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3 UNITED STATES NUCLEAR REGULATORY COMMISSION

4 BRIEFING ON THE NUCLEAR EDUCATION PROGRAM

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6 FRIDAY

7 March 20, 2009

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9 The Commission convened at 9:30 a.m., the Honorable Dale E. Klein, Chairman

10 presiding.

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12 NUCLEAR REGULATORY COMMISSION

13 DALE E. KLEIN, CHAIRMAN

14 GREGORY B. JACZKO, COMMISSIONER

15 PETER B. LYONS, COMMISSIONER

16 KRISTINE L. SVINICKI, COMMISSIONER

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PANEL 1: NRC STAFF

BILL BORCHARDT, Executive Director for Operations

BRUCE MALLETT, Deputy Executive Director for Reactor and Preparedness Programs

JIM McDERMOTT, Director, Office of Human Resources

RANDI NEFF, Office of Human Resources

JOHN GUTTERIDGE, Office of Human Resources

PANEL 2: STAKEHOLDERS

RICHARD TOOHEY, PhD, CHP, President, Health Physics Society

MICHAEL CORRADINI, Chair, Nuclear Engineering & Engineering Physics, University of Wisconsin-Madison

KENNETH LEWIS, PhD, P.E., Dean and Professor, South Carolina State University

ELAINE CRAFT, Director, SC Advanced Technological Education Center of Excellence, Florence-Darlington Technical College

1 P-R-O-C-E-E-D-I-N-G-S

2 CHAIRMAN KLEIN: Good morning. We get to hear about a very
3 exciting program this morning about our educational program. Obviously, this is a
4 subject that I have a little bit of interest from my former activities at a small
5 university in Texas.

6 We're going to hear from John and Randi today and I think this is the first
7 time you all have been before the Commission in a setting like this, but certainly
8 not the first time you've been involved in educational programs.

9 We have a second panel that will talk later. We'll have Dick Toohey, the
10 President of the Health Physics Society; Mike Corradini that's hiding back there
11 behind Bill. And so, he gets to take off his hat as ACRS and put his academic hat
12 on. And Ken Lewis from South Carolina State University and Elaine Craft from
13 Florence Darlington Technical College. So, we certainly thank you all for coming
14 and talk on the second panel today.

15 Obviously, the educational program has gone through some exciting twists
16 and turns. In '07 we had about $5 million allocated of our own resources. In 2008
17 Congress moved a program that was at the Department of Energy to the NRC and
18 that added about $15 million and it included some trade schools, scholarships,
19 fellowships and faculty grants for new faculty in the higher education arena.

20 In the Omnibus Appropriation Bill that just recently came we think the
21 money is back in there, so I assume we're going through that process. And they
22 also talked about a long-term program from the Omnibus Bill. So, it would be nice

1 to get some stability in the higher educational arena.

2 So, we look forward to hearing from the NRC staff and then from our

3 academic representatives on the second panel. Any comments before we start?

4 COMMISSIONER LYONS: Just that the subject is absolutely vital to

5 both government and industry. I am eagerly awaiting the testimony of everyone.

6 CHAIRMAN KLEIN: Bill, would you like to begin?

7 MR. BORCHARDT: Good morning. Thank you, Chairman. The

8 success of this program has been the result of a wide range of people, not just the

9 people, but largely the results of the people on either end of the table here on the

10 staff side.

11 I'd like to acknowledge the efforts of all those people. Dr. Mallett has been

12 the lead for this activity in the EDO's office so I'm going to ask him to do the

13 introductions.

14 MR. MALLETT: Thank you, Bill. Good morning, Chairman Klein,

15 Commissioners Jaczko, Lyons and Svinicki. I've learned how to say "Svinicki", I

16 think. It's taken me a while.

17 A key part of our maintaining the skills inventory in our own agency and I

18 think a key part of success in operating existing and new nuclear facilities, whether

19 they're reactors or materials or fuel facilities is the education and experience of the

20 people in those organizations.

21 This education experience requires us, I think, to develop the next

22 generation of experts in nuclear energy related fields and I think to do this the

1 agency has done several things over the past several years to foster training at
2 higher institutions of learning, including colleges, universities and trade schools.
3 We foster this by a number of actions, such as our partnerships with the
4 universities for recruiting, teaching and classes at those universities, co-op
5 students, summer hires and I think including as the Chairman mentioned this
6 program for education support for grants, fellowships, scholarships.
7 This past year we accomplished much due to the dedicated work as Bill
8 Borchardt said of all the staff in the agency and many individuals not only sitting at
9 this table. I think you'll see the fruits of that during the presentation today.
10 Because this work requires individuals from several organizations in our
11 agencies, last year we created a steering committee with the purpose of providing
12 an integrated senior leadership to this program for grant assistance to universities
13 and institutions of higher learning.
14 We named the committee the Strategic Education Panel. Don't ask me
15 what our basis was for that, but that's what we named it. I'm the Chair of that
16 panel and its members include representatives from the Office of Human
17 Resources, Administration, Office of General Counsel, the CFO's Office, the Small
18 Business and Civil Rights Office, and, of course, the Office of the Executive
19 Director for Operations. Many of those members of that panel you see sitting in
20 what we call the "well portion" of this meeting and I complement all of them for
21 their contributions to the program.
22 One key element I would highlight or key action that we took last year in the

1 Strategic Education Panel was to do an independent review on lessons learned of
2 the actions we took last year in the grant program and that was led by our Office of
3 Small Business and Civil Rights.
4 Ren Kelley and Tuwanda Smith are here who led that lessons learned. We
5 factored those lessons learned into our planned program for this fiscal year.
6 With that I'll turn the briefing over to Jim McDermott. Thank you.
7 MR. McDERMOTT: Good morning, all. Can I have the slides,
8 please? I'm just going to do a quick overview of the language we used and talk
9 about the program. We call one the $5 million program and the other the
10 $15 million program. Both of them have morphed a little bit over the two and now
11 three years that we've had them.
12 The Energy Policy Act of 2005 gave us the $5 million program and we have
13 kept that focus strongly on developing curricula in a variety of schools. Randi Neff
14 manages the $5 million program.
15 The Congress gave us a $15 million program a year later and that has three
16 major focus areas: scholarships, fellowships is one, faculty development is the
17 other and trade school are a third element of that. John Gutteridge whom we lured
18 over here from DOE has managed that program.
19 CHAIRMAN KLEIN: We saved him.
20 [LAUGHTER]
21 MR. McDERMOTT: My chief recruiter had a lot to do with that. The
22 one thing I would point out -- and Bruce and Bill have both acknowledged that this

1 was very much a team effort; lots of offices involved.

2 We finally got the language for FY 2009 out of the Omnibus Bill and this is

3 an obviously somewhat oversimplified description of what it does. But essentially

4 they partitioned our -- I'll call it our -- $15 million as follows.

5 We have $10 million for the same purposes for which we had the year

6 before, which is faculty support, scholarships and fellowships and trade schools.

7 We have $5 million for both research and development. And we're to address

8 those funds in coordination with NNSA and with DOE -- the Office of Nuclear

9 Energy within DOE. And we've done very, very preliminary discussions with how

10 we might arrange this "coordination", which is what the Congress has told us to

11 do.

12 We intend to continue our focus strongly on faculty support, but we'll talk to

13 our partners in this. The other thing as the Chairman has alluded the law also

14 authorized this for 10 years, so there's clearly going to be some continuity to the

15 program.

16 With that said, I will turn the program over to Randi Neff who will talk about

17 the $5 million program.

18 MS. NEFF: Thank you. The Energy Policy Act of 2005 authorized

19 the NRC Educational Grant Program and as a result I was hired in 2006 for my

20 grant position with NOAA to start a competitive grant process as there had not

21 been one here for many years.

22 I developed an announcement of opportunity based on our legislation,

1 established a letter of intent process, researched a constituent database to
2 outreach to our community and all to begin the grant process here at the agency.
3 The first year was very successful receiving 116 letters of intent with a
4 request of nearly $25 million. After the initial review ranking and review panel
5 process the agency was able to award 26 grants with an average of $200,000
6 each.
7 2008 brought changes such as searching our strategic workforce database
8 to identify future staffing needs. As a result the announcement was refined to
9 include curricula development in several technical areas. I also invited the
10 academia community to participate in our review panel meeting.
11 Additionally, I discovered that each curricula development award can be
12 carried out for less money than the previous award; therefore, we were able to
13 expand the amount of awards that year.
14 In addition to myself and others we participated in outreach programs which
15 helped to increase participation especially among the minority serving institutions.
16 Next slide, please.
17 As a part of the Energy Policy Act we had another program for scholarships
18 and fellowships with the service agreement that was tied to working at the NRC for
19 the same amount of time as one received a scholarship or fellowship.
20 With a median award of $50,000 and the program only lasting one year, I
21 see this as being successful as so far we have been able to hire eight recipients at
22 the agency and I believe one of them is here today.

1 MR. McDERMOTT: Where is he? Steve Ward.

2 MS. NEFF: Although this program is no longer, it is now much

3 bigger and it is part of the $15 million program which you will hear about shortly.

4 Next slide, please.

5 Although the accomplishments have been many for this program a few to

6 highlight are the use of second life as a training tool for students in environmental

7 assessments, the development of virtual labs as a teaching tool, the start of 20

8 new university programs and many new courses focusing on reactor safety.

9 In order to improve the efficiency and effectiveness of the program two key

10 parts of the grant process were automated. First, the use of grants.gov, the

11 government source to apply and find grant opportunities. This moved our process

12 from paper to electronic as well as created uniformity with all our applicants.

13 Secondly, I recommended an automated payment system that was

14 implemented replacing paper payment process so that we can move money to our

15 grantees with ease, as well as enabling them to access reimbursement to their

16 expenses as they incur them rather than waiting on a check, reducing the burden

17 on the agency and the grantees. Next slide, please.

18 This program has been included in the NRC budget since 2007. Currently,

19 we are nearing the end of our grant process for this year just completing two days

20 of a very successful panel review meeting on Wednesday and we will be making

21 recommendations for grant awards shortly as our award date for these grants is

22 June 1. Shortly thereafter we will begin our next grant cycle for 2010.

1 Thank you very much for the opportunity to speak to you this morning and
2 I'd like to now introduce my colleague John Gutteridge.
3 MR. GUTTERIDGE: Good morning. Many of you are very familiar
4 with the $15 million program. I arrived at NRC on February 18th of last year. The
5 grant announcement had already been issued and so it was time to get
6 submerged into the program immediately, which I did, and the applications arrived
7 on the 1st of April. And we actually conducted a peer review in April and May and
8 we had 33 reviewers with three for proposal and it worked out very well. The
9 award date was made on August 1st. Next slide, please.
10 We did receive 99 applications. We funded 50, which is a very high
11 percentage. We funded all the trade awards that we got in -- six. We funded
12 two-thirds of the faculty development awards, which I was very happy with.
13 The universities seemed to indicate to me that faculty development is
14 actually more important than any other part of this grant program. There is a
15 shortage of faculty and as the backup slides show there's probably not a shortage
16 of students. We seem to be getting quite a few applicants because the field is so
17 lucrative now.
18 We did award about 22 scholarships and fellowships and we had 61
19 applications; so, about one-third. The nice part about this is we funded over 120
20 students and that does not include the students that are attached to as grad
21 assistants to the faculty development awards. So, that would probably add
22 another 30 or 40.

1 We probably have more than 150 students benefiting from this program in
2 the first year alone. Half the states applied, 19 received grants, 33 of the 49
3 institutions, two of the four minority serving institutions. The nice part was cost
4 sharing was not required by faculty development grant, but most of the schools
5 actually came up with their own sharing. So, that was very, very helpful. Next
6 slide, please.
7 2009 program we got a little bit more of a head start. We issued the
8 announcement in late December. The applications came in in February. We just
9 did a count of them and we have 130 applications this year. We had 99 last year.
10 So, we did have an increase.
11 The peer reviews are ongoing right now. We sent them out to our 42
12 reviewers for the 130 proposals. We should be dealing with them in about two
13 weeks with the trades and two weeks after with the other two. The award date is
14 scheduled for a month earlier than last year, which is July 1st. I think we'll make
15 that date. Next slide, please.
16 As Bruce Mallett mentioned we did have some lessons learned. The first
17 one actually is from Randi's program and she alluded to it that after the first year
18 they had an understanding of the curriculum costs. There weren't as high as they
19 thought, so they were able to better judge what would be on the second and third
20 year, which allowed them to have more awards.
21 In my case, what I learned when I was at my former agency was that
22 leveraging and partnering worked very well. And we included this year and have a

1 point value for leveraging and partnering in this year's announcement. So, they do
2 benefit by coming in with outside money and outside partners. And from what I've
3 seen most are doing that.
4 We eased or changed the GPA requirements a bit. A lot of the schools
5 came to us and said it's very hard to find especially undergraduate students with
6 3.5 grade point average. So, we lowered that a bit. Graduates were lowered as
7 well. I think it generally was well received by the universities.
8 And we actually broadened the eligible disciplines. Last year it was health
9 physics, radiochemistry and nuclear engineering. It left out a lot of schools that
10 don't focus on those three, so we broadened them a little bit and basically said
11 related disciplines. So I think we're going to get a bigger variety this year, which is
12 nice. Next slide, please.
13 We did emphasize this year the increased participation of trade schools,
14 community colleges, minority serving institutions and health physics and
15 radiochemistry. There were very few awards and very few applications in health
16 physics and radiochemistry last year. These are two areas that need assistance
17 and we are trying to do that this year.
18 Also we expanded the peer review community with the help of Ren Kelley.
19 She offered us quite a few additional reviewers and we are using them this year.
20 We're using 42 reviewers of the 60 or so that we have listed. Next slide, please.
21 I do believe that we have developed very good working relationships with
22 the universities. I think that's -- you'll probably hear that later today, but I always

1 have emphasized that and I know Randi has as well that we need to serve the
2 universities and not control the universities.
3 I believe the NRC program is assisting in a well-trained work force, which is
4 critical to nuclear safety. The service agreement, which when I came here, we did
5 not have one at my previous job and I was a little skeptical of having a service
6 agreement, but actually I think it's very beneficial now that I've looked at it. And it's
7 been agreed to by all the schools, obviously, all the students.
8 We actually have had two that have students that have changed their
9 minds; two out of the 150 or so. Schools have reimbursed the grant money that
10 they gave to the students. So, NRC had to take no action on those. And
11 under-represented groups have been encouraged, as I said, to apply this year.
12 That concludes my remarks. Thank you.
13 MR. BORCHARDT: That completes the staff's presentation. Thank
14 you.
15 CHAIRMAN KLEIN: Thank you for a very good informative
16 presentation and we will begin our questioning with Commissioner Lyons.
17 COMMISSIONER LYONS: I'll certainly start with compliments to
18 both Randi and John. These are incredibly important programs, especially in the
19 case of the $15 million. I know we didn't really have the time that would be ideal
20 for planning and it was necessary to get the program up and running essentially
21 overnight. And the success that you've discussed here especially in light of the
22 time you've had to do it, I think, is just very, very impressive.

1 John, you went through some discussion on the percent of different types of
2 awards that you were able to make ranging from 100% of the trade schools down
3 to about one-third of those for fellowships and scholarships.
4 I think those are still pretty impressive numbers whether you take certainly
5 the 100%, but even the one-third. Am I right that that's still fairly impressive for
6 this type of program across the government?
7 MR. GUTTERIDGE: You'll find at other agencies -- and I found at
8 DOE that we awarded about 15% of the applications at DOE, maybe 20% in some
9 years, but never half. So, when we had one-third of the fellows and scholars that
10 was high. Having half or two-thirds of the faculty was extremely high as well
11 because the faculty were the most expensive of the awards.
12 So, it was very nice to have that amount of money. Now, keep in mind we
13 awarded $15 million. We had $47 million in requests. I read every proposal and I
14 would say that 95% of them were meritorious. So, more money would have been
15 better things, but obviously we're limited.
16 COMMISSIONER LYONS: That gets to my next question. I don't
17 claim to understand even partially understand the language that has been
18 provided by Congress this year. It seems to be $10 million and then $5 million off
19 in a separate area. Maybe you have a better understanding of that, but my first
20 concern would be does this -- are we potentially going to get into a situation where
21 we end up cutting back on the program from the 15 of last year to the 10 that
22 seems to be quite cleanly continuing for this year. I hope that isn't what Congress

1 is intending, but do you have a feeling on that yet?

2 MR. GUTTERIDGE: I think, the General Counsel has discussed this

3 with Jim McDermott and myself, and I think the feeling is that for the $5 million

4 that's reserved for research, if you will, within our faculty development grant we

5 conduct research and I think that if the language is read as its intended that that

6 would service the faculty development grants so that essentially the program

7 should remain what it was last year. That's our initial feeling any way. The

8 general counsel might want to just comment on that.

9 MR. GRAY: We agree with that.

10 COMMISSIONER LYONS: In reviewing the language are you

11 convinced that the $5 million has to come out of the $15 million or could that come

12 out of other agency funds? At least as I read it I thought that was a possible

13 interpretation given that it was somewhat vague.

14 MR. GUTTERIDGE: I'm going to have to have the General Counsel

15 answer that. I don't know.

16 MR. GRAY: I believe the $5 million will need to come out of the

17 $15 million total, but it is a part of the whole $15 million and $5 million needs to be

18 dedicated to what the Congress has directed.

19 COMMISSIONER LYONS: Well, I appreciate your looking at that

20 and perhaps relooking at it very carefully because when I read it I thought there

21 was a possible interpretation that the $5 million could come out of available funds.

22 Maybe I'm off base on that.

1 MR. MALLETT: If I could add in. I think this is something that's
2 perfect for the Strategic Education Panel to look at with all of the members and we
3 do need to have, I think, some meetings with the other agencies to see how we're
4 going to go forward and probably get back to you on that. I just don't think we
5 know right now.
6 MR. GRAY: We can supplement from our other programs and add
7 to as permitted by our other programs, but in terms of the $15 million it is divided
8 as indicated.
9 COMMISSIONER LYONS: Well, certainly, just from my perspective,
10 number one, those discussions with the other agencies and the extent to which we
11 can cooperate and come up with a program that is much larger than the sum of
12 the parts. I think that would be highly appropriate and I'm about out of time.
13 But the second comment would be that I hope your Strategic Education
14 Panel does look at the possibility and the potential need to supplement the
15 program with still additional funds. At least from my perspective that would be a
16 reasonable and appropriate investment of agency funds if that's legal.
17 Again, I think you're confirming that maybe my interpretation was correct
18 that it could be done that way. I'm out of time. Thank you, sir.
19 CHAIRMAN KLEIN: Commissioner Svinicki?
20 COMMISSIONER SVINICKI: Thank you. I hesitate to put my ore in
21 the water, but I do have the statute language in front of me. It appears clear to me
22 that the $15 million is authorized for NRC and then of that amount $5 million. So, I

1 don't know. Perhaps we have other authorities to supplement, but it seems clear
2 to me that the $5 million is of the $15 million. So, anyway, I'll leave that to the
3 experts.
4 As they often joke if you've been staff on Capitol Hill is I'm not a lawyer, but
5 I played one on Capitol Hill for many years. So, that's my interpretation of the
6 statue.
7 [LAUGHTER]
8 I wanted to start out again by thanking Randi and John and I have a specific
9 comment for each. John, in response to the Chairman's comment about saving
10 you I will just say that if you have an affiliation with DOE on your resume you're in
11 good company here. So, don't listen to closely to what he says.
12 And Randi, I appreciate that you've brought some of the efficiencies and
13 more modern ways of thinking about the grant program here. I was particularly
14 happy that we used a letter of intent process because again when dealing with
15 educational institutions I think that we serve that whole community better if we're
16 able to see a briefer proposal and then indicate to them, kind of give them a sense
17 of whether not it's promising enough for them to invest all those resources to do a
18 full grant request to us. So, I appreciate that you have adopted what I consider a
19 very efficient process.
20 And also, you have implemented the automated payment system. I think
21 often the invoicing back and forth with educational institutions can be very delayed
22 and I appreciate that you've incorporated that efficiency.

1 And to both you and John I endorse fully the fact that we are involved in a
2 re-evaluation and improvement. Each year we're looking at we can do better. I
3 noticed even in the paperwork that goes out to potential interested educational
4 institutions that year to year we're trying to add little changes and improvements
5 and clarifications; that I think we're working with those who take part in these
6 programs to know what best serves their needs. I think that's important.
7 On the broader topic -- and I'm not sure I have a lot of questions, but I think
8 I wanted to second what Commissioner Lyons had said that these are certainly
9 very important programs for us.
10 NRC is the best place to work in the federal government and I think that
11 part of that is that we have shared organizational values. I think that education is
12 clearly -- being such a technical organization education is one of our shared
13 organizational values and you see it in everything from the agency staff that
14 mobilizes tremendous support to the Montgomery County Science Fair to other
15 schools and things, initiatives that sometimes employees just organize on their
16 own. So, I think there's a real commitment to education here.
17 I'm pleased, whether or not there is divided opinions about this program
18 remaining at a different department or coming here I think that we're working hard
19 to do our best in the implementation and I think that's really all we can do; being
20 given the mission, we're doing our best. I think that we're providing a lot of very
21 effective support.
22 I would ask -- and this might bring poor Ren to the microphone, but I know

1 that in terms of minority serving institution participation Ren and I had talked about
2 the fact that some institutions did not apply because they felt that it was a very
3 nuclear-oriented program that they may not have had relevant programs to bring
4 in.
5 I think what Ren told me that she and her staff have been reaching out to
6 institutions that didn't participate in the program and minority serving institutions.
7 I'm wondering if we're getting a sense of ways that we could encourage them if
8 maybe they don't have a nuclear engineering program that there certainly are
9 other opportunities and ways that they could contribute and be part of this. Do we
10 have any feedback yet in terms of that outreach?
11 MS. KELLEY: Yes, thank you, Commissioner Svinicki. That was the
12 case in the initial implementation of the program. We discussed this point with a
13 number of the minority serving institutions. They did have that impression and
14 some did not come forward because they did not think they could qualify for the
15 program.
16 And since that time that's one of the things that we talked about among
17 ourselves in the panel and how is it that we can broaden the scope of the
18 solicitation to include a broader group of universities that would qualify for the
19 funds. That was something that was taken into account and that was done in the
20 way that it was solicited this time.
21 And I believe we were successful in bringing in a larger number of minority
22 institutions because looking at the related subjects if you're not nuclear there are

1 other related topics that the program would qualify you for.

2 So, I believe we've been successful in doing that and the numbers as I

3 believe John indicated -- we did get a larger number of minority serving institutions

4 to apply.

5 COMMISSIONER SVINICKI: Okay. Great. Thank you. Thank you,

6 Mr. Chairman.

7 CHAIRMAN KLEIN: Let me add my compliments. I think this really

8 is a very important program and Randi and John have done a great job. I think the

9 important thing was getting the money out the door and then getting it out

10 correctly. The money did come in late for '08 and I think that worked very well to

11 get those resources to the people that need it, the academic institutions and the

12 students. So, you all did a great job on that.

13 I guess my first question for Randi is that as you look in the out years it

14 seemed like leveraging with the Department of Labor and the Department of

15 Education is something that we should do. Could you talk about maybe some

16 plans? And maybe Jim or John or Bruce or Bill could comment on that.

17 Do we have opportunities to leverage this program in other departments in

18 the federal government so that we can expand this and do a more effective job?

19 MS. NEFF: I haven't gone down that road yet, although I will say

20 that the Department of Homeland Security came to see us about leveraging our

21 program more so on John's end by using some of our scholarship and fellowship

22 recipients eventually to go have an opportunity with forensics. I'm sure that's

1 something we could do, but I have not done that yet.

2 MR. GUTTERIDGE: Mr. Chairman, I have been reviewing the trade

3 school applications so far and almost everyone of them has reference to other

4 grants from other federal agencies because we encourage them to leverage. So,

5 it's amazing to me that a little bit of money from the NRC -- and when it was at

6 DOE as well -- it's a catalyst for private sector and for other institutions to donate

7 and contribute.

8 A lot of it is in kind -- some of it is in cash, but a lot of it is in kind -- but a lot

9 of these schools I think you'll hear later from our other panelists have benefited

10 from the fact that the NRC stepped up to the plate and provided money and that

11 enabled them to go out and seek private funds, not only from the other federal

12 agencies, but from industry as well.

13 So, it actually does it on its own. I know that I particularly wanted to

14 leverage the funds this year in the announcement and including other federal

15 agencies. It seems to have worked so far. So, yes, we have done something.

16 MS. NEFF: I have one comment to add. We have received

17 leveraging from individuals from the universities and some from industry, although

18 not required in our grant program. There has been some voluntary contribution.

19 CHAIRMAN KLEIN: I think as the program matures and we develop

20 it, it would be good to develop contacts within both Department of Labor,

21 Department of Education and see if we can encourage them also to be proactive

22 in this area so that we can leverage our dollars with the dollars in the missions,

1 certainly that they have as well and probably Homeland Security as well.

2 MR. MALLETT: We have an action. Our panel discussed that. We

3 have not gone out as of yet to talk to those heads of those organizations.

4 Department of Labor was one that we focused in on that we think we could tap into

5 some of those resources. And it would expand their program and ours. So, we do

6 have that as an action.

7 CHAIRMAN KLEIN: Maybe this could be part of our stimulus

8 package that we can look at increasing educational activities.

9 MR. MALLETT: Good point.

10 CHAIRMAN KLEIN: John, you said that the applications went from

11 99 to 130.

12 MR. GUTTERIDGE: Yes.

13 CHAIRMAN KLEIN: What was the dollar request if you total up all

14 the requests?

15 MR. GUTTERIDGE: I haven't totaled it yet because I've only

16 managed to get through the 15 trades. These things tend to be 30 pages long, so

17 I've read them all, but I haven't read the scholars and fellows, although somebody

18 else is helping me review them.

19 I know that it's going to be high, although keep in mind that the faculty

20 development this year we're only allowing one faculty development, if you will, per

21 school. Last year we were allowing two.

22 What happens there -- so, that will be cut in half, that amount -- but what

1 happens there is that although we said in the application, the announcement you
2 can only have two faculty for the amount of money, many of them came in and
3 asked for six or seven. We go back here to leveraging.
4 I know one of your favorite schools Texas A&M has asked for seven faculty
5 to be supported by the grant last year and I said, "How can you do that?" They
6 said, "Because the fact that you gave us money we found all this other money out
7 there from the State of Texas and various organizations in the State of Texas,
8 private and public."
9 So, they were able to take our $450,000 which we intended for two of them
10 and turned it into seven, which is good for the faculty as you know because they
11 can claim that they have a grant.
12 CHAIRMAN KLEIN: Thank you. Commissioner Jaczko?
13 COMMISSIONER JACZKO: I appreciate the work that went into
14 getting the money and I think as the Chairman indicated we did get it late and
15 there was a lot of uncertainty last year, I think, about how the program would move
16 forward. So, I think you all deserve a lot of credit for the work you did to get it out
17 and the feedback in general seems to be positive.
18 Perhaps, I think, some areas for improvement -- I think as Commissioner
19 Svinicki mentioned with better communication with some of the minority serving
20 institutions so they have a better understanding of what the opportunities are
21 would be helpful. I don't have any particular questions at this point. Thank you.
22 CHAIRMAN KLEIN: Any more questions, Commissioner Lyons?

1 COMMISSIONER LYONS: Just perhaps one suggestion, not as
2 much a question, John. Maybe for both John and Randi. I would think that it
3 would be very interesting to the Commission and probably to Congress if you
4 could come up with at least an estimate after this year of the extent to which the
5 funds are leveraged with private dollars.
6 You've given a number of anecdotes of very good examples and I can
7 imagine that it would be hard to come up with a precise accounting. But I can't
8 help thinking that that would be an important number to have available, both for us
9 and for Congress.
10 Beyond that, my compliments and my appreciation -- very important
11 program.
12 COMMISSIONER SVINICKI: Could I just ask. I think, John, you had
13 mentioned the number of reviewers. We have a pool of 42 reviewers. Some of
14 those are external to the agency, if I understand. How do we go -- not names --
15 but what types of institutions are we reaching out to? Is that other government
16 agencies? Is there any private industry folks who volunteered to review?
17 MR. GUTTERIDGE: The review panel's -- the pool of reviewers,
18 which probably exceeded 300 or 400 last year, comes in from private industry,
19 universities, public policy institutions, NRC, although that's a small part. Of the 32
20 we had last year seven were NRC. I think out of the 42 we have this year
21 probably five are NRC.
22 I was never a large proponent of having the internal people review. Even at

1 DOE I didn't use DOE reviewers. I used outside sources. But I think it does help
2 here because we do want some benefit to the NRC. So, I think that's why we're
3 using some. And they're excellent reviewers I might add.
4 But they are from all parts of the community, both private, public, university,
5 whatever. It's a very broad sweep that we use.
6 And this year thanks to Ren and Tuwanda so that we could include more
7 minority institutions, they gave me a list of about 15 reviewers that we're using, I
8 think, 12 of those. So, we should have a better peer review process this year than
9 we did last year, although I was very happy with it last year as well.
10 MR. MALLETT: I wanted to add that's one of the lessons that we
11 learned last year was we thought we needed to broaden some of the people that
12 were on the panel reviews. I compliment Ren and Tuwanda for helping us do that.
13 COMMISSIONER SVINICKI: Okay. And my follow-up was just
14 going to be if you had any difficulty in getting reviewers and volunteers and it
15 sounds like the answer to that is a resounding no. Thanks.
16 MR. GUTTERIDGE: They love to review for some reason. I don't
17 know why.
18 COMMISSIONER SVINICKI: Okay. Thank you.
19 CHAIRMAN KLEIN: Well, I just had a question on one of your
20 backup slides. On slide 17 you talk about the NE enrollment trends. One of the
21 issues that industry used to challenge us on is not necessarily the quantity in the
22 pipeline, but the quantity that comes out.

1 So, in terms of degrees granted as opposed to people in the pipeline have
2 you started looking at that trend as well?
3 MR. GUTTERIDGE: Yes, actually I didn't put it in here because the
4 slide had about 40 schools on it, but it shows undergrads and grads enrolled and
5 also shows graduations from undergraduate and graduate schools. So, we
6 actually have that slide. I didn't provide it here. I don't know if it's in your books or
7 not, but it was very detailed and it was very hard to read. But, yes, we have
8 looked at that.
9 This year I asked for not only the enrollments, but the graduations. As you
10 know, they're a smaller percentage. And also looked at HP and radiochemistry as
11 well. I got incomplete results, so I didn't put that in the chart, but that's coming
12 along and Dr. Toohey actually has been helpful with that.
13 So, we will probably have better statistics even next year, but as you can
14 see the trend is very good and the graduations, I would say, represent about 15%
15 of the total are graduates. But keep in mind that of the undergraduates half of
16 them belong to a Masters or a Ph.D. so they're not available to the industry or the
17 private or public sector as well.
18 CHAIRMAN KLEIN: I think it's important to look at probably the
19 number of graduates and then the number of graduates that are available for
20 employment to track those trends.
21 And then the other is sustainability. I know one of the metrics that DOE had
22 for awhile was just getting a limited number of enrollments and they didn't look at

1 how do you sustain that. So, I think we need to look at sustainability as well.

2 Well, thank all of you very much for a great presentation. We look forward

3 to the second panel, the recipients of some of these activities. And we look for

4 continuous improvement in this area on a program that's been doing very well.

5 Thank you very much.

6

7 PANEL 2

8

9 CHAIRMAN KLEIN: Thank all of you for coming and enlightening us

10 on the recipients of some of these programs. It's always good to know what we do

11 well and what we can do better. So, thank you for your participation.

12 Obviously, health physics is an area that we hear a lot about and it seems

13 like no matter what the programs are there are never enough health physics going

14 around. So, Dick, we thank you for coming and telling us about your activities.

15 MR. TOOHEY: Thank you very much for the invitation to represent

16 the health physics profession. Actually, I can sum up our feelings in four words:

17 we are very happy. I realize you probably don't get to hear that very often at these

18 meetings.

19 CHAIRMAN KLEIN: Regulators rarely hear that.

20 MR. CORRADINI: Say it again.

21 MR. TOOHEY: Mike said I should say it again. We're very happy.

22 Can I have the next slide, please?

1 We've got 23 institutions with programs ranging from Bachelors to Ph.D.
2 degrees and a couple with Associates degrees only, but that is increasing. We're
3 seeing more and more coming on line. There's three or four, maybe half a dozen
4 coming in.
5 A number of our institutions are accredited by the Accreditation Board on
6 Engineering and Technology and the Health Physic Society is a member of that
7 Board. We pay a rather large amount of money for that privilege, but it's very
8 important because some scholarship recipients such as serving military or
9 government personnel who are being funded by the government have to attend an
10 accredited institution for their degree program. Next slide.
11 Health physics is, of course, a mixed bag. We've got a number of part-time
12 faculty -- well, they're full-time faculty, but they only spend part of their time on
13 health physics at the universities. The number of faculty who spend at least a
14 quarter of their time on health physics ranges from one to 11 and the student
15 enrollment ranges from none -- but hoping for more -- to 80, which is a pretty
16 good-sized department, actually.
17 The summary statistics in our health physics education reference book --
18 John has a copy of that. It's also available online and we're currently gathering the
19 data updated for this year. Wes Bolch from the University of Florida is in charge of
20 that effort. Next slide.
21 Health Physics, of course, the name was developed during the Manhattan
22 project to hide what was really going on. It's still quite effective in accomplishing

1 that. There are relatively few programs that are actually called Health Physics.
2 They're embedded in nuclear engineering programs, medical sciences,
3 environmental science, biology, physics and so on.
4 That's part of the reason that we haven't had a single champion for these
5 programs for this academic discipline. It was one significant thing we saw with the
6 NRC's program because, of course, you need a lot of health physicists in the
7 agency to accomplish their job. You recognize the importance of this as a
8 separate discipline. Next slide.
9 Our programs, as I mentioned, are very pleased with the first couple of
10 years of experience. I think as the staff mentioned the relationships between the
11 NRC program and the universities have been very good. We feel like an equal
12 partner in the program.
13 The staff has provided excellent support and help to faculties in the
14 universities. And again, because it represents all the disciplines involved in health
15 physics -- dosimetry, environmental, reactor operations, and everything else. It's
16 really a good match. Next slide.
17 Of course, we have put together our wish list of what we'd like to see. If we
18 were the only academic discipline in the country that needed funding and we had
19 all the money and were calling the shots on the Hill we would like to see a
20 nationally competitive program. It already is to some extent, but we would like to
21 see more expansion on that.
22 One thing our faculty members have told me is many of them would rather

1 see the money going to an individual student rather than to an institution and then
2 that student could use that scholarship or fellowship grant to attend any accredited
3 program of their choosing. So, that may be one option. If it's already ABET
4 accredited, fine; if not, there'd have to be some sort of procedure where the NRC
5 endorses this as a kind of program from which you would be willing to hire a
6 graduate on site. Next slide.
7 Certainly, the level of support should cover everything: tuition, fees, living
8 stipend. Of course, I can't complain. When I started in this business I had a $120
9 a month fellowship. Dollars were worth a lot more back in those days, I suppose.
10 The Block Grants -- next slide -- are working very well in faculty
11 development and supporting faculty research. Infrastructure support is probably
12 something that needs to be addressed. Instrumentation, re-equipping say
13 radiochemistry labs with more modern equipment and all that sort of thing. Next
14 slide.
15 Certainly, as was mentioned leveraging is very important and we certainly
16 look to encourage industry and national laboratory collaboration with the university
17 programs. For instance, my colleague Rich Bray at Idaho State, most of his
18 students spend an awful lot of time in Idaho Falls which is just down the road
19 working at the Idaho National Lab.
20 We feel extended support is very important for five years to get someone
21 completely through a Ph.D. program and was very glad to hear from Randi that the
22 Omnibus Bill does carry long-term or at least the promise of long-term funding with

1 it.

2 The other thing we are interested in, sort of the traditional approach to
3 forming a consortium of colleges, universities and the private sector is regional,
4 but we are proposing looking at subject area consortia. Next slide.

5 Some of those disciplines we think really do need attention. One has
6 already been mentioned, which is radiochemistry. There are very few, if any,
7 radiochemistry graduates coming out and a lot of departments have shut down on
8 that. But it's a critical national need in national security as was mentioned.
9 Nuclear forensics, response for both environmental and bio assay sample analysis
10 following a radiological terrorist event. CDC is working to develop a laboratory
11 network to analyze potentially hundreds of thousands of samples in a short
12 amount time. But the analysts that actually do that are shortfall.

13 Some of the more arcane things like internal dosimetry, environmental,
14 obviously nuclear-powered and fuel cycle HP.

15 Decommission and decontamination. That may not -- my personal
16 opinion -- be as important as it used to be because everybody is applying for a
17 license extension now rather than deciding to close it down and take it apart.

18 But also naturally occurring radioactive materials and instrumentation and
19 detection. We've got a lot of new smart technologies coming on line that I think
20 could also be applied to a faculty research, collaborating then with private industry
21 or national partner for practical application, would be very beneficial to that.

22 So, the last slide is just some acronyms on there. Relatively few people not

1 in academia know what ABET stands for, so I included that for you. You certainly
2 know what D&D and NORM are.
3 That concludes my remarks. Thank you.
4 CHAIRMAN KLEIN: Thank you. Mike?
5 MR. CORRADINI: Thank you very much. I'll apologize ahead of
6 time. I don't have an acronym slide, so I'll try to explain them as I go along. I
7 failed already on one of the requirements. So, I tried to keep it relatively short. If I
8 could have the first slide, please.
9 I have only three things to say in terms of kind of what happened: The
10 history, what is current status and future direction. I have a couple of things to
11 show you as examples. I'll try to talk through most of it.
12 In 1999 -- and I'll preface this by saying that instead of telling you about the
13 discipline I'll try to weave it in so that you can see where I'm coming from. In '99
14 the Nuclear Energy Research Advisory Committee for DOE led by Jim Duderstadt
15 was quite concerned about what was at that time looking like a declining
16 investment -- a severely declining investment in nuclear engineering education.
17 So, I kind of got a call out of the blue from Jim saying, "Would you like to chair a
18 panel to look into this?" So, in '99 we started the investigation; finished it in 2000.
19 If we go to the next slide to show you kind of what it looked like. This is a
20 slide that I would say is infamous rather than famous for a lot of reasons which we
21 can get into, but I put the two statistics up just to save some time.
22 One is you have this enormous dip in undergraduate student enrollment

1 and about the same time or shortly thereafter essentially a lack of investment by
2 DOE. The red line back in the late '90s that just kind of bumps along at a few
3 million dollars is essentially for fuel for university research reactors and that's
4 about it and some transportation. So, we had this declining investment.
5 The study which ended in 2000 and submitted to the DOE basically said
6 that there's got to be a way -- we have to reinvest in nuclear engineering education
7 and we gave six steps in which we would go forward with that.
8 In fact, shortly thereafter in the summer of 2000 I got a call from Senator
9 Bingaman's staffer on the Hill, John Epstein, and we started talking about ways to
10 authorize this and a lot of what occurs after that is because of this initial study. So,
11 at that time DOE renewed the effort in that area and you saw then the blue line
12 which shows a growth.
13 I will not claim there's any correlation between the red and the blue; simply
14 that the blue line we started increasing investment in a whole range of areas.
15 In 2006, DOE declared victory and essentially eliminated the program. That
16 essentially is the end of it there. I decided that I wasn't going to take somebody
17 else's slide and manipulate it, but I was trying desperately to show you how this
18 thing fell to zero. Trust me, it essentially went to zero.
19 And actually, John mentioned it -- John Gutteridge mentioned it in his
20 discussion that then some of the program kind of sat there for a year and then got
21 moved over to the NRC, which I will compliment all of you here and many others in
22 the Congress to have that occur.

At that time we were so concerned that there wasn't going to be a continued investment that the American Nuclear Society put out what is called the FINE report. I even had to look up what that one was. That stands for Federal Investment in Nuclear Education.

And Pete Miller, Warren Miller the former deputy director of Los Alamos ran the study for the American Nuclear Society and we again came back to pretty much the same principle as before, which is you have to invest in human infrastructure otherwise you're going to have a problem.

And so, I guess I end my history with we're at a point now, at least from the NRC side, where we now have an education piece the NRC is part of or is running, which I would say it in two ways. I'm happy, but I would call it comprehensive and coordinated. I would think that how it's being run now is how I would hope it would have been continued to be run, but at least it is running. So, that's kind of the history part. Can we move to the next slide, please?

Status. So, I guess my feeling is the current program is well structured. I'll give you some examples. First, educational grants to build curricula. We were lucky enough -- that is Wisconsin was lucky enough -- to win a grant in the first year of this and our focus was risk.

I have some colleagues on the ACRS which have now got me in a room and I can even talk about risk in a somewhat intelligent fashion. But the program was risk uncertainty and decision analysis. We were happy to get people from IE, Industrial Engineering, Civil Engineering and Statistics to put together something,

1 but that's an example.

2 Another example that kind of gets to one of the questions of the

3 Commissioners before -- I think Commissioner Svinicki was asking about other

4 institutions. We were trying to and are continuing to try to work with minority

5 institutions. One in particular in this case that pops into my head is the University

6 of Puerto Rico Mayaguez, where they do not have a nuclear engineering program,

7 but they have faculty in chemical engineering and mechanical engineering that are

8 interested. And I think they have a grant in the 2008 cycle on trying to develop

9 courses. I think Dean Lewis will tell you about the successes at South Carolina

10 State.

11 So, the educational grant program has success in a couple ways. You can

12 change what you're doing in an established nuclear engineering program by

13 connecting departments and faculty for new initiatives. I use the example of risk.

14 You can try to start the inklings of a new program at other universities that

15 don't have nuclear engineering by involving faculty to cross lines and develop new

16 curricula that will be embedded in a current degree program.

17 Second example is scholarships to build the work force. Again, I go back --

18 I pick on my colleague Doug Henderson. Doug was one of the -- Professor

19 Henderson was one of the folks that back in I want to say 1999 or 2000 with Bill

20 Magwood and others essentially drew up the curriculum with -- I'm thinking it was

21 Dean Anderson at South Carolina State when we were a partner institution.

22 And so, in the scholarships and to build the work force example here, Doug

1 was the one that actually has shepherding scholarships and fellowships at
2 Wisconsin. And the only reason I picked that is he also is running a program for
3 the campus called Graduate Education Research Scholars, which is a diversity
4 program.
5 So, I think at least in our case we try to link it with programs that are already
6 successful at the institution and at Wisconsin we have a thing called the Linkage
7 Program where the scholarships for undergraduates and the fellowship program
8 really tries to bring in not just across engineering, but across the campus.
9 Again, I use this as an example of a success not because it's us, but simply
10 because then you can get again a different flavor. We were able to recruit some
11 very good students; one from Iowa State who happened to be working I want to
12 say with the State Department here back to graduate and for his Ph.D. So,
13 another example.
14 Junior Faculty Program. John went through that in a good bit of detail. I
15 wanted to kind of go off of a question that one of you asked. I don't remember
16 which one about the Junior Faculty Program and leveraging. I supported this one
17 for a number of years and finally the money was able to be given. And the reason
18 I support it is because finally in similar fashion to the NSF Career Award and
19 similar fashion to the Office of Naval Research Faculty Program, AFOSR's Faculty
20 Program you allow the faculty to do some work in a fundamental area and you kick
21 start them at their young careers and then it should stop. It shouldn't continue,
22 and by then they should have been developed certain research areas and certain

1 areas to do work where they can go to normal peer review competitions and do
2 things.
3 The leveraging part of that is very important in similar fashion to NSF,
4 AFOSR, the DOE's fusion energy; all of these require some sort of leveraging
5 where they look for other monies. And so, I think that's very important. And let me
6 move on to my last slide relative to funding for '09 and collaboration.
7 In the future I think the comprehensive program that NRC is doing should
8 be continued, but also now married to what I've been reading in the language. I
9 was trying to pull up the language when you guys were interpreting it because I
10 couldn't remember it. I read it and I'm still not sure. Now I have to go to Congress
11 and Obey's words on the floor to try to figure out because they reference his words
12 on the floor.
13 So, four things under support and collaboration with DOE and NNSA. First,
14 in education programs I have an opinion here -- and it's only an opinion -- that this
15 money which is being pooled I really do think that the connection to the junior
16 faculty is the way to do this because if you focus on the individuals again and build
17 the human infrastructure you can help the research, but you help it in a way where
18 it's essentially like the spark to kick start a career and then all of a sudden it really
19 continues.
20 In infrastructure support -- nobody's mentioned it yet, but I want to get back
21 to it since one of the things that we did in the Big 10 is we had a group of us
22 together that won a grant. We even beat the Missouri folks initially, which was the

1 university research reactors. I really do think there should be infrastructure
2 support for things. And the things don't go apart from the people, but they've got
3 to be supported in some way to keep up -- I would say -- top-notch facilities to do
4 good work, whether it be for undergraduates in training, in laboratory courses or
5 graduates for doing some of the research work.
6 I will point to one thing that Idaho has done that I think is good is this
7 consortium with the ATR reactor where they have essentially married that facility
8 with institutions and universities which can then join in and have facilities at
9 universities working with the ATR so we can have some sort of joint work.
10 And then finally, mission-oriented research and investigator initiated
11 research. That I feel really is DOE's role in life and I hope at least the way I read
12 the language it's going to continue or at least grow to that.
13 My last slide is simply to show you there are actually degree programs that
14 are out there. South Carolina State was the oldest, but I put them in alphabetical
15 order in term of the new program. These are six that are not just having new
16 programs; they're actually going for new degrees. And so, I'll just stop there.
17 Thank you.
18 CHAIRMAN KLEIN: Thank you. Ken?
19 MR. LEWIS: First I'd like to thank the Commissioners for inviting me
20 to speak today and I want to talk about how successful your funding programs
21 have been in expanding the programs and enhancing programs in nuclear
22 engineering and science at South Carolina State University. Let's see.

1 The slide that's up on the board now -- basically briefly. South Carolina
2 State University is a HBCU. It's an 1890 Land Grant college that was founded in
3 1890. It's located in Orangeburg, South Carolina. It has an approximate
4 enrollment of about 5,000 students.
5 In 2000 we entered into an agreement, a partnership a majority/minority
6 partnership arrangement with the University of Wisconsin to form a nuclear
7 engineering program, the first such at an HBCU as Dr. Corradini alluded. The
8 program was implemented in 2002.
9 We began with seven students. Motivation -- next slide, please. Our
10 motivation was, of course, the national imperative to train nuclear engineering and
11 science students, both for civilian nuclear power as well as for the national security
12 areas. Next slide, please.
13 I want to get directly to the point here. This slide shows the progress of our
14 enrollment and it's due directly to the support from basically three grant areas.
15 One is Ren and Tuwanda's grant; the first one listed there. The second one is
16 Randi's scholarship program. The third one is John's scholarship program.
17 You can see that we've gone from in 2002 seven students to in 2008 close
18 to 50 students. We don't have 2007 listed there, but in 2007 our fall enrollment
19 was 41 students.
20 The next slide basically lists -- it's just a list of a lot of the students who have
21 benefited from the program and the next slide also shows that.
22 There are 11 more who were not included in this data. Let's move on to the

1 next slide, please.

2 Once again this is another way of showing the correlation between our
3 increased enrollment and the support that we've gotten particularly through the
4 grant programs from the USNRC. Next slide, please.

5 One of the major goals that we had beginning in 2005 when we graduated
6 our first student was to get this program ABET-EAC accredited as a nuclear
7 engineering program. That happened in August of 2008.

8 The visit for the program was in November of 2007 and in August 2008 we
9 became the first new nuclear engineering program accredited in about 30 years
10 and significantly the first ever accredited at an HBCU. Next slide, please.

11 Some of the support for our accreditation came from the USNRC with
12 Dr. John Larkins, who is a member of our advisory committee and he helped us in
13 three major areas.

14 First, he helped to formulate our mission statement. Secondly, he helped to
15 formulate our program educational objectives. And thirdly, he was the key
16 advisory committee member who actually spoke with the ABET reviewers when
17 they came down to South Carolina State. So, we were quite happy with his
18 contribution and the contribution of the USNRC in helping us get accreditation.
19 Next slide, please.

20 We recruit students in four major ways, but the one that I want to focus on
21 is the fourth one. Through a grant through Ren and Tuwanda's office we basically
22 instituted a summer nuclear science institute program for high school guidance

1 counselors. We targeted guidance counselors because they actually have access
2 to a wider cross-section of very good students and most of our students who are in
3 these summer programs were about 14 years old. And so, they hadn't made up
4 their minds yet. So we targeted guidance counselors because they could direct
5 those types of students to us and indeed they did. Next slide.
6 The funding for this came through Ren and Tuwanda's office. We received
7 a $90,000 grant to institute the summer nuclear science institute for high school
8 guidance counselors and that funding will extend through this summer actually.
9 We also got a grant from the U.S. Department of Education to actually have
10 the same institute for high school science students. Next slide.
11 This slide shows one of the guidance counselors. This one is Ms. Helen
12 Beard. She's from the State of Tennessee. Most of our guidance counselors
13 came from the State of South Carolina. But we actually had a rather rigorous
14 program for them. Most of them were not science majors and so it was a new
15 experience for them and we actually were able to explode a bunch of
16 misconceptions that they had as well.
17 We felt that that would help them basically explain to even those who were
18 not necessarily interested in pursuing careers in nuclear science and engineering.
19 They would be able to explain to those students at least the opportunities that
20 were available and basically would be able to do so with some basis of knowledge
21 as opposed to their preconceived notions about nuclear energy.
22 The next slide basically shows a number of the activities that we were

1 doing. We had lectures in the morning and experiments in the afternoon. This is
2 basically the way things ran.
3 We also -- on the next slide -- had a number of very interesting activities for
4 them to perform using nuclear instrumentation. Of course it was a lot of work they
5 had to do in regard to lab reports and everything else. So, it was a new
6 experience for them because most of them as I mentioned before were not
7 science majors. Next slide.
8 This experiment basically is one in which we placed a very weak source on
9 the underside of a piece of poster board. We had the poster board matrixed and
10 they had to actually use a pancake detector to find out where the source was and
11 give us a matrix number. Next slide.
12 We also had three field trips for the guidance counselors, one of which was
13 to the MOX fuel fabrication facility at the Savannah River National Laboratory.
14 Next slide.
15 As I mentioned the guidance counselors helped us to recruit students for
16 our summer nuclear science institute and this is our first group of students. We
17 had a group of 10. The average age was about 14 or 15. They were rising
18 sophomores. It was a very successful program. Once again, we had a group of
19 10 in this first group. We had a second group of 10 also. Next slide.
20 Basically, this slide shows some of the work that they were doing. Once
21 again, heavily involved in using nuclear instrumentation and we taught them
22 fundamentals of nuclear science. Next slide.

1 This is our second group and basically went through the same curriculum.
2 Next slide.
3 This shows the students using in this case a multichannel analyzer, which
4 actually they've learned how to use and calibrate. And then it shows a classroom
5 lecture. Next slide.
6 There was also a visit to the VC Summer nuclear power plant. That was a
7 half-day trip and they actually got to tour inside the nuclear facility. We thought
8 that was very instructive as well. Next slide.
9 We also implemented in the year 2005 a radiochemistry program at South
10 Carolina State University. It was actually funded in part by the DOE and NNSA at
11 that time. This grant allowed us to basically train up to 10 students in
12 radiochemistry, four of whom you see there. They have all since graduated. Next
13 slide.
14 This shows experiments that the students were doing at Clemson University
15 during the summer of 2006. And here they are basically doing chemical
16 separations. In the State of South Carolina in the northwest corner a lot of the soil
17 and also some of the rocks actually contain thorium and uranium. They actually
18 did the actinide separations. Next slide.
19 This is one of our current students. She's a junior at South Carolina State.
20 She's a chemistry major focusing in on radiochemistry. She is a USNRC intern
21 and has been for the last two years and plans a career in the USNRC when she
22 graduates. Her name is Sophie Lee. Next slide.

1 These are also two students who have been benefited by the scholarship
2 programs. One is a sophomore, Sherry Harris and then on the other side is
3 Bradley. He's a junior. These people were funded through John's scholarship
4 program. Next slide.
5 In 2008 through Randi's program for curriculum development we were able
6 to actually get funds to start a minor in health physics within the Physics
7 Department. We've recruited so far three students, one of whom is shown here.
8 This is USNRC Scholar Ashley Graham. We actually designate the scholarship as
9 a USNRC scholarship. All three of the students who have been recruited to this
10 program are recipients of John's scholarship. Next slide.
11 And I want to thank the USNRC and all of the Commissioners once again
12 and invite all of you to come to South Carolina State at some point.
13 CHAIRMAN KLEIN: Thank you very much, Ken. Elaine?
14 MS. CRAFT: Good morning. I'm delighted to meet with you this
15 morning -- next slide, please -- to talk to you about three aspects of the work that
16 we're doing at Florence-Darlington Technical College that we think will be of
17 interest you.
18 First is the impact of the NRC scholarship grant to Florence-Darlington
19 Technical College. Secondly, the industry employment demand that makes it
20 imperative that we grow our programs. And third the educational continuum and
21 the partnership that is essential for the future work force. Next slide, please.
22 Florence-Darlington Technical College was the recipient of $150,000 grant

1 award. It was to support 54 scholarships in pipe welding. What happened -- and
2 as John Gutteridge mentioned earlier -- was this truly was a catalyst. It allowed us
3 to start a Pipe Welding Academy with support from Progress Energy, DZ Atlantic
4 and others who stepped up to the plate very quickly as soon as we had NRC
5 money.
6 The Pipe Welding Academy became a reality and the scholarships are
7 enabling us to enroll students that have the greatest talent and potential instead of
8 just those who have an ability to pay. Next slide, please.
9 We are using our faculty members as success coaches for students. I
10 think, Chairman Klein, you made the point about it's not just about getting them
11 enrolled; it's about getting them out the other end and into the workplace. Our
12 success coaches are really doing a great job with this. They're promoting
13 retention. They're solving problems early on for the students and our retention
14 rate has been excellent.
15 To date, we have 20 certified pipe welders; 40% of those are minorities.
16 Progress Energy is testing and certifying those graduates for us. We have 34
17 more certified graduates anticipated by August 2009 which will be the full
18 complement of 54 that the grant provided for. Next slide, please.
19 All graduates working in the nuclear power industry are still enrolled in
20 higher education of the 20 that we've already graduated. One of our graduates
21 came by recently -- and this is really when it becomes real. The student brought
22 us a pay stub. This student was so excited. He had made more than $2,000 in

one week. It had totally changed the economics for his family. He was kind of a walking economic stimulus and it was so exciting. We were excited for him.

The educational pathways that we have available to students who do the Pipe Welding Academy that can go ahead if they'd like to continue their education, which very few of them have. They are pursuing industrial engineering, electrical engineering technology and they can go on beyond that. Next slide, please.

Importantly the knowledge and skills that are being learned are transferable to other industries. So, their futures are very secure with the skill sets that they are receiving.

The success of the NRC scholarship program and student demand led to the creation of a new pre-pipe welding program at the college and an evening program to meet the demand. We now have 125 students enrolled in the pre-pipe welding program just since January of '09 when we started it.

Essentially, our pipeline is full and the cream of the crop, as most of you know, you have to become a welder before you can become a pipe welder. And so, our pipeline of welders is full. From that, we'll be able to choose the cream of the crop to go into the pipe welding and send into the nuclear energy industry. Next slide, please.

As a result of the success of the Pipe Welding Academy and industry demand we now have a pipe fitting and valve technician academies planned to complement this. We have also plans for having the students in these three programs work together in little mini crews as they would in industry on projects in

1 the program, which will make them much more work place ready.

2 The demand for technicians and craftsmen is greater than that for

3 professionals. I'm sure that you're also aware of. It's just sheer numbers. During

4 an outage at the Brunswick plant in North Carolina right now for instance, a DZ

5 Atlantic representative said they normally have about 200 technicians and

6 craftsman there. But during an outage they can have 800 to 1,000. And so the

7 numbers are just staggering, the number that we need. We're drawing students

8 from all across South Carolina into our program. Next slide, please.

9 We have plans to add a nuclear power plant operator certificate within the

10 engineering technology program at the college. We are a pilot site for the Nuclear

11 Energy Institute. Our sponsoring industry is Progress Energy and what this will

12 create is a new industry recognized uniform curriculum that's being implemented

13 across the country and we're delighted to be a part of that pilot program. Next

14 slide, please.

15 Wages in nuclear stimulate regional economies. There's just no doubt

16 about that. A sample of the median salaries in the areas where Associate Degree

17 graduates are typically found employed: reactor operator, electrical technician,

18 mechanical technician, these are jobs with salaries in the $60,000 to $80,000 a

19 year range without any consideration of overtime or per diem or anything. These

20 are very good jobs. Next slide, please.

21 As you know we're experiencing the first major growth in nuclear energy

22 since the 1970's. There's a potential for up to 26 new nuclear power plants and

1 new and replacement talent is needed. This employment demand is unique in
2 today's economy. This is an industry that is expanding rather than contracting.
3 Next slide, please.
4 And what we hear from our industry partners is that both theoretical and
5 practical learning are required. On the job training alone which was relied on so
6 much in the past in the areas of technicians and skilled craftsman is no longer
7 sufficient. Advances in technology require greater knowledge and skills than ever
8 before. Next slide, please.
9 Two-year colleges are comprehensive and technologically advanced. In
10 America, we have nearly 1,200 community colleges enrolling 11.5 million students.
11 We serve the most diverse student population of students in higher education
12 today. Forty-seven percent of these students attend with financial aid. At our
13 particular college that number is 78%. Without the kind of support that we're
14 getting from the NRC scholarships these students simply could not pursue this
15 higher education and get these good jobs. Next slide, please.
16 Many start at two-year colleges en route to four-year degrees and the
17 pathways for college transfer are smoother now than ever before and we continue
18 to work on that. Students can easily transfer from Florence-Darlington Technical
19 College to South Carolina State University to go into their program or into a health
20 physics program at Francis Marion University.
21 Fifty percent of those earning engineering or science Bachelors degrees in
22 this country have attended community college at some point in time and technical

1 and community colleges prepare highly skilled technicians. It's really our
2 specialty. Next slide, please.
3 50% of all employment today is in the "middle-skill" occupations which
4 require more than high school and less than baccalaureate. Partnerships are
5 going to be vital at all of these levels of education to move forward. No one of us
6 can do this alone. Next slide, please.
7 Advancement of nuclear energy will not be possible without strengthening
8 every component of this continuum. Florence-Darlington Technical College is
9 pleased to be a partner with the NRC to proactively address this challenge. Next
10 slide, please.
11 The NRC educational grants are having significant impact and should
12 continue. In fact, we think they should grow. Next slide, please.
13 The nuclear power industry needs more talent than is currently available or
14 that is in the educational pipeline really at any level. Florence-Darlington
15 Technical College and other two-year colleges are a critical part of the continuum
16 and solution to the nuclear power workforce challenge. I think the NRC
17 educational grants program is going to be even more important in the future than it
18 is today and I do thank you for including us in this program as a grant recipient and
19 also in today's discussion. Thank you.
20 CHAIRMAN KLEIN: Thank all of you for very informative
21 presentations. We will begin our questioning with Commissioner Lyons.
22 COMMISSIONER LYONS: We certainly heard four success stories

1 and my compliments to each one of you. If I could maybe start in reverse order,
2 Elaine and start with you. I was very pleased to hear that Progress Energy has
3 stepped up and is helping.
4 Is there some union involvement? Are any of the unions involved in hiring
5 these individuals also showing interest in your program?
6 MS. CRAFT: We do not -- it's not a very strong union state. I really
7 can't answer your question.
8 COMMISSIONER LYONS: I was just curious. It's not critical.
9 MS. CRAFT: We have no trouble placing the graduates from our
10 programs, but we don't have any particular relationship with the unions in doing
11 so.
12 COMMISSIONER LYONS: Interesting. I was just guessing that the
13 program that you have would be of great interest to at least some of the unions.
14 That's why I asked.
15 I was also curious if you could comment on the male/female ratio in your
16 program -- in that welding program. I ask because I had a couple of occasions to
17 visit programs at Cape Fear and at Wharton County and I was very impressed that
18 my stereotype that it would be -- it was predominantly male. But there were a lot
19 of women in the program. Are you finding that, too?
20 MS. CRAFT: We are. In fact we just recently completed a "Women
21 in Welding" video to sort of highlight this and help us with additional recruitment
22 efforts. These were incredibly diverse. They were young. They were middle age.

1 They were second career. They were African-American. They were White. It was
2 just a wonderful mix of women. They were very passionate about welding and
3 about what it meant for them and for their families and for the kind of work they
4 could do.
5 One of the little quips that one of them said that we just loved was that
6 somebody asked her -- they questioned her about wanting to be a welder. "Well,
7 doesn't it mess up your nails?" She said, "Honey, with the money I make I can get
8 them done again."
9 [LAUGHTER]
10 COMMISSIONER LYONS: I'm very glad to hear you're helping to
11 break down stereotypes. That's great.
12 Ken, my compliments to you from any number of perspectives; that
13 accreditation that you achieved within the last few months. It's certainly an
14 outstanding milestone. I was very pleased to hear that John Larkins -- I guess I
15 could say "our John Larkins or our former John Larkins" -- was involved in helping
16 and certainly very positive.
17 I was curious if you are able to obtain leverage from industry and/or unions
18 in a similar way that Elaine described?
19 MR. LEWIS: We have been able to do that. We've formed an
20 alliance or partnership with the MOX facility down in Aiken and actually they've
21 instituted a five-year scholarship program across the board for all engineering
22 technology because you don't just need nuclear engineers as Elaine pointed out,

1 you need other people, too.

2 So, we are having our first class of four graduates coming out. They

3 basically received full tuition scholarships over the last two years from the MOX

4 program. Duke Power and Light has basically contributed two $5,000

5 scholarships to a couple of our students; one in computer science and one in

6 nuclear engineering and SCANA has actually helped us in various ways including

7 helping to schedule these field trips that we have for the summer science

8 institutes. We're quite pleased.

9 COMMISSIONER LYONS: That's excellent and I'm glad to hear

10 they're stepping up to the plate, too, because there's certainly a role for

11 government in this, but there's also a role for industry, too.

12 And then a question for probably both Mike and Dick. Both of you touched

13 briefly on the way the Congressional language is worded this year looking towards

14 cooperation among not only NRC but NNSA and NE.

15 I'm just curious if from either of your perspectives there's been any

16 discussion within the organizations that you represent, Mike from perhaps the

17 nuclear engineering department head organization or from HPS, in those agencies

18 and other appropriate agencies playing some role in trying to work across the

19 agencies that are now being asked to work together and to provide suggestions

20 maybe even assistance in how to form a cooperative program.

21 It just seems to me that you two represent two of perhaps several

22 organizations that could help in crafting this kind of cooperative approach.

1 MR. TOOHEY: Thanks, Mike. Actually, not yet, but it's an
2 interesting idea. We, as you know --
3 COMMISSIONER LYONS: The ink is hardly dry.
4 MR. TOOHEY: -- we're not shy about expressing our opinions to the
5 Commission or to DOE but it's on specific topics: cesium chloride, isotope
6 production, things like that. But it certainly makes sense as a representative of the
7 profession to help the disparate agencies, if I may use the term "play nicely"
8 together, to accomplish Congress's intent.
9 MR. CORRADINI: I guess in all honesty I read the language when
10 you guys were asking each other and asking the folks before up here, I thought, I
11 can't remember the language, so I pulled up the PDF file to read through it.
12 I do think, though, that going forward it would be good if the three agencies
13 would at least get -- the nuclear engineering department heads, which I'm kind of
14 representing in this case, is essentially just as any academic organization has we
15 just get together. We get together in the context of the American Nuclear Society.
16 So, I would hope that the ANS has asked at least to get involved in some of the
17 discussion.
18 In the past we have sometimes even when we're not asked we will form a
19 committee and give advice anyway. But I think in this case it would be good if that
20 would be the case.
21 The only thing that pops in my head is the president-elect of ANS is coming
22 up next week to the student section and so I now have something to torture him

1 with over pizza and beer about it. But I do think it would be a good thing to do. I
2 would prefer to be invited into the discussion rather than kind of horn in and start
3 giving our reviews. But I think it's a good idea.
4 COMMISSIONER LYONS: I just wanted to plant the seed and I'm
5 sure John Gutteridge from our perspective will certainly be trying to work with each
6 of the entities to try to craft the best possible program. It just struck me that you
7 two represent appropriate agencies. Thank you.
8 CHAIRMAN KLEIN: Commissioner Svinicki?
9 COMMISSIONER SVINICKI: Thank you. Well, I add my welcome to
10 all of you. Elaine, you talked about seeing that pay stub and that's when it gets
11 real, I think you said. Well, it get real for us when we can hear from all of you
12 directly as participants in this program and hear about these successes. So, I
13 appreciate you all traveling to be here today and your presentations that you've
14 given.
15 I'm going to start with the language again since Commissioner Lyons
16 closed with that. I don't profess any perfect interpretation, but I guess I always
17 start with the simplest interpretation first. I look at the driving the pulling of the
18 $5 million from the three different, from the NRC and the two other programs. I
19 think of that as perhaps a kind of mechanism for forced consultation and I'll call it
20 government mathematics where they say if you do five, five and five somehow
21 through the coordination we might end up getting more benefit than just the
22 additive of those three.

1 You heard from the first panel that NRC staff feels that junior faculty
2 development for our $5 million would be a good direction to go. I'm hoping -- we
3 talked about radiochemistry and you were mentioning, Dick, the national security
4 need for that. In my simple way of looking at it I thought perhaps NNSA might say
5 for their $5 million that's a real emphasis for them.
6 So, I'm hoping that that's at least -- it's maybe the simplest objective that I
7 can interpret of what Congress wanted but I'm hoping that that's at least part of it
8 is that the sum of it will end up being more than each contribution through the
9 coordination that will be required now under the language.
10 Dr. Corradini, you had mentioned the Office of Naval Research and the Air
11 Force programs and I wasn't going to weave that in today, but I will say that I
12 spent a couple of years working with the military services on their outreach
13 programs. You're right. The junior faculty support is something that the military
14 has been investing in and DOD has been investing in.
15 One of the things that they can offer those junior faculty, while they have a
16 lot of interesting experiences that they can offer, but they can take them to an
17 aircraft carrier and they can offer different experiences. I think the analogous
18 offering here is the National Laboratory involvement.
19 You talked about Idaho State University and those folks can go to the Idaho
20 Lab and spend some time there. And so, I'm hoping again when Congress is
21 forced this mechanism of coordination that with the money that gets pooled maybe
22 DOE will be able to provide some experiences to junior faculty.

1 I think that that is something that the military services have found to really
2 be of value and as I understand it the junior faculty come away from those
3 experiences energized with new ways to do R&D or curriculum development that
4 will meet national security needs. So, there's a real synergy that goes on there
5 between that military and the faculty.
6 You did touch on and I feel I need to add a caution. You talked about
7 infrastructure support for university reactors and I was really glad to see that you
8 had DOE at the end of that as a suggestion for them. We do license those
9 reactors.
10 Although NRC knows that we need to have research assets at universities
11 we're sensitive to the fact that we license. I see you nodding your head. I'm kind
12 of grazing through with some commentary that I had on each presentation. I'm not
13 sure I even have a question.
14 MR. CORRADINI: May I interrupt your commentary just for 20
15 seconds.
16 COMMISSIONER SVINICKI: Certainly.
17 MR. CORRADINI: Back to the junior faculty. I think actually you've
18 hit upon something, but I'll put a seed in to DOE. They might be in the audience.
19 And that is with these junior faculty awards if they were part of the $5 million that
20 NRC put in -- I mean, the connection is partly faculty, but in some sense it's partly
21 the students. You always get a lot of buy in from the faculty if you get a good
22 Master's or Doctoral student and they get shipped to the lab and therefore that

1 attracts the faculty member to the lab to work with the staff and scientists.

2 I think that's a very good connector if you can get the students in projects

3 that the labs are interested in or even industry, then the glue starts drawing the

4 scientists with the faculty members. That's all I was going to say.

5 COMMISSIONER SVINICKI: I agree. Dean Lewis I wanted to thank

6 you for talking about your programs with high school guidance counselors and the

7 summer science institute that you run. So again, to weave back to DOD and the

8 military services. They are doing limited, but highly targeted outreach to students

9 at the high school level, I think, and to guidance counselors as well some similar

10 initiatives realizing that a lot of the preparatory course work even to enter into a

11 Bachelor's program for engineering there is science and mathematics work.

12 The Pentagon is finding even down to the middle school level actually is

13 where some of the initial choices are made as students can begin to put

14 themselves on a path of math and science courses. So, there's a struggle to

15 outreach in the middle school and high school level and how to have really an

16 enduring impact on the choices of students and to really capture their imagination

17 so that they'll begin to do the preparatory course work that would at least permit

18 them when they get to college age to have the preparation to enter those fields.

19 I appreciate and appreciated always seeing the pictures of the students.

20 I'm sure that -- I know that my energy always increases. All commissioners have a

21 chance to go out and speak at universities and I'll be participating in the ANS

22 Student Conference down at the University of Florida in a couple weeks. That's

1 another point where it gets real.

2 But if your energy is lagging and you've had a long day and you're many
3 decades away from the point at which you decided to enter this field, but their
4 energy is really stimulating. It's great to be around them. That's just some
5 reactions, but thank you all for being here today. Thank you.

6 CHAIRMAN KLEIN: I'd like to begin my questions probably with
7 Elaine and Ken. I think, Ken I liked -- as Commissioner Svinicki said your slides
8 that show people because at the end of the day it gets down to people and so you
9 had a lot people in the program.

10 And I guess, Elaine, from our standpoint having nuclear qualified welders
11 that know how to do their job really comes back to our job is safety. In other
12 words, we need the qualified people to do qualified tasks to make these plants run
13 safely.

14 In terms of getting your word out about your programs how do you do that?
15 How do you go out and recruit people and let them know about your program?

16 MS. CRAFT: We have faculty members who are so excited about
17 this program that they are out in the high schools every week. We also, of course,
18 use media like the "Women in Welding" video for instance that we have. We can
19 put those, like for instance, even in the WIA one-stop locations to show on a
20 continuous feed, loops. We have a lot of broadcast opportunities for the area.
21 And then, of course, the industries are helping send people to our programs as
22 well.

1 CHAIRMAN KLEIN: Well, in terms of your recruitment have you
2 noticed a change? I think probably when Mike and I went through our high school
3 days I don't think anyone came and told us about a career in nuclear. Are you
4 finding the high school students have a better awareness of career choices in
5 nuclear now?
6 MR. LEWIS: Not really. I personally go out to the five major fairs
7 and I carry my instrumentation with me. We actually do demonstrations during the
8 recruitment fairs. I find that the presence of a Dean is very substantial, very
9 significant particularly to the parents.
10 I normally carry a younger person with me and so while that person is
11 talking to the students I'm talking to the parents and a lot of times that makes a big
12 difference.
13 CHAIRMAN KLEIN: That's probably a good strategy to do that.
14 Mike, Commissioner Svinicki raised an issue that certainly is, I think, a challenging
15 one and that is the research reactors. We've all been there and done that.
16 I think the challenge is how do we maintain the equipment and the funding
17 for those reactors where we can help. I know university budgets get torn in a lot of
18 different directions. And so, it's always challenging to put resources into those
19 university research reactors because of the pulls of other departments. Have you
20 talked to DOE to find out where they're headed for the research reactors?
21 MR. CORRADINI: There's two things that are happening. I'm going
22 to backtrack a bit. Before the Omnibus was passed, but in the anticipation of it,

1 there was a discussion back in June at the NNSA meeting in Anaheim and then
2 some small meetings, and then again in August at a meeting actually over here at
3 Bethesda at the Marriott right over here where we're trying to put together a
4 university program. Not education as we're mainly speaking of today, but in terms
5 of research and infrastructure support.
6 There were three legs that were promised. The third leg just popped out
7 actually just last week at the end when the solicitation came out where there's an
8 infrastructure grant program that has just been released by the DOE. That
9 program essentially is a micro version of what we remember as the INE program
10 for the big infrastructure program.
11 Just for everybody's benefit to go back you can go all the way back to 1988.
12 The National Academy had a study that put out kind of an alarm saying that the
13 infrastructure universities was decaying generally, but specifically in nuclear
14 engineering they were very concerned about university research reactors. That
15 became a theme for almost a dozen years as we are aware. Only after the Energy
16 Policy Act, the one in 2000, did they come up with the INE Program through the
17 DOE.
18 That ended in 2006 as we were talking about and so now in this new
19 program just released last week there's a smaller program where universities can
20 either partner within their institution or with other institutions to build, make
21 proposals, peer reviewed competition to build infrastructure.
22 And at least in our case -- it's in the middle of the thing, so I can't tell you all

1 our secrets -- but at least one of the things that I guess we're thinking of is to go
2 back and in some sense connect back up to the laboratories. So, I'll give you an
3 example.
4 If you have a -- we don't have exactly this, but let's pick on Michigan.
5 They're an okay school. Michigan has a hot cell facility and I happen to know the
6 professor that runs it. I would be willing to bet you dollars to doughnuts that he will
7 essentially in this proposal connect the hot cell facility that he can do some
8 interesting examination experiments with something the laboratories might be
9 irradiating so that you can then have a connection.
10 So, at least my thought is you want to build this infrastructure and connect it
11 to the larger facilities the labs are doing and be somewhat collaborative and
12 complementary. Many of the universities have unique facilities. Missouri has got
13 this enormously versatile test reactor that most universities do not have test
14 reactors.
15 So, that's the new program, but it's a relatively small one. If I read the
16 language for the outgoing fiscal years they'd like to grow that assuming the
17 budgets are allowed and all the other things fall into place. At least that's one of
18 the three legs.
19 Sorry to take so much time, but that's one of the three legs and it just
20 happened last week. Does that help?
21 CHAIRMAN KLEIN: That's good. Thanks. Commissioner Jaczko?
22 COMMISSIONER JACZKO: I appreciate the presentations. It was, I

1 think, as all of you talked about various programs. Dick, it's good to hear about
2 the health physics program. That is an important aspect certainly of the work that
3 we do and, of course, the work of safety at nuclear facilities and whether those be
4 power plants or fuel cycle facilities or decommissioning activities. So, I think that's
5 important.
6 And to hear Dean Lewis the work that's going on in particular I think as
7 Commissioner Svinicki talked about the need to really bring these issues to
8 students in high school, I think, is important to understand. Just in general math
9 and science is an important discipline and an important field. I think it's always
10 refreshing to see people inspired and interested in those things. Hopefully they
11 will then continue.
12 I guess if I had any question on that it would be have you seen any of the
13 students that have done the summer institute that you've done? Have they come
14 to South Carolina State or gone into engineering programs?
15 MR. LEWIS: Most of our kids were about 14 or 15, but we had one
16 senior and we had -- actually, we had two seniors and one of them is coming to
17 South Carolina State to major, I think, in radiochemistry.
18 COMMISSIONER JACZKO: Great. So, that's another success story
19 from the things that you talked about. Again, I think it was good to hear that.
20 It's also good to hear the welding -- Commissioners are a unique breed and
21 we have very little useful skills when we're done with these jobs. [LAUGHTER]
22 So, I will keep in mind welding. I went to visit EPRI, which they do a lot of

1 research in the nuclear industry and they have a very interesting device that
2 they're developing to help teach welding where it's a simulator. Kind of a 3D
3 simulator where you put on a mask and they have a device, a welding device, not
4 an actual welder. It simulates the welding experience and it was very interesting.
5 You put on the hood and so I had an opportunity to practice a couple times.
6 It actually was an amazing tool because I did it once and then did a second time
7 and helps guide you and helps you manipulate the instruments as you're doing it.
8 But it's good to see that people are interested in those.
9 I think as you indicated we often focus sometimes on the engineering on
10 some of those skills, but there are a lot of intermediary activities, the things that
11 you talked about in the trade and the crafts that I think are very important in these
12 areas. So, I appreciate your discussion.
13 I didn't have any other questions beyond that. Mike, I can't let it go without
14 asking you the Florida State/Wisconsin upset.
15 MR. CORRADINI: It's not going to be an upset.
16 COMMISSIONER JACZKO: Exactly, which means that Wisconsin
17 will win.
18 MR. CORRADINI: I have another Wisconsin School I'm watching
19 today, too. It's my alma mater. They're ranked higher, but they might. They don't
20 have their star player. Let's not go there.
21 COMMISSIONER JACZKO: I just wanted to make sure we got that
22 clear. Thanks.

1 CHAIRMAN KLEIN: Commissioner Lyons, any more questions?

2 COMMISSIONER LYONS: No more questions, but if there was any

3 doubt about the importance, I think, of a government role in jump starting

4 educational programs in this area I think this meeting today should completely

5 dispel any questions. It's just been a very, very good meeting and clearly you

6 talked about a number of successes. Thank you.

7 CHAIRMAN KLEIN: Well, thank all of you for your presentation and

8 thanks to the staff for their work in implementing the limited funds that we have.

9 We hope that they will grow over time.

10 Thanks for all you do for the educational arena. It's very important for the

11 young people to have good jobs and certainly we need to keep moving forward for

12 the opportunities for the young people and certainly to help our nation grow. So,

13 thanks all of you for your work. The meeting is adjourned.

14 (Whereupon, the meeting was adjourned.)