

**Panel on Public Affairs Meeting**  
**May 30<sup>th</sup>, 2008**  
**529 14<sup>th</sup> Street, NW, Suite 1050, Washington DC**

**Members present:**

M. Klein, D. Moore, R. Socolow

J. Browne, P. Coleman, G. Crabtree, J. Drake, F. Hellman, R. Howes, R. Jaffe, T. Kaarsberg, G. Lewis, V. Mohta, S. Mtingwa, J. Scofield, A. Sessoms, B. Tannenbaum, P. Zimmerman

**Advisors/Staff present:**

D. Engel, J. Franz (via telephone), T. Johnson, J. Russo, F. Slakey

**Members Absent:**

K. Budil, C. Callan, R. Eisenstein, H. Gao, R. Goldston

**Guests:**

Alan Chodos, APS; Mark Goodman, NNSA

<b>Call to Order</b>
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**M. Klein called the meeting to order at 8:18 AM.**

<b>Welcome, Introductions, &amp; Approval of Minutes</b>
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M. Klein introduced R. Socolow & R. Jaffe, as this was the first POPA meeting each was able to attend in person. The table was then opened for introductions from all members. The first order of business was to discuss the minutes from the February 1, 2008 meeting.

**Action:** J. Scofield moved to approve the minutes of the February 1, 2008 POPA meeting, as presented. Motion was seconded by J. Browne.

*The motion to approve the minutes passed unanimously.*

**Commentary:** M. Klein indicated that, at the request of an APS member, we should make approved POPA minutes available on our public website. All POPA members agreed.

**Action:** J. Russo will post all future POPA minutes, and any past minutes she can locate, to the website. POPA minutes need to be approved by POPA prior to posting.

*Nuclear Workforce Study*

S. Mtingwa provided background on the study, and how the working group & POPA had arrived at the version of the report that was discussed at the meeting. He indicated that the original report, submitted for approval at last February's meeting, had focused entirely on nuclear energy. POPA decided that the scope of the study should be broadened to include other aspects of the nation's needs including information about nuclear forensics and the nuclear weapons complex. Page 8 of the report was referenced to demonstrate how the inclusion of this additional information, and the report in general, had been newly organized. The report now included an overview of federal support for universities, graphs detailing federal investment vs. undergraduate enrollment in nuclear engineering programs, a schematic of how nuclear chemistry PhDs have declined over time, and a summary of past reports written on this topic.

In 2002 a federal program was established to assist university research reactors in jeopardy of being decommissioned (e.g. at Cornell and Michigan). Working group members surveyed various institutions around the country, which maintain these facilities, to determine their current status. It became clear from corresponding with the directors of the reactor centers that the federal monies injected into their programs significantly contributed to increasing the number of nuclear engineering majors around the country. However, the working group's analysis shows that there are still two reactors that may not survive (at University of Maryland and University of California-Irvine). What is most concerning is the Department of Energy's lack of support. In 2007 & 2008, the Administration zeroed-out funding for the university reactors and other nuclear/educational programs at DOE. Congress did not allow this to happen and instead restored funding for university reactors and other nuclear/educational programs at the DOE. Facing similar disinterest at DOE in 2008, Congress took the bulk of that money and transferred it to the Nuclear Regulatory Commission. The NRC is now managing the support going to all university nuclear reactors. The only monies left under the auspices of the DOE are just sufficient to maintain fuel services programs for the current reactors, which puts the reactors mentioned (at University of Maryland and University of California-Irvine) at high risk of being decommissioned. If there is going to be a resurgence of nuclear energy in the US, it is important to keep the reactors functioning. Since 1980, the number of nuclear reactors has decreased from 63, to about 25 today. The report argues that we need more nuclear chemists & engineers, not only for nuclear energy in the future, but also for careers associated with nuclear forensics, our national weapons complex, and industry sectors which require their expertise.

Another issue that was voiced at the February POPA meeting was the lack of focus on physics in the original report. The working group addressed this by highlighting the real need for an understanding of fission and the neutron capture process. The next generation reactors will require researchers to do more than just take measurements. A fundamental understanding of real physics, and the ability to make educated predictions about what needs to be done in different situations will be necessary. The report now emphasizes this.

The results of the report indicate that we will be able to maintain the current number of reactors, using the existing model of hiring mechanical engineers and providing them with sufficient on-job nuclear training. If the U.S. were to double the number of reactors out to the year 2050, then this model would eventually fall flat. The trained workforce would not be available and the number of reactors could not be sustained. If the number of reactors is doubled, and the

additional services of reprocessing and recycling spent nuclear fuel are included, the number of nuclear chemists available to handle the additional tasks is insufficient as well. The U.S. is not prepared to handle this scenario.

**Commentary:** A. Sessoms indicated that he thinks discussions on carbon caps in the upcoming months will put emphasis on finding alternative energy solutions, including nuclear energy. The state of our workforce in this area will certainly need to be considered, and this report could influence the next administration's transition team. Perhaps DOE will be forced to begin seriously looking at nuclear workforce issues. M. Klein indicated that the report will have to go to the Executive Board for final approval if POPA approves it. J. Browne asked if the movement of funds from DOE to NRC made by Congress was a temporary arrangement. S. Mtingwa answered that Congress was looking for another agency with expertise in this field when it made the decision to move the money from DOE to the NRC. The assumption is that the funds will return to DOE in time. F. Slakey discussed why Congress took this action. The Administration cut the program because they believed it had served its purpose: undergraduate enrollment in nuclear engineering had increased dramatically over the past few years. Congress restored the funding because they believed the enrollments would decline if the program was cut. There was a discussion as to whether the final product of this study should be a "report" or a "review". S. Mtingwa indicated that his preference is to move forward with a report. It was explained that a report typically includes advocacy activities by the APS Washington Office but, in this case, the report would be not coming out in time to influence either the Energy Workforce bill or the Energy and Water appropriations bill. It was agreed that, if approval from POPA is received, the final product should be in the form of a report, not a review, but that no advocacy would be undertaken at this time. Advocacy could be requested at a later date (with concurrence from PPC), and the information should go to the new administration next year. Discussion ensued as to whether the report should include an executive summary. J. Drake asked how minor edits could be included in the final version, and discussed some small changes he thought should be made.

**Actions:** P. Zimmerman moved to include an executive summary with the report.

M. Klein suggested that the motion be tabled until POPA decided whether to approve the main report.

P. Zimmerman removed his prior motion from the table.

R. Howes moved to approve the nuclear workforce report, with an executive summary, and including edits discussed today. J. Scofield seconded the motion.

***Motion was approved unanimously.***

J. Scofield moved to produce a new executive summary for the nuclear workforce study, over lunch. A. Sessoms seconded the motion.

***Motion carried, with 3 abstentions (Hellman, Kaarsberg, Socolow).***

## **Progress Reports & Updates**

### **Nuclear Policy Project**

J. Browne provided a brief overview. This project was first introduced about a year ago and was approved by the Executive Board and Council last fall. The effort has been shared between AAAS, CSIS, and APS with outside funding coming from both the MacArthur Foundation and the Lounsbery Foundation. Four workshops were scheduled. The first three covered military, technical, and international policy issues separately. The final workshop will be held on June 11<sup>th</sup> to integrate information from the prior three. Each workshop has been attended by high caliber experts, and attendance was kept to a minimum (25-30 participants). This facilitated a good deal of interaction and participation. Two papers were commissioned for each workshop to frame the debate. Those invited were known to have differing viewpoints on the issues, so that all sides would be investigated; however there proved to be more consensus than was expected. There was less emphasis on “either/or” solutions and more focus on a “continuum of options for the future”. Staff members from the three organizations involved are now taking all of the information obtained and condensing it into a report that will be presented to Congress and the new Administration. The report will be finished this summer and available for review by September.

**Commentary:** J. Franz asked whether the reports that have come from these workshops could be published on the POPA website. J. Browne suggested that we wait until after the Integration Workshop information is incorporated, prior to posting anything. R. Socolow inquired about where the funding for this project was obtained (\$60K from APS, \$60K from AAAS, \$60K from the Lounsbery Foundation and \$110K from the McArthur Foundation). A round of applause was given to J. Browne, and then another was offered to F. Slakey and B. Tannenbaum.

### **Energy Efficiency Study**

J. Scofield discussed the status of this APS study. Work began last summer, and the committee met four times over the course of the year. The focus of their work has been on energy efficiency in transportation and buildings. A professional writer has recently been hired to handle condensing the contributions of all committee members & staffers into a readable report, which should be ready for review in early July. The final report will be short (approximately 40 pages), with longer technical appendices. It will be written in a style that will be most appealing to policymakers.

### **Nuclear Forensics Study**

F. Slakey provided an overview on the conclusion of this study. The completed report went through the approval process in late 2007 and was released at the AAAS annual meeting in February 2008. There was a strong media blitz surrounding its release, including an op-ed in the Washington Post and an editorial in USA Today that touted the report as a blue-print for what the federal government should do regarding nuclear forensics. F. Slakey & B. Tannenbaum then took the report to the Hill. Earlier conversations with Hill staffers paved the way for this roll out. The five recommendations offered in the report were discussed with congressional offices, the Department of State, the NNSA, the White House, and the Office of the Vice President. All five recommendations in the report were included in either the House or Senate Defense Authorization bill. In addition, Representative Foster, newly elected APS member, introduced a

forensics bill in Congress and it was included as an amendment to the House Defense Authorization bill.

**Commentary:** It was noted that our “credit” for the recommendations included in House & Senate Defense Authorization bills should be posted on the POPA website. G. Crabtree asked if any opposition was encountered when Congress was approached. F. Slakey said that they ran into a “turf battle” between Foreign Affairs, Homeland Security, and the Armed Services Committee, on who should handle the issue. Armed Services eventually took the lead in the Senate. B. Tannenbaum indicated that there is now a classified Academy study in progress that picks up where this APS/AAAS report left off, primarily focusing on research & development. It was also suggested that the process by which POPA has been handling the classification/non-classification issue should be documented for future reference so that we have a guide for proceeding with future reports. It was agreed that unclassified reports such as this one make a valuable contribution and F. Hellman suggested we put this information on our website as well.

**BREAK**

### **POPA Energy Study Proposals**

#### **Revisit: Renewable Energy Study**

J. Scofield discussed the history of the proposed Renewable Energy Study. The co-chairs of the Energy & Environment subcommittee (J. Scofield, T. Kaarsberg) spoke with several people since the last POPA meeting and discovered that there is a similar study underway at the National Academies. They suggested that it might be beneficial to take a look at the NAS study draft prior to deciding on how to move forward on our own report.

**Commentary:** R. Socolow thought that we should decide exactly what it is we want to achieve and see how the NAS reacts to our course of action. M. Klein said we shouldn't get involved in a study focused on bio-fuels. Discussion continued about the topics and issues we should consider; the focus moved towards solar, tidal, solar photo-voltaic and high temperature solar-thermal. It was noted that there is enough time to consider what we want the study to accomplish. This project does not have to begin right now, and most likely could not, as the Energy Efficiency Study is currently in progress and staff would be overburdened. It was agreed that, regardless of what the NAS produces, a POPA study on renewable energy could add value through both advocacy and public outreach activities. An idea was suggested for creating an “installment series” – a series of short reports, spread out over time, on different types of renewable energy sources.

#### **New: Direct Climate Technologies**

T. Kaarsberg discussed a proposed study on Direct Climate Technologies. (We had referred to this as “anti-tipping” technologies, but that terminology was considered controversial.) Kaarsberg explained that decarbonization tends to be slowing down – e.g. oceans & forests are absorbing CO<sub>2</sub> at a lower rate than in years past. Consequently, there is concern that we may be facing a dramatic climactic change and unconventional technologies are beginning to appear and policy makers, as well as the general public, are going to have a difficult time evaluating the possibilities. POPA may be able to help them sort through this.

There are three options for how POPA might proceed, each described in the proposed study.  
Option A: POPA examines the albedo and carbon cycle technologies separately.  
Option B: POPA considers both of albedo and carbon cycle technologies, together.  
Option C: POPA investigates non-biological CO2 capture from air.

**Commentary:** J. Scofield wondered if there is enough public information readily available for us to review, condense, and report on. M. Klein suggested that we consider either doing a study on this topic or the renewable energy proposal that J. Scofield presented earlier, but not both. It was generally agreed that we should start with one or the other, but that both studies could be handled by POPA over time. J. Drake suggested that we begin with a study that investigates new carbon capture technologies (Option C), but that we add information on more standard ideas for affecting climate change as well. J. Scofield suggested that he should wait about six months to start a study on renewables. R. Howes suggested that agreement be reached on which of the ideas POPA is interested in, and that a formal proposal be drafted and distributed via e-mail for a vote.

**Action:** T. Kaarsberg moved to vote to approve, in principle, option C (non-biological CO2 capture from air) with a formal proposal to follow via e-mail. R. Howes seconded the motion.

J. Drake amended the motion to include a broader perspective on direct capture (which would include point source capture).

A friendly amendment was made to have the proposal vetted by the E&E subcommittee prior to sending it around for a vote.

*The motion passed, with one opposed (R. Jaffe) and one abstention (F. Hellman).*

T. Kaarsberg will work up a formal proposal for an email vote by POPA. R. Socolow suggests finding co-funding opportunities.

**-BREAK FOR LUNCH-**

### **Campaign Education Project**

Alan Chodos addressed the group and spoke about multi-science-society questionnaire that would be distributed to all Congressional candidates. These questions were generated by Scientists and Engineers for America (SEforA) on behalf of all the societies they work with. He acknowledged the fact that the response rate for this questionnaire will most likely be low. However, the likelihood may increase if more societies endorse it. The questions will be delivered to all Congressional nominees, Democrat and Republican alike. Answers would be posted on the SEforA website, and would most likely find their way onto the candidates' websites as well.

**Commentary:** B. Tannenbaum took issue with sending out a questionnaire. He felt that, because candidates do not pay attention to these sorts of inquiries, it makes the societies

that endorse them look impotent. A. Chodos observed that the alternative would be to do nothing at all. S. Mtingwa asked why we weren't approaching the presidential candidates with these questions. A. Chodos indicated that this subset of seven questions came from a larger list of fourteen that are being sent to the presidential candidates. P. Zimmerman asked if SEforA was planning to do anything to penalize those candidates who don't respond. P. Coleman suggested that SEforA should list the candidates who don't respond, publicly.

**Action:** P. Zimmerman moved to recommend endorsing the seven questions. Motion was seconded by S. Mtingwa.

*The motion passed, with two opposed (Tannenbaum, Kaarsberg).*

The recommendation to endorse will now move to the Executive Board for approval, since the questions will be endorsed by APS as a whole.

### **Presentation from NNSA: *Next Generation Safeguards Initiative***

Mark Goodman, from the National Nuclear Security Administration (NNSA), provided a presentation on the twenty-first century challenges and opportunities for technical safeguards:

- Current challenges
  - More countries than ever before have nuclear weapons, or the materials to produce nuclear weapons.
  - A global expansion of nuclear energy provides an environment for a greater risk of diversion, or theft, of materials necessary to produce weapons.
  - The expansion of the International Atomic Energy Agency's (IAEA) responsibilities puts strains on their resources and credibility.
  - Our country's aging workforce, competing lab missions, and low spending on safeguards technology puts us at risk.
- Possible opportunities for strengthening safeguards system
  - Enhance sharing of information with the IAEA.
  - Recommend that the DOE support a campaign that improves the speed and precision of nuclear measurements, screening, and collection of all nuclear data.
  - Create partnerships between the national laboratories, universities, and professional associations to increase the human resource base.

M. Goodman requested that APS help to lobby for additional funds to help the NNSA confront the current challenges with the solutions outlined in his presentation. He pointed out that this would be consistent with the recommendations of the May 2005 POPA report: "Nuclear Power and Proliferation Resistance."

**Commentary:** B. Tannenbaum asked M. Goodman, if APS were to lobby for additional funds, where would he suggest we find the additional funding that NNSA is requesting? He said he didn't have an answer for that. B. Tannenbaum thought this would put APS in an awkward situation, lobbying against some other program in order to find funds for the NNSA's program. J. Browne asked if there was strong enough support within the

administration and the department that they would push this issue again in 2010. M. Goodman said that all of the responses he has seen have been favorable.

M. Goodman made his exit.

F. Slakey summarized. POPA did a report on proliferation resistance and safeguards. One of the recommendations made was to create a program and a timeline, which both have been done. Now the NNSA would like APS to advocate for a doubling of their budget, to forty million dollars. M. Klein suggested that we do a little investigation to see if we can support this request. J. Franz said that she didn't think there were any grounds for us to do that.

No motion was made for APS to advocate for an increase to the technical safeguards budget.

## **Old Business**

### *Radiological Detectors Issue in NY*

P. Zimmerman briefed POPA. The bill still exists, but is extremely watered down. There was substantial public protest to the bill and POPA action is no longer required.

### *DNDO X-Ray Project*

P. Zimmerman provided an update on the presentation that was made at the last meeting. He met with the DNDO and discussed what could be done. He lined up people who could help with the project. However, when he started discussing the terms of the contract, DNDO said that the federal government cannot accept free labor. But, APS has restrictions on accepting payment. No agreement could be reached, so POPA will not be working with DNDO on this project.

### *POPA Web Portal Status Report*

J. Russo reported that the "suggestion box" for POPA studies is ready to go live. She asked for feedback on the wording that will be included on the web, explaining the portal. Members provided their advice, and the changes will be incorporated prior to adding the box to our site. The new subcommittee wiki page was discussed as well. E&E will be the first subcommittee to receive training on the site and use it.

## **New Business**

### *NAS Report- Cesium 137 Issue*

M. Klein provided background on how this issue was brought to his attention. He received an e-mail from Arthur Bienenstock, who had received a message from a member who was upset about a recommendation that was made within the NAS report on cesium. Arthur requested a response from M. Klein on how to handle the member's concern. M. Klein sent the issue to the National Security subcommittee, chaired by J. Browne. J. Browne reviewed the report, and provided his review to POPA. The report took over a year to produce, is very extensive, and it recommends that our country phase out Cesium 137 sources because of the danger they present (e.g. could be used for dirty bombs). The report only recommends this for Class 1 and Class 2 sources (very high activity sources, such as for blood irradiation & purification). There are alternatives to

Cesium 137 chloride use in these situations, but the major objection to this is that people don't want to change as there are expenses associated with changing sources and training people to use the new technology. J. Browne said that the report doesn't suggest that we pull the plug immediately and leave these people hanging. The NRC is proposing stakeholder meetings this fall to obtain feedback from the community, prior to any regulatory actions being taken. J. Browne explained that this is a very reasonable approach to a very serious issue and he recommended is that we not endorse the study, but that we don't speak out in opposition, as the member who brought it to our attention advocates.

**Action:** M. Klein indicates that he will send a letter to Arthur, attaching J. Browne's review of the report, as response to his initial inquiry. J. Browne said he would augment the review with some new information he obtained at a recent meeting he attended.

#### POPA Bylaw Amendment

F. Hellman advocated for a POPA bylaw change, which would frame POPA's purpose in a much clearer way. She would like to mirror the PPC's bylaws more closely, as she feels these explain that committee's purpose in a concise way.

**Commentary:** R. Socolow suggests that a sentence be included clarifying the purposes of both POPA and PPC, and how they fit together. Many comments were made about the ease of using the POPA subsite page online.

**Action:** F. Hellman moved that a sentence or two be crafted, by the POPA Physics & the Public subcommittee, clarifying the purpose of the Panel in the current bylaws. This will be presented at the next POPA meeting. Motion was seconded by B. Tannenbaum.

*Motion passed unanimously.*

#### Possible "Recoverable Energy" Study

M. Klein introduced an issue that was suggested by an APS member, Roger Gottfried. This member feels that POPA should be doing ongoing outreach to the public regarding several physics related topics. M. Klein suggests that the Energy & Environment subcommittee look into this request. J. Scofield was a little unclear as to what Gottfried was interested in educating the public about. T. Kaarsberg said that she read his paper and found it very confusing. J. Scofield said that he would read the paper and discuss it with his subcommittee. The E&E subcommittee will initiate discussions amongst themselves over the next few months regarding these ideas. They will report back to POPA in October.

#### Nanotech Letter

M. Klein indicated that he had received some e-mails about supporting the national nanotech initiative. APS has been asked to support this. J. Franz indicated that we have already signed onto this initiative.

#### POPA White Papers

At the urging of R. Socolow, M. Klein suggested that POPA consider returning to producing "white papers" – papers that are reflections of one of more POPA members on a publicly

relevant science issue. Socolow said that POPA members should consider papers they would like to work on and he asked for 30 minutes at our next POPA meeting to discuss idea.

#### **Next Meeting**

The next POPA meeting will be held on **Friday, October 3<sup>rd</sup>, 2008.**

#### **Adjournment**

**Action:** M. Klein moved to adjourn the meeting at 3:00 PM.

*The motion to adjourn the meeting passed unanimously.*