> | <b>5,459</b>  | <b>13,659</b> | <b>12,859</b> | <b>12,059</b> | <b>6,759</b>  | <b>14,959</b> | <b>9,659</b>  |  |

### **Fusion Science and Technology (FS&T) Journal Report**

Nermin A. Uckan, FS&T Editor, Oak Ridge National Laboratory, Oak Ridge, TN.

During the past 12 months (from October 1, 2009 to September 30, 2010), FS&T received a total of 345 manuscripts for FS&T regular issues. Of the 345 manuscripts, 132 were from North America, 98 from Asia, 114 from Europe (including Russia), and 1 from Others. During this period, FS&T also received 48 camera-ready papers from the 2009 Carolus Magnus Summer School (CMSS2009) for FS&T Transactions.

All FS&T issues for 2010 are published and all FS&T 2011 issues are assigned (or committed). Next available FS&T open issue is in 2012!

#### Following dedicated issues were published during the period 10/1/09 to 12/30/10:

- Tore Supra Tokamak (Cadarache, France) – FS&T Oct 2009
- 9th Carolus Magnus Summer School (CMSS2009) – FS&T Trans. Feb 2010
- Selected papers from APS-DPP 2009 Mini-Conference on Mirrors – FS&T May 2010
- Large Helical Device (LHD) 10th Anniversary - FS&T Jul/Aug 2010
- Selected papers from 6th Fusion Data Validation, plus regular papers – FS&T Oct/Nov 2010

#### Following issues are scheduled (and closed) for 2011:

- Selected papers from 19th IFE Target Fabrication 2010 – FS&T Jan 2011
- Open Systems 2010 Proceedings – FS&T Transactions (Feb 2011)
- 4th International ITER Summer School (IISS2010) Lectures – FS&T April 2011
- Selected papers from 2010 EC-16 – FS&T May 2011
- IAEA 1st Int. Fusion Youth Conference (IAEA-IYC2010) – FS&T Transactions (2011)
- 9th Tritium 2010 Proceedings – FS&T double issues Jul & Aug 2011
- 19th TOFE 2010 Proceedings – FS&T double issues Oct & Nov 2011

#### Following issues are planned for 2012:

- Selected papers from ICFRM 2011 – FS&T regular (double) issue(s) (2012)
- JT-60U (update of JT-60 Tokamak Special 2002) – FS&T regular issue (2012)
- ICENES 2011 Proceedings – FS&T Transactions (2012)
- 10th Carolus Magnus Summer School (CMSS2011) – FS&T Transactions (2012)

Effective mid-February of 2010, FS&T has moved to Editorial Manager (EM), a new online manuscript submission and review system. You can access the site directly at <http://fst.edmgr.com/> or through the home page at <http://www.ans.org/pubs/journals/fst/>.

Please check for your library subscription. Electronic access to FS&T is available from 1997-to-current. ANS is planning to start adding pre-1997 back issues within the next few years. Tables of contents and abstract of papers can be accessed by anyone at <http://www.ans.org/pubs/journals/fst/>. Individual and library subscribers can access the full text articles at <http://epubs.ans.org/>. Please send your comments on FS&T contents and coverage as well as suggestions for potential future topical areas that are timely and of interest to [fst@ans.org](mailto:fst@ans.org).

**ANS Fusion Energy Division  
Executive Committee Meeting Agenda**

3:00 pm to 5:00 pm PST (**remember daylight savings time end**)

November 7, 2010

Capri 113

Las Vegas, Nevada, Riviera Hotel and Casino

Call in number 708-579-8319

Code 569354

**Attendance**

- 1. Call to Order:** (Lee Cadwallader)
- 2. Approval of 2010 Meeting Minutes** (Mark Anderson)
- 3. Treasurer's report:** (Mark Anderson)
4. TOFE student Awards (Mark Anderson)
- 5. Student related issues**  
(student organizations to discuss upcoming student conference)
- 6. Web site improvements** (Mark Tillack)
- 7. FED publications:** (Nermin Uckan)
- 8. ITEM 6 H&A committee results for technical accomplishment**  
(Neil Morley)
- 9. Update division sponsored meetings**  
(Farrokh Najmabadi and Shahram Sharafat)  
Plans for 20th TOFE - Dave Rasmussen (ORNL)  
Update on ICENES (Wayne Meier)
- 10. SOFE and TOFE conferences IEEE co-sponsorship**  
(Dennis Youchison)
- 11. FED Scholarship update:** (Lee Cadwallader)
- 12. FED rules of operation** (Lee Cadwallader)
- 13. Slate of candidates for next election** (Lance Snead)
- 14. New Business:** (All)
- 15. Close meeting** (Lee Cadwallader)