UNITED STATES NUCLEAR REGULATORY COMMISSION

MEETING WITH DEPARTMENT OF ENERGY (DOE)

ON NEW REACTOR ISSUES

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MONDAY

March 5, 2007

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The Commission convened at 1:00 p.m., Dale E. Klein, Chairman presiding.

NRC CHAIRMAN AND COMMISSIONERS

DALE E. KLEIN, CHAIRMAN

EDWARD MCGAFFIGAN, JR., COMMISSIONER

JEFFREY S. MERRIFIELD, COMMISSIONER

GREGORY B. JACZKO, COMMISSIONER

PETER B. LYONS, COMMISSIONER

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2 DEPARTMENT OF ENERGY

3 DENNIS SPURGEON, ASSISTANT SECRETARY FOR

4 NUCLEAR ENERGY, DOE

5 R. SHANE JOHNSON, PRINCIPAL DEPUTY ASSISTANT

6 SECRETARY

7 PAUL LISOWSKI, DEPUTY ASSISTANT SECRETARY, FUEL

8 CYCLE MANAGEMENT/GNEP DEPUTY PROGRAM MANAGER

9 REBECCA SMITH–KEVERN, DIRECTOR LIGHT WATER

10 REACTOR DEPLOYMENT

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

2 CHAIRMAN KLEIN: Well, Good afternoon. It's a pleasure to have
3 the Department of Energy representatives here today and I'm glad to see Dennis
4 that you're feeling better today.

5 MR. SPURGEON: Well, thank you. If I falter I have two good people
6 on, three good people on either side of me that I'm sure will pick me up.

7 CHAIRMAN KLEIN: I think the last time we had a meeting was April
8 of 06, prior to my arrival, so we're looking forward to hearing your programs. It's
9 also probably exciting for us that we have a budget that we can talk about now as I
10 have indicated. We were obviously having a challenge with our Continuing
11 Resolution and I'm sure you all suffered the same challenges at your side.

12 So we look forward to hearing what you have to say today. And I
13 think from our perspective what's important for us is to know where you're headed
14 so we will know how to move in parallel. So it's good for us to have advance
15 knowledge of how your various programs are going for those of which we have
16 appropriate interaction.

17 Any comments from fellow Commissioners? Well, Dennis it's all
18 yours.

19 MR. SPURGEON: Well, thank you Mr. Chairman, Commissioners.
20 Thank you for the invitation. Yes, I think it was the early part of April because I
21 reported on board April 3rd and I think it was within I don't know I think a week or

1 so of my arrival that I was over here for the first of these, or at least in my case,
2 the first of these briefings.
3 What I'd like to do is just go through a bit of an overview presentation
4 and then obviously along the way I'll entertain whatever questions that you might
5 have so that we can hopefully communicate as thoroughly as possible at this
6 stage where we are going and how we hope to get there.
7 We are, like you I think, still waiting for the final allocation of the
8 Continuing Resolution funds. So while I certainly know what has gone in in terms
9 of our request for how those funds will be finally allocated we don't quite yet have
10 the result out the back end of our budgetary process. But having said that let me
11 begin and I'm going to … there we go, so I know what slide we're on. This is
12 basically the outline of the presentation that we'll be going through today. Some of
13 this you've certainly heard before and Nuclear Part 2010, EPAct Incentives,
14 Generation IV, the Nuclear Hydrogen Initiative, GNEP and then the University
15 Nuclear Science and Engineering Support Program. Next please.
16 And I'll go through these, we understand that you have a session
17 scheduled on Clinton for the early site permit coming up the end of this week and
18 that's certainly going to be good news. This is a program that we have been
19 supporting with industry on a 50/50 cost share basis to help bring three early site
20 permits to completion. And we look forward to Clinton and then Grand Gulf in the
21 not too distant future.

1 The combined construction and operating license work, this we do
2 anticipate that there will be the first of the ESP applications made this fall. And
3 that again has been the major focus of our effort to bring, actually we're funding
4 two in totality; one for a boiling water reactor, one for a pressurized water reactor.
5 But then there is a third boiling water reactor that we are supporting, but not the
6 site specific parts of that third COL application, that being the Grand Gulf
7 application in Mississippi. Next slide.
8 What we do plan to do with the COL project is to restructure it to split
9 out the engineering from the licensing activities, basically splitting out what is
10 being done by the two reactor vendors from what is being done by the utility
11 applicants.
12 We hope to accelerate completion of the COL engineering items and
13 we're focusing on preparation as I mentioned of a reference, ESBWR and an
14 AP1000 COL application. We think what we're doing is totally consistent with the
15 NRC's design centered new plant design approach.
16 Along the way we have supported reactor technology training for
17 DOE and NRC staff and we're pleased that NRC has provided training to DOE
18 relative to 10 CFR Part 52 licensing. Next slide.
19 I know we've gone through the EPAct incentives with you before, but
20 perhaps just in summary fashion there are three major pieces to the Energy Policy
21 Act of 2005 as they apply to reactor programs. First is the standby support which
22 we do have the final rule which was issued last summer, which is basically the

1 regulatory and litigation insurance policy for nuclear power plants. It provides up
2 to $500 million for the first two plants in support and $250 million for the next four
3 facilities.
4 Production tax credits can amount to a maximum $18 a kilowatt and
5 that applies to the first 6,000 megawatts and if there's more than 6,000 megawatts
6 it would be prorated across those plants.
7 And then finally loan guarantees and that's the one that has not been
8 implemented as of this time. Through the Continuing Resolution the Department
9 does now have authority to establish a Loan Guarantee Office. That office will be
10 stood up very shortly. And we would anticipate putting out a Notice of Proposed
11 Rulemaking for loan guarantees in the very near future.
12 I think that's probably enough for that. Let's go onto the Next
13 Generation IV Nuclear Energy Systems. Generation IV is a program that was
14 designed to evaluate and do internationally sponsored and cooperative research
15 on a number of different advanced reactor systems. Through the United States
16 we have pretty well focused on two, which is the high temperature gas reactor and
17 the sodium fast reactor.
18 We have agreements in place. We are doing work. Principal
19 partners. And I should say one addition to Generation IV is that since the last time
20 we met both Russia and China have been invited to participate in the Generation
21 IV program, which brings into play two of the more active advanced reactor
22 program nations.

1 So this work is proceeding well. The major activity associated with
2 Generation IV in the United States at this time is the Next Generation Nuclear
3 Plant, the gas cooled reactor high temperature reactor that would have primary
4 application in the arena of process seed hydrogen production and other
5 applications that can make use of a high temperature reactor environment. And
6 obviously by doing process seed and/or hydrogen production with nuclear energy
7 we proceed in a way that allows production of these materials without associated
8 production of any green house gases and their formation.
9 I think we have a good interchange program going with NRC now in
10 developing the criteria that will be used to license the Next Generation Nuclear
11 Plant. We're learning how to do business back and forth and how to transfer funds
12 or how we can get work done with NRC. It's not a matter of transferring money, it's
13 a matter of saying okay, we're ready for you to do this and now you can bill us and
14 we'll pay you. So I think we've worked those kinks out if that's a fair statement on
15 the part of our staff here.
16 I'm hopefully almost over this, but obviously not quite. Next slide,
17 please.
18 Nuclear Hydrogen Initiative. The basic hydrogen initiative that we
19 support and fund for using nuclear energy to produce hydrogen is part of the
20 overall DOE hydrogen program that's managed by the Office of Energy Efficiency
21 and Renewable Energy. Our focus is on the production of hydrogen from water.

1 As you probably know most hydrogen today is produced by steam
2 reforming of natural gas. But obviously that's using one valuable commodity to
3 produce another. And so the idea that if we could efficiently separate water to
4 produce hydrogen we could advance, I think, substantially the ultimate introduction
5 of hydrogen in a major way into our economy.
6 And so we're focused on high temperature means of doing that. The
7 sulfur iodide process is the one that we have focused on from a chemical
8 standpoint as well as the high temperature electrolysis. And by high temperature
9 electrolysis what we do as well is increase the efficiency of the separation process.
10 I think we have seen some significant progress along the way. We
11 have demonstrated both high temperature electrolysis and we've demonstrated
12 the sulfur iodide process. This work is also being done, or similar work is also
13 being done overseas. The Japanese have a substantial program along these
14 lines. And we certainly are going to achieve as much cooperation as we can
15 internationally in order to leverage the work that we're doing here with our own
16 program in the United States. Next slide.
17 Next I'd like to talk about the Global Nuclear Energy Partnership and
18 go through basically the outline as the outline shows you here, the status, the
19 strategic plan, safety and security and what we are doing for next steps. Things
20 that we've accomplished to date. Next slide.
21 We've achieved CD-0 which is basically just mission need, was
22 approved by the Deputy Secretary on April 28 of last year. DOE has released a

1 request for Expressions of Interest with regard to siting integrated spent fuel
2 recycling facilities for GNEP technology demonstrations. And we have issued an
3 Advanced Notice of Intent for those firms that might be interested in participating in
4 one or more of the three demonstration projects associated with GNEP.
5 Results of these have been very strong. We received 18 responses
6 from industry. And those responses included most of the major suppliers involved
7 in the nuclear fuel and fuel cycle business. And they weren't just responses from
8 people who were saying okay, we'd like to participate, you know, tell us when
9 you're going to fund this and we'll be there, they also included some I would call it
10 good preliminary business plan information and good preliminary indication, I
11 would stress preliminary indication that there's a desire to invest private funds to
12 be able to help in the construction and/or operation of these facilities.
13 Relative to the … trying to see what I got here forward because I
14 want to talk more about what we've gotten back here from industry. Let me back
15 up a little bit and just talk about the responses we got when we went out to solicit
16 to see what localities might be interested in hosting GNEP facilities. We initially
17 went out and received a number of responses. We went back out and said well,
18 okay, now specifically we'd like you to prepare environmental data for the sites
19 that you would like to propose, send us your proposal to do that.
20 We received 11 proposals that we ended up funding, we received a
21 couple that we didn't, but 11 that we ended up funding, representing eight different
22 states in every region of the country. And we are now in the process of funding

1 those proposals. And they're at work and they're developing the site specific
2 environmental data.
3 We also have gone out with the beginning, with a Notice of Intent to
4 prepare a Generic Environmental Impact Statement for GNEP. And we're in the
5 process of conducting public scooping meetings for that environmental impact
6 statement. We're going to be conducting, I think it's 13 different sessions around
7 the country. And those have begun. We've done probably, well, more than half of
8 them at this point. And I think we've had probably in excess of 1,000 people
9 attend these. So it's for public scoping meetings, they have achieved quite a
10 following, if you will. Let's go on to the next slide.
11 The Strategic Plan that we've prepared and released for GNEP, and
12 you have to remind me, even though I wrote it, I can't remember when we actually
13 put it out. It was in January. A couple of months, you know, time flies when you're
14 having fun. But basically it calls for specific actions to obtain input from U.S. and
15 international industries and governments and what technology and policy issues
16 must be resolved and what business obstacles must be overcome in order for
17 GNEP facilities to put into being.
18 It requires development of a detailed GNEP technology roadmap for
19 demonstrating solutions to the remaining technical issues in order to support
20 commercial scale GNEP facilities.

1 And it's designed to pursue industry participation in the development
2 of conceptual design and other engineering studies that support both a nuclear
3 fuel recycling center and an advanced recycling reactor.
4 The bottom line is that our work is designed to support a Secretarial
5 Record of Decision in June of 2008. And that decision to proceed with a
6 government industry partnership, to build a nuclear fuel recycling center and a
7 prototype advanced recycling reactor assumes that by that time a credible
8 technology pathway has been developed and satisfactory progress has been
9 made in its implementation; a credible business plan exists, and that's a significant
10 and important requirement; there is reason to believe that a government-private
11 partnership can be formed to build the GNEP facilities that are in the best interest
12 of the Nation and all of the parties; that the relevant NEPA requirements are
13 satisfied; that nonproliferation criteria are both defined and met; and that
14 international agreements are in place to demonstrate support and participate in the
15 GNEP mission.
16 Safety and security are from the beginning key elements that are
17 built into GNEP. The National Security Policy Directive that will apply says that the
18 United States will continue to discourage the world-wide accumulation of
19 separated plutonium and to minimize the use of highly-enriched uranium. As
20 outlined in the National Energy Policy, the United States will work in collaboration
21 with international partners to develop recycle and fuel treatment technologies that
22 are cleaner, more efficient, less waste-intensive and more proliferation-resistant.

1 The key non-proliferation security GNEP objectives are simply no
2 separated plutonium; nuclear waste forms that cannot be readily made into a
3 nuclear device; advanced nuclear safeguards; and reliable fuel services. Next
4 slide.
5 In near term work for GNEP includes technical, business and
6 regulatory actions. A technology roadmap needs to be developed that identifies
7 key technology development activities for advanced separations and transmutation
8 fuel fabrication. Industry needs to be engaged and to provide input on conceptual
9 design approaches and business plan options.
10 As I mentioned scoping meetings for the GNEP Programmatic
11 Environmental Impact Statement are under way and are to be completed in this
12 coming, actually it's this month now. And we need to work with you all to develop
13 a Memorandum of Understanding as to how these facilities are going to be
14 licensed as we move forward.
15 Next topic, and perhaps this is one that you might have even been
16 more interested in your previous assignments or two previous assignments ago I
17 should say.
18 There is a change in our approach to working with our universities,
19 but this is not a change to decrease the role of universities in the work that we do.
20 But we think to the opposite effect it will increase the importance of universities to
21 the overall nuclear energy research and development programs and provide

1 additional opportunities and actually financial growth for universities to be able to
2 work specifically on research associated directly with programmatic needs.
3 So we have revised the program and what this will we hope do is
4 result in not only a redirected, but a reinvigorated cooperation effort between the
5 Department and our universities around the country.
6 As I mentioned, it is research based under our broader Nuclear
7 Energy Research Initiative program, NERI program, and we do believe should
8 develop an improved educational network amongst our universities, laboratories,
9 nuclear industry and government. And while I don't think I say this specifically on
10 any of these charts we are looking to the fiscal year 2008 budget if passed by
11 Congress as proposed, we'll see a significant increase in funding for universities
12 as part of that. Our 2007 funding for universities is roughly the same. We
13 anticipate roughly the same as 2006, but that's obviously, we're operating on a
14 2007 budget, which is flat with 2006 because of the Continuing Resolution. Let's
15 go onto the next slide, thanks.
16 I think I've already stated this in my initial discussion, but it does
17 provide research to universities to support NE program applied R&D goals. And
18 the program funds are what will support this. The line item that has been in our
19 budget associated with fellowships is still there, I should be quick to say, there is
20 no cutoff of any fellowships that were provided in the prior years' budgets. We
21 have provided in the transition budget money to fully fund all mortgages
22 associated with any fellowship that was begun in prior years.

1 A modified NERI solicitation is being developed to include capability
2 support. We recognize that there is infrastructure that has to be supported, as well
3 as research. And we recognize that and know that that is going to have to be
4 accommodated in the proposals that we receive and in the grants that we do fund.
5 Next slide.
6 Basically the steps through the transition, we are going to continue to
7 fund many of the original university and NERI activities for much of 2007. There's
8 a workshop being held this month, I think it's maybe even next week, next
9 Tuesday, to introduce universities to NERI during which the current NE program
10 areas of research will be presented. A new solicitation and peer review process
11 will be developed or be discussed and they will issue a new solicitation. And
12 during 2007 we're very mindful of wanting to make a smooth transition.
13 So there's going to be, we'll probably in some cases do programs
14 that are, well, sort of joint activities where we have several universities involved
15 sharing a particular program activity. What we don't want to have happen in this
16 early stage is have one or two or three universities basically dominant the
17 research grants to the exclusion of any one else. So we're going to try to manage
18 this to be a smooth process in the transition. Last slide, please.
19 The total support for university activities in 2006 is approximately $50
20 million. And that's, as I mentioned that's going to be about the same in 2007. And
21 we certainly look to see 2008, that going perhaps into the $60 million range.
22 With that Mr. Chairman I would be pleased to answer your questions.

1 CHAIRMAN KLEIN: Well, thank you very much Dennis for that
2 background and a good overview of the program. As you might expect the NRC is
3 process driven that includes the order in which we ask questions, and so today we
4 will start with Commissioner Jaczko.
5 COMMISSIONER JACZKO: Thank you, Mr. Chairman. I'm
6 wondering if we could go back to slide 13. This is the slide that references the
7 Secretary's decision on the GNEP program. You indicated there there's a whole
8 bunch of things that need to, or I guess there are assumptions that are required for
9 the decision. So are those things, are you saying that needs to get done by June
10 of 08 in order to support a decision?
11 MR. SPURGEON: Yes, they are.
12 COMMISSIONER JACZKO: Maybe you could walk me through
13 some of those in a little bit more detail. If you can give me a sense of how you are
14 in completion of some of these, for instance, things that have to do with a credible
15 technology pathway, to what extent you plan to have interactions with our staff
16 about making sure we have a technology pathway that's licensable or that at least
17 we can get at least a framework developed in time. So if you could just walk me
18 through those in a little bit more detail.
19 MR. SPURGEON: I'd be glad to.
20 COMMISSIONER JACZKO: Or whoever.
21 MR. SPURGEON: And I certainly would ask Paul to chime in
22 because, you know, in terms of how things actually work and within the GNEP

1 program, the man who generally gets tasked to do all of the hard work is sitting
2 next to me, and so his job is really to put together the technology pathway. So
3 Paul you want to just comment?
4 MR. LISOWSKI: Sure, I'll be happy to. You know we've developed
5 over the past five years an approach using the Advanced Fuel Cycle Initiative,
6 which is a technology demonstration plan developed by the National laboratories,
7 looking towards demonstration facilities. We'll be bringing, engaging industry this
8 year, and industry is going to come to this with a different world view, clearly than
9 the National laboratories. And they're going to come to it with the world view of
10 how NRC can license these facilities.
11 One of the things that we're going to expect from them is to tell us
12 exactly what their technology pathway is and to give us an approach for how this
13 should go forward with licensing. We'll take that pathway, which is going to be
14 different; there will be a lot of overlap, but it will be different, and we'll take this
15 very detailed pathway that's been developed and over the course of the time
16 between now and the decision put together what we're calling the Technology
17 Pathway that identifies exactly what technologies we're going to approach and
18 how we're going to license those things.
19 Now in the interim we are trying to develop a Memorandum of
20 Understanding with the NRC so that we can work with you in a non-regulatory
21 framework in order to bring your staff up to speed, so that when we do come

1 forward with this technology pathway, it's not going to be a surprise to NRC. We
2 really want to communicate every step of the way as we go forward with this.
3 COMMISSIONER JACZKO: I appreciate that. I think that certainly
4 will be helpful I think, as we discussed a little bit earlier that a lot of these
5 technologies will be new to us from a licensing standpoint or at least not recently
6 familiar.
7 You mentioned the MOU. From your perspective is the intention to
8 have an MOU finalized again before the June decision or is that something that …
9 MR. LISOWSKI: No, we'd like to have that finalized earlier than that,
10 you know staff are working on that now. In fact, I have a copy of it with me, just
11 with me. But we do want to have that in place as soon as we can.
12 COMMISSIONER JACZKO: I appreciate that. The question, this is
13 something I think Dennis we'd talked about last time I think when you were here,
14 and this has to do, well, last time we talked about Part 52 and I won't ask you
15 about that again, but we talked a little bit about transmission infrastructure. I think
16 again this may be a little bit beyond your office's responsibility, but I'm wondering if
17 you have perhaps a little bit of a sense of how DOE intends to use some of the
18 new authority that you have under the Energy Policy Act to try and get
19 transmission lines sited where necessary and those kinds of things.
20 MR. SPURGEON: Well, that's not something that I'm really prepared
21 to discuss today, other than to tell you that this is something very keen on my mind
22 and on Kevin Kolevar's mind, in particular, because we fully recognize that the

1 challenges with respect to getting the transmission lines sited and approved can
2 be equal to the challenge of getting the new power plant sited and approved. And
3 we have to work both of those in conjunction with one another.
4 Obviously most of the new plants that you're seeing, potential
5 applications for to-date are on existing sites, just additional reactors for existing
6 sites. But even that can strain the grid capacity in some of those locations. So the
7 answer to your question is yes, it clearly is, in my new acting capacity I'm going to
8 have to become even more familiar with that, but I would want to tell you that I'm
9 just not prepared to be able to go into that in detail.
10 COMMISSIONER JACZKO: That's fine. And I appreciate your
11 comments though. We had a good meeting with FERC a couple of weeks ago
12 and this issue came up as well, and the comment was made there that
13 transmission is, to some extent, is as complicated and as lengthy a process,
14 transmission siting in construction as nuclear power plant siting, licensing and
15 construction. So my sense is that I don't, I certainly don't see the comparable
16 effort on the transmission side as I'm seeing on the generation side. And that
17 could just be a function of where I sit, I suppose. But I think it is certainly an issue
18 that the Nation's going to need to tackle if we're one way or the other going to be
19 building a lot more generation sources.
20 The last question I would just ask is a little bit of a general question
21 on the university research programs. This is obviously a very popular program.
22 One of the things that I certainly hate to see though is that we focus it so

1 exclusively on nuclear engineering and perhaps without recognizing that certainly
2 at the NRC we rely on a lot of other types of engineering, electrical engineers,
3 mechanical engineers, a whole variety of people, health physicists, all kinds of
4 disciplines that may not necessarily be captured under that.
5 So again this may be a little bit beyond your office now, but I was
6 wondering if maybe you could comment, if those other disciplines are getting the
7 same kind of focus and attention that the nuclear engineering disciplines are.
8 MR. SPURGEON: Well, you know what you're doing and what a lot
9 of us are doing now I think is the first part of solving the problem and that's really
10 starting to shine the light on the issue. The whole question of rebuilding not just
11 our physical infrastructure in the nuclear arena, but rebuilding our human
12 infrastructure is extraordinarily important.
13 There is some very good work though going on, not just I'm talking in
14 the engineering arena, but in the trades. The unions are now starting to really step
15 up and begin training programs. We're starting to recognize the problem and
16 recognize the opportunity that comes with it here, you know.
17 When you look at these 30 or whatever plants that may be built and
18 you really drill down to what that means when you roll that through not just the
19 primary jobs but the secondaries and so forth, you know, you come up with
20 numbers. One study, Idaho National Laboratory did is around 600,000 new high
21 paying jobs, both professional and trade, that are going to be required.

1 So with opportunity though like that then comes the challenge. But
2 the biggest stimulus here is that people truly believe that nuclear energy is going
3 to be successful and that it is a career that they should want to invest their
4 professional life in.
5 And as that change begins to occur then I think we're going to see
6 the growth and the people interested in getting into this field that we just haven't
7 had. You know, it's been a long time, probably since close to since when I was in
8 school, when there was a real solid enthusiasm for nuclear engineering. And I
9 take with that all of the allied fields, electrical engineering, mechanical engineering,
10 civil engineering that are needed to build a nuclear power plant.
11 You know, it just hasn't been a field people were wanting to enter
12 because of the uncertainty associated with well, what kind of career opportunities
13 really are there. Now I think they're seeing that there are. And we're seeing that in
14 our undergraduate enrollment starting to go up.
15 COMMISSIONER JACZKO: Thank you.
16 CHAIRMAN KLEIN: Commissioner Lyons.
17 COMMISSIONER LYONS: Yes, Dennis, I hope you're feeling better.
18 MR. SPURGEON: I'm trying.
19 COMMISSIONER LYONS: And thank you all for being here. I think
20 Paul just mentioned that it's certainly the intent of your office to work in such a way
21 with the NRC that as you get further down the path for GNEP that it will not be a
22 surprise to us.

1 But I'm curious if you can, either one of you, perhaps shed some
2 more light on where in the process of GNEP facilities you anticipate an NRC role
3 in licensing or as opposed to perhaps a more general consulting. Or does that
4 await the definition of this roadmap?
5 MR. SPURGEON: No, I don't think so. And let me be very open
6 about it. I mean, obviously until such time as we've completed our NEPA review
7 process and recommendations are made to the Secretary relative to the size and
8 scope of facilities, we tend to be a little bit circumspect relative to saying okay,
9 what would need to be licensed and what would not be. But, however, the way I
10 see it going, and this is nothing but a projection that could turn out to be incorrect
11 with the passage of time, is that any fast reactor that's built, any recycling facility
12 that's built for commercial use, and the intention is that these would be built for
13 commercial use, are going to be licensed by the NRC.
14 A research facility, the advanced fuel cycle facility that would be built
15 perhaps on a National laboratory site would perhaps not be, but nonetheless
16 would have a great deal of NRC involvement because we certainly want anything
17 that's done there to be usable in the commercial endeavors.
18 COMMISSIONER LYONS: I appreciate that and I think that will be
19 very, very important that we work together as much as possible to assure that
20 whatever is done perhaps at the National labs is licensable, and as you said, once
21 it moves to a commercial facility then that will be the proof of the exercise.

1 Commissioner Jaczko talked a little bit about the NERI program and
2 the university assistance and I was very interested to hear your comments that
3 there is a plan to continue to involve the universities because as I looked at some
4 of the language that accompanied the zeroing of that account last year, at least
5 the way I read it it was a declaration of success, 1,500 students and don't need
6 any more support, which frankly certainly worried me immensely.
7 But Commissioner Jaczko raised a point that I don't think, might
8 deserve a little bit more discussion, Greg made the point that within NERI there
9 was a focus on the allied skills, such as health physics that are critically important
10 in the overall plan for nuclear engineering and nuclear power, but not specific to
11 nuclear engineering. And I worry that some of those allied skills may be lost in the
12 way you're focusing now on the specific areas of GNEP for the university funding.
13 Am I worrying about something that …
14 MR. SPURGEON: Let me let Paul answer, but all of the funding for
15 universities is just not out of GNEP. GNEP will carry a substantial portion of the
16 funds for our university research, but it's intended that it will be supported by all of
17 our various program offices.
18 MR. LISOWSKI: Yeah, and I would say that within GNEP I think
19 there's going to be an intent to involve related disciplines as well. One can
20 imagine that we are pushing forward on a computation simulation issue within
21 GNEP and there will be university funding for university programs in that, you
22 know, that will include things like civil engineering related to seismic analysis and

1 other things that you might think, ooh, that's not strictly nuclear engineering. But it
2 will have a part in it and could be very definitely related to programmatic activities
3 within GNEP even though it's a bit removed from what you might immediately think
4 about.
5 COMMISSIONER LYONS: If I'm remembering correctly some of the
6 language on NERI even specifically called out health physics for some of the
7 attention. And I was a little bit concerned that in the path that you're laying out that
8 might be lost.
9 MR. SPURGEON: I think you've got a good point that we need to
10 ensure that it doesn't fall in the cracks here, because we take seriously that we're
11 probably the only, and certainly the major, I don't want to say the only, but the
12 major supporter of nuclear engineering and health physics activities in the
13 government. Other disciplines get support from the National Academy, but when it
14 comes to the nuclear engineering arena we're sort of the only show in town.
15 CHAIRMAN KLEIN: Thank you Commissioner Lyons. One of the
16 things obviously Shane will probably recognize my interest as you indicated from
17 my two past lives having served on the Nuclear Energy Research Advisory
18 Committee for a while, but you really made a good point about you being the only
19 show in town for some of these fields because as a faculty member when you go
20 to the National Science Foundation you know they typically will say if it involves
21 nuclear engineering or health physics go see DOE. So you are the only show in
22 town.

1 And compared to other programs like electrical engineering,
2 chemical engineering, mechanical engineering, those funding programs are
3 covered by others. And having been in a dean's office and looking at the
4 enrollment in those programs, typically there are a lot of dynamic forces for a lot of
5 other industries that are not there for health physics and for nuclear engineering.
6 So that's why I think you're funding is such a key role.
7 On your slide 17 that showed the arrows, I assume those arrows
8 probably reflect the fact that the funding went down and now are going up. One of
9 the questions, I happened to be at the same meeting that Paul was yesterday in
10 which he talked about some of the funding requests that you have for GNEP for 07
11 and project for 08. If you don't get all of your funding requests for 08, do these
12 arrows still reflect that as opposed to funding all of those at the National labs
13 where Pete used to work?
14 MR. SPURGEON: Well, look, one, I think the universities can be
15 quite competitive, even against some of the National labs where Pete used to
16 work, because I think there's …
17 COMMISSIONER LYONS: Let's not leave Paul out of this.
18 COMMISSIONER JACZKO: It's because Pete doesn't work there
19 anymore.
20 MR. SPURGEON: Well, neither does Paul. So they just happen to
21 be from the same place that … whatever. It's hard to predict. I don't want to
22 predict where we're going to be relative to the ultimate funding decision on the part

1 of Congress. I certainly hope that they will recognize the worth of our nuclear
2 energy programs in general and all of those that are programmatically going to be
3 supporting work at universities in particular.
4 Now if you say if our budget is cut does some of this suffer as well,
5 I'm sure it will. But I do think that we have a tremendous capability within our
6 universities that's hopefully growing. And as it grows and as we integrate the
7 universities directly into our real time work that we're doing I think that we'll find
8 universities can be very competitive in doing the work that we need to have done
9 as a part of not only the GNEP program, but NGNP and others.
10 CHAIRMAN KLEIN: On your last slide you talked about 50 million
11 being provided to universities over the last, I guess 06 and 07, and I was just
12 curious does that include the Fuel Assistance Program? So what's the breakout
13 between the Fuel Assistance Program and the research part?
14 MR. SPURGEON: Fuel Assistance is what, three million dollars
15 roughly.
16 CHAIRMAN KLEIN: So most of it's research.
17 MR. SPURGEON: Most of it's research. And the Fuel Assistance
18 Program continues on into the future, that's not affected.
19 CHAIRMAN KLEIN: Okay, thanks. Obviously the Commission has
20 been familiar with the Next Generation Reactors and the talk that you had about
21 potential gas reactor at Idaho. What I don't believe the Commission was
22 expecting necessarily was an application from another university dealing with gas

1 reactors. And so that was not part of our, necessarily our budget planning
2 because …
3 MR. SPURGEON: They kept you in the dark too.
4 COMMISSIONER MERRIFIELD: It's those independent Texans, you
5 know, you never quite know.
6 CHAIRMAN KLEIN: I was going to ask whether the UT Permian
7 Basin Program is an integrated program or were you surprised like we were?
8 MR. SPURGEON: We have not been. I can't say we haven't been
9 aware, I mean, we've been aware of the activity with UT Permian Basin, but this is
10 not a program that we have been directly involved with, so their schedule and
11 intentions are not one that are cleared with us prior to their going out and making
12 their own announcements.
13 CHAIRMAN KLEIN: And have they integrated their programs to-
14 date? Or is that still not clear?
15 MR. SPURGEON: It's not integrated with us from any kind of a
16 significant basis. We've talked with them, but that's it. There hasn't been, they
17 have not asked us for money. We've not provided any. So there's not a
18 connection at this point.
19 CHAIRMAN KLEIN: Thanks. Commissioner McGaffigan.
20 COMMISSIONER McGAFFIGAN: Thank you, Mr. Chairman. Last
21 year when you were here I suggested that we might need to have some contracts
22 for taking spent fuel from the new reactors. Section 302 of the Energy Policy Act

1 requires that there be contracts or good faith negotiations on a contract. It also
2 seems to require a January 1998 date, which DOE lawyers may have decided is
3 impossible, therefore moot.
4 But Ward Sproat announced last week that he was going to be open
5 for business sometime this week to negotiate contracts with the new plants. But
6 it's a contract without a date, so it's sort of we'll take your fuel maybe some day,
7 21st, 22nd, 23rd, 24th Century. Could you explain whether we should be reviewing
8 our Waste Confidence findings in light of DOE's not wanting to commit to any date
9 to take spent fuel from the new reactors?
10 MR. SPURGEON: Well, I think you've read the announcement that
11 Ward made relative to beginning negotiations. I think Ward has also stated, as
12 has the Secretary, our determination to submit a license application to you by next
13 June. And we are proceeding to do that.
14 COMMISSIONER McGAFFIGAN: But you also proposed legislation
15 in the last Congress, so called Save Yucca legislation that would give you the land
16 that would give you water rights that would take care of a bunch of things. And I
17 don't know whether you're going to submit that to this Congress or not. But it
18 seems like there are five or six items that you sort of had to get done or else an
19 NRC construction authorization would be worthless. If you could submit the
20 license on time and if we could grant the construction authorization it would be
21 with, conditioned on these various things that you don't have at the moment.

1 MR. SPURGEON: Well, there's no question that these activities
2 need to proceed forward in parallel. We do need the things that Ward mentioned
3 last year and that were included in the Waste Management legislation.
4 COMMISSIONER McGAFFIGAN: The reason I asked about Waste
5 Confidence is that the Waste Management legislation had in it that Congress
6 should make the finding. And given at the rate at which legislation in this area
7 passes we are going to be dealing with the new generation of reactors at least in
8 COL space, and it would strike me that it might be nice for us to have worked out
9 Waste Confidence or else it's going to come up everywhere.
10 So if the prospects for the legislation are small, I think the burden
11 may be coming back on us and we might have to change the 2025 date.
12 MR. SPURGEON: Obviously there are things that I can't comment
13 on nor do we have total control over other than to say that the Department's
14 commitment to take spent fuel from utilities in accordance with our obligation has
15 not changed one bit and we're moving forward as quickly as we can in order to get
16 to the position where we can carry out that obligation.
17 COMMISSIONER McGAFFIGAN: Okay, GNEP, you clearly have
18 very mixed support on Capitol Hill. There's a Bingaman/Domenici letter that went
19 to the budget committee last week that said the committee couldn't agree on it,
20 some supported it, some didn't. I'm not sure I found the Democratic supporter yet,
21 you know, Ernie Moniz testified last week in the appropriations hearing saying that

1 this is not an area to go fast in, you need to think a lot more before you commit to
2 something like what you're trying to commit to in June 2008.
3 I've said on other issues that nuclear issues have to be bi-partisan or
4 else they get to be, you know, you toss something over the transom, you turn it
5 into a presidential political issue and you set nuclear back about a decade. How
6 are you going to deal with the apparent partisanship with which GNEP was
7 received last year when it was brought to Congress?
8 MR. SPURGEON: Well, we're going to deal with it by continuing to
9 talk to both sides of the aisle. This, you're absolutely right has got to be a bi-
10 partisan issue. You're also correct in that not everyone perhaps understands
11 GNEP for what it is. And it's incumbent upon us to be able to carry that story, to
12 be able to explain why first off energy security is key to our national security, take
13 that down a level, that nuclear energy is key to our energy security, take that down
14 a level, and that we need to be able to resolve the entire nuclear fuel cycle if
15 nuclear energy is going to have its long term future and for it to make the
16 contribution to our Nation's energy future that we all believe it can and should
17 have. And so we have, I don't think carried that massage well enough or it has not
18 been heard well enough.
19 COMMISSIONER McGAFFIGAN: Well, somebody like Ernie Moniz
20 would probably agree with your first two points and then say, respectfully disagree
21 with the third as a natural corollary. So I think that's where the break comes. I
22 mean, Ernie is not anti-nuclear; he's, smile noted, but if you don't get Ernie Moniz,

1 who was Undersecretary under President Clinton, name some Democratic
2 intellectuals that you are going to pick up.
3 MR. SPURGEON: Look, it's up to us to be able to make the case.
4 We do need to make the case. And it's obvious that that case has not been made
5 to this day.
6 COMMISSIONER McGAFFIGAN: The last issue I'll just mention to
7 you is you think about these facilities, I think a date after June 2008 is probably
8 more appropriate personally, but as you think about it, you need to think about
9 security and the security requirements post 9/11 that we've imposed on our fuel
10 cycle facilities and on our reactors. You know, a reprocessing facility strikes me
11 as something that is going to be a real challenge to design against the design
12 basis threat is just … the design basis threat as annunciated in the United States,.
13 It's going to be a challenge.
14 MR. SPURGEON: Well, no question. But we do have reprocessing
15 facilities in operation around the world and the Japanese are no slouches relative
16 to security, but they do it in different ways.
17 COMMISSIONER McGAFFIGAN: Okay.
18 CHAIRMAN KLEIN: Commissioner Merrifield.
19 COMMISSIONER MERRIFIELD: Mr. Chairman, again, Dennis I want
20 to thank you for coming on up here, for reprise of our meeting last year. A couple
21 of things, I do this perhaps because I'm a lawyer on the Commission, to clear the
22 record, in terms of you all being the only show in town, actually, and my staff will

1 point this out, we have about a $50, $60 million research budget, about $8 to $10
2 million of which is directed toward university-based research.
3 So while we are a smaller player than you all, our dollars are
4 important too in helping to keep these programs alive, and are meaningful, we
5 don't have a National lab of our own, and so many times universities can play a
6 very key role in helping us get this information and benefit them at the same time.
7 I agree with some of the comments of both Commissioner Jaczko
8 and Lyons in the importance of these programs, in a variety of different areas,
9 whether it's capability, support or providing us the information that we need to do
10 what we do.
11 On your slides, slide 18, at the top it stated that R&D related
12 university-based research will be beneficial to DOE and the university community.
13 I think we've had a program in the past where the NRC has also benefitted from
14 the work that you all have funded. It strikes me, and this is really the heart of
15 where my question on this is coming from, a lot of this, obviously you're trying to
16 align, and you're trying to say okay, we have certain initiatives like GNEP and we
17 want to make sure that the universities are in line with that.
18 Much of the work in the past years has been on issues associated
19 with providing greater efficiencies in the current fleet of nuclear reactors. We've
20 been involved on the safety side. With your new arrow in terms of alignment
21 where, I understand where a lot of that money is going to go to the Next

1 Generation Reactor where it's going to go to GNEP, where does the current fleet
2 stand in all this in terms of your research and your thinking?
3 MR. SPURGEON: You might to comment relative to advanced burn-
4 up, high burn-up fuels.
5 MR. JOHNSON: Actually it doesn't. And it doesn't from the point of
6 view that the funding sources for the university R&D that we'll be pursuing 07, 08
7 and beyond come from appropriated accounts such as the Generation IV account,
8 Nuclear Hydrogen, and the Advanced Fuel Cycle program.
9 The program that the Department had previously funded that worked
10 on the current generation reactors principally was our Nuclear Energy Plant
11 Optimization Program, which was zeroed out of the budget I want to say about
12 three years ago. So the NERI program itself, as it was originally established, did
13 have a much broader kind of a blue sky approach to the R&D that we would fund.
14 But what we've done, in narrowing it down we've basically, we've
15 narrowed down the scope to be those programs that we are pursuing through our
16 research in order to get the university community researchers aligned with our
17 laboratory researchers and the industry moving forward not in blue sky, but really
18 in these directed R&D programs. So you really will not find, other than if there is,
19 you know, kind of an ancillary benefit to the research that's going on on Next
20 Generation Reactors that may have applicability to the existing fleet. But flat out in
21 terms of a research project that is principally for the benefit of the existing fleet,
22 there is none.

1 COMMISSIONER MERRIFIELD: Well, I appreciate that. I know
2 obviously everybody's going to prioritize what they do. We don't know what's
3 going to happen with GNEP, and we don't know what's going to happen with
4 future nuclear plants. We do know we've got an existing fleet. And we do know
5 that we've re-licensed those reactors to operate, half of those reactors to operate
6 for an additional 20 years. We're going to have absent some issue operating
7 reactors in 2030 out of what we currently have.
8 So those dollars play an important part in making sure that we have
9 the staff that we need, that we have the capabilities that we need for the existing
10 fleet. And while I understand what you're doing, I do wonder. I mean, I wonder
11 how that's going to effect our capabilities as an agency and I wonder how that's
12 going to affect the abilities of universities to continue to provide the people we
13 need to do what we do.
14 MS. SMITH-KEVERN: Commissioner Merrifield we have begun
15 coordinating with your staff on issues pertaining to life after 60. We've begun
16 looking at materials degradation issues. We're coordinating with your staff to have
17 a workshop with the Office of Science later in the spring. And it's certainly
18 something that we're looking at for future budget years.
19 MR. SPURGEON: And we're all interested in life after 60.
20 CHAIRMAN KLEIN: In more ways than one, right?
21 COMMISSIONER LYONS: I'll second that.
22 CHAIRMAN KLEIN: Commissioner Jaczko.

1 COMMISSIONER JACZKO: I don't have any additional questions.

2 CHAIRMAN KLEIN: Commissioner Lyons?

3 COMMISSIONER LYONS: I'd like to go a little bit further on some of

4 the questions that have already come up on university reactors. I certainly haven't

5 been as closely involved as our Chairman with the university reactors, but as I

6 have visited the university reactors around this country, at least the ones I visited

7 are not paragons of modern instrumentation, are not exactly what I would view as

8 serving as a draw to the next generation. I'd contrast that, and it's just very

9 isolated personal experiences, but I did have occasion to visit the OPAL Reactor in

10 Australia, which is by any measure I think an absolutely spectacular facility and

11 exactly the kind of magnet that I would hope we would have many of in this

12 country to draw new students in.

13 I think we've already said and probably agree that DOE I think really

14 is the only game in town when it comes to really funding the infrastructure of the

15 university reactors. And I realize that this is a major challenge for your programs,

16 but I wonder if you had any thoughts along these lines or share any of the

17 concerns that I'm suggesting.

18 MR. SPURGEON: Well, I share your concern not just with university

19 reactors, but if you look at what our own test reactor, the ATR, for example, looks

20 like in Idaho.

21 COMMISSIONER LYONS: That's a good example.

1 MR. SPURGEON: It falls in the same category. We have let our
2 nuclear infrastructure in this country atrophy. And that's obvious; it's not just in
3 one area, it's in all other areas. You know, the Idaho National Laboratory is our
4 laboratory, if you will, from an NE standpoint, it's our lead laboratory. And there
5 are times when I'm embarrassed to show people around, especially people from
6 other countries who do have first class facilities at some of their home location.
7 So we have a long big job to do. The first step in that is to re-
8 establish nuclear energy's position within government. First off was within the
9 Department of Energy, and the Department of Energy within the government as a
10 whole. You know it's only been what less than ten years sine the R&D budget of
11 the Department of Energy was zero.
12 So we have a long road back, we're not going to solve it in one or
13 two years. The first step is to begin to get a recognition that nuclear energy
14 deserves a bigger budget or bigger piece of the budget pie, if you will. The
15 President's request for 2008 was $875 million for nuclear energy. That compares
16 to $532 million in 2006. It was $632 in 2007, but there is no 2007 appropriation.
17 So is that enough? Do we have enough to do all the things we really
18 need to and want to do? The answer is no. But are we making progress? Yes.
19 And we've got to demonstrate that we can be good stewards of that money, that it
20 can be effectively spent, we do give good results for the expenditure of that
21 money, but we've got to continue, you know, in real dollars the nuclear budget
22 today is a small part of what the nuclear budget was 35 years ago.

1 So we've got a long way to go. And you're right, the university
2 reactors, I mean, I know what the MIT reactor looks like. But it's no different than
3 ATR. It's no different. So across the board, we've got work to do.
4 COMMISSIONER LYONS: I very much appreciate your comments,
5 Dennis, because I very, very strongly agree with you, and we have a long ways to
6 go.
7 One other question on NP 2010. We've heard here on the
8 Commission how as companies are working towards the COLs and eventually
9 construction that one of the longest poles, maybe the longest pole in the tent is
10 going to be the digital I&C suite and the simulators that will be needed to go with
11 that suite. I was just curious if as a part of NP 2010, either through funding or
12 through coordination, DOE is playing a role in trying to assist in development of
13 both the digital I&C, the technologies that underpin it, and the simulators that are
14 going to be required to train people before there's any operators.
15 MR. SPURGEON: Well, the direct answer to your question relative to
16 2010 and the plants that are known now in the pipeline, the answer is no. They're
17 just not part of our, of the 2010 program. 2010 is a program that ends in our fiscal
18 year 2011. It's designed to carry through the design certification, the initial three
19 combined operating licenses, two of which we're doing in fall and one partially if
20 you will, and the early site permits that are almost complete at this point in time.
21 Where there is potential, but it's future for our involvement in areas
22 associated with this, is what we're doing under GNEP for the advanced simulation

1 and modeling because as we carry that to its ultimate we're going to be able to not
2 only do basic training which you're speaking of, but I think revolutionize how we
3 both design, and potentially with passing this technology to you all, potentially
4 revolutionize the way you might be able to regulate and license new nuclear
5 plants. But the direct answer to your question is no, we're not participating in that.
6 COMMISSIONER LYONS: I think my comment also to some extent
7 ties in with a point that Commissioner Merrifield made about the many needs of
8 the existing fleet, because digital I&C is very, very much an issue for them too. It's
9 an issue that certainly NRC is wrestling with, industry's wrestling with, and I can
10 well imagine that there's an important need for DOE leadership in this area too.
11 But thank you.
12 CHAIRMAN KLEIN: Dennis I know looking at GNEP it seems like at
13 the moment the leading candidate is UREX+ in fast reactors, sodium fast reactors.
14 Is that kind of where you all are headed at the moment?
15 MR. SPURGEON: I try not to use a brand name relative to
16 separations process. A sodium fast reactor, the answer is yes. Relative to
17 separations it's really, we're criteria based, I would say; we know what we want it
18 to do, we want it to be able to separate out the transuranics, we want it to be able
19 to separate out cesium and strontium, we want it to be able to isolate
20 (unintelligible).
21 But relative to saying that the process must go from step A to step B
22 to step C, in order to get there the only bottom line is that we do not separate out

1 pure plutonium. But we're not defining the order of the process. Within any one
2 called UREX+ or others there are different steps involved, and they go by different
3 names and it seems like everybody calls somewhat the same process something
4 slightly different. And so I stay away from saying it's UREX+, I just say that there's
5 the criteria, as long as it meets the criteria, that's totally acceptable.
6 CHAIRMAN KLEIN: That's helpful, because I think what we need to
7 do as the potential licensee at some point in time is to work in parallel as you're
8 doing your R&D so we can do the licensing R&D as well.
9 In terms of … could you talk a little bit about, you know, you have
10 two options of how you can go as you move forward, you know, your
11 demonstration scale versus a commercial production and licensing. Could you just
12 talk about what your thoughts are now as to how you intend to proceed? And with
13 the end goal what we want to know is what might we license and when.
14 MR. SPURGEON: First off let me back up and add to the point of the
15 2008 decision. What you do in 2008 is decide on the path forward, you're not in
16 2008 ready to say okay, we're going to start building a facility at that point in time.
17 That's not a decision to say okay, here's the check, let's go build the plant. This is
18 the definition of the path forward we're going to take to get to that point.
19 I do believe we're going to be able to go to what we call prototype
20 scale, which is certainly larger than a demonstration kind of a scale, but perhaps
21 capable to be expanded modularly to large commercial scale, as a step in a
22 separation facility and a recycle facility. With respect to the reactor we're going to

1 see what sizes come in that appear from industry standpoint can be done and can
2 be done most economically.
3 The fast reactor is one that we have a lot of work to do to make it
4 economical. Because in the end all of this has to fit into a business plan and that
5 business plan is going to be carried out by people who have an objective to make
6 money. And consequently we need to see what has to be done in order to get us
7 to the point of having a total system, from a systems approach that can result in a
8 business that can be looked at as desirable by industry.
9 And you know it's always possible that a decision could be made that
10 these are totally designed, built and operated by the government. But my
11 assumption is that that's not the way this will go. My assumption is that this will
12 be, that these plants will certainly have a government role, certainly have a
13 government technology input, certainly have government incentives to get the
14 early plants up and running and in operation, but will be done by private industry.
15 CHAIRMAN KLEIN: If you go the prototype option do you expect
16 those would be licensed by the NRC or through your authority?
17 MR. SPURGEON: I would expect that's NRC.
18 CHAIRMAN KLEIN: Thanks. Commissioner McGaffigan.
19 COMMISSIONER McGAFFIGAN: Well, staying away from brand
20 names, although I'll use UREX+ generically not as a brand name, my
21 understanding, and you can correct me, is that GNEP involves light water reactors,
22 UREX+ or some type of reprocessing facility to remove the uranium and plutonium

1 and other things as you outlined and fast reactors to consume the product and
2 then pyro-processing to recycle the product of the fast reactor. So you have both,
3 and pyro-processing may again be a brand name, but don't you need both
4 recycling technologies in the ultimate end game?
5 MR. SPURGEON: Well, the answer is no, but let Paul.
6 MR. LISOWSKI: I was just going to say we haven't made the
7 decision as to what fuel type the reactor will take. If it's a metal fuel then clearly
8 pyro-processing is the reprocessing.
9 COMMISSIONER McGAFFIGAN: Aren't the liquid metal cooled …
10 MR. LISOWSKI: Well, it would be a metal cooled reactor, but it could
11 be a mixed oxide or it could be an oxide fuel, or it could be a metal fuel reactor. If
12 it's metal fuel then it's pyro-processing. And if it's an oxide fuel reactor then you'd
13 reuse the aqueous processing technology to reprocess a fuel.
14 COMMISSIONER McGAFFIGAN: Okay.
15 MR. SPURGEON: The point is that is one of the decisions that hasn't
16 been made. That's the basis for my saying no, we haven't reached that
17 conclusion yet.
18 COMMISSIONER McGAFFIGAN: I'm not sure there's much of a role
19 for DOE in this, but our staff early in February, February 5th put out an information
20 notice where they talked about construction issues in new plants. And we have
21 one being built in Finland, and they pointed out that in 1984 we had done a report
22 about the problems in quality of construction and that the Fins had come along last

1 year, in July 10th of 2006, with the report that sounded like an echo of what we had
2 written in 1984, why they were having problems at the Finnish facility; poor
3 communication between design and construction organizations and within
4 organizations, over confidence in personnel with little nuclear industry experience
5 and inadequate oversight and training, ineffective problem identification reporting
6 and inadequate corrective actions, unrealistic and aggressive schedules to
7 complete designs sufficiently ahead of the construction, inadequate assignment of
8 responsibilities to control assigned work, etc., etc.
9 We're obviously, it's our role to try to tell people please remember
10 the past, but you've talked about the fact that we've allowed the nuclear sector to
11 atrophy and we're an organization that even if we didn't have a nuclear
12 renaissance we'd be desperately trying to hire people, and even if there weren't a
13 nuclear renaissance in the 104 existing plants they'd be desperately trying to find
14 people to replace an aging workforce.
15 How worried are you about this? As I say I don't think there's much
16 a role for DOE there and there's not much of a role for us except to preach. But
17 isn't that a really probably the major constraint on nuclear renaissance at this
18 time?
19 MR. SPURGEON: Sure, it is, because it turns out to be generally,
20 the experience turns out to be the long pole in the tent very often. You know I find
21 myself, probably bore some of my colleagues stiff because I keep bringing in

1 things from my house which are the documents that we wrote in the 1970s. And by
2 the way they're pretty applicable.
3 COMMISSIONER McGAFFIGAN: Our 84 reports are pretty
4 applicable too apparently.
5 MR. SPURGEON: I have a complete conceptual design for a
6 reprocessing plant done by Dupont that was done in 1978. And oh by the way it's
7 for a proliferation resistant reprocessing plant, back then we called it co-
8 processing. This was in the Carter Administration. So have we … so what's Yogi
9 Berra saying? De-jevu all over again? Well, you know we have that but now we
10 have to make sure that that experience gets transitioned, so we don't reinvent all
11 the same wheels again.
12 COMMISSIONER McGAFFIGAN: Going back to GNEP. And this
13 will be our last question. You have these 11 sites that are doing some work, how
14 many of them are really viable? I mean, I read the newspapers and I can see
15 people saying oops, we don't really want a reprocessing plant here, look at the
16 experience at West Valley and Savannah River and whatever. And, you know, of
17 these 11 how many really are politically viable?
18 MR. SPURGEON: Well, most are politically viable. There are a
19 couple that I would agree with you, and I'm not going to get into specifics, but that
20 politically probably would have a very difficult time sustaining public support, on a
21 broader scale, not local. I think they all have good local support.
22 COMMISSIONER McGAFFIGAN: But on a state scale.

1 MR. SPURGEON: But on a state scale would have difficulty
2 sustaining that support. But on the other hand, there's some very strong
3 candidates within that and they're diverse enough, both east and west, that I think
4 we will have some very good competition for siting when this is all over.
5 COMMISSIONER McGAFFIGAN: Mark me as a bit of a skeptic, but
6 I'll leave it at that. Thank you.
7 CHAIRMAN KLEIN: Commissioner Merrifield.
8 COMMISSIONER MERRIFIELD: I think it's your turn. Oh, no, I'm
9 sorry… On slide 7, well, in terms of going forward with Next Generator Reactors,
10 part of GNEP, one of the things that strikes me that we have benefitted from in our
11 current licensing program is a technological capability to have our own test
12 facilities to validate the work done by our licensees.
13 We have, for example, a facility in Oregon State that was used for
14 pressurized water reactors, notably the work that we did relative to the AP600 and
15 the AP1000. At Purdue we have a boiling water test loop facility that was very
16 helpful in the work that we did to validate work on ABWR and will be utilized for the
17 purposes of the ESBWR design work that we're going to be reviewing.
18 As we go forward if you all were to decide to go down the road
19 toward a liquid metal reactor we don't have the capability to access a similar type
20 of facility, and that obviously will make our job a little bit more difficult. Are you
21 thinking about in your programs how we collectively might be able to address that
22 issue so that whatever technology you choose we're going to have access to it in a

1 way that we can independently validate the information that you all would
2 ultimately be giving to us?
3 MR. SPURGEON: Well, obviously we have a challenge relative to
4 our current, your domestic capability and fast reactors. So since FFTF was shut
5 down we don't have an operating fast reactor in this country. And so we do
6 ourselves find ourselves relying quite a bit on our international cooperation in order
7 to do some of the work that we need to have done to irradiate fuels, especially the
8 fuels development work that's going to be required.
9 And I don't doubt but what perhaps we may need to look at some of
10 those similar kind of arrangements that might, that you might want to have in order
11 for you to have cooperative arrangements from a licensing standpoint, which you
12 do, because you have the international licensing, the precise title I don't
13 remember, but initiative.
14 COMMISSIONER MERRIFIELD: Multi National Design Evaluation.
15 MR. SPURGEON: And perhaps could make use of that very
16 effectively with the French, with the Japanese, for example, then perhaps the
17 Russians in this arena.
18 MR. LISOWSKI: May I just comment, there are actually three
19 facilities under consideration for GNEP, the reactor, the recycling facility and what
20 we're calling the advanced fuel cycle facility. The advanced fuel cycle facility will
21 have a lot of capabilities for testing and independent evaluation. And I don't know

1 how many people actually have seen the view graph that I have, but in one of the
2 viewgraphs, you probably saw it, I had the word NRC.
3 And the idea there was if we're able to fund and build this facility that
4 we would be able to put in place testing facilities that other people could use as
5 part of the overall understanding of the performance of these facilities. And so we
6 are thinking about how we could involve other agencies who might need to use
7 those facilities in an independent way.
8 COMMISSIONER MERRIFIELD: Well, I think if you've got some
9 additional information on that you can provide the Commission … I didn't get a
10 chance to see the slides, but I certainly …
11 MR. LISOWSKI: It's just one line on a slide, but the point is, the idea
12 is that if this facility comes into being it's not only for use by the National
13 laboratories but by industry and by NRC and others who may have to use this
14 capability.
15 MR. SPURGEON: I'll be glad to give you the viewgraph background.
16 COMMISSIONER MERRIFIELD: The other question I had, on slide
17 eight you talked about some of the work you have underway relative to the
18 hydrogen initiative. And I understand the deployment of the program; I understand
19 the intension behind it. What has always sparked my concern obviously as the
20 safety regulator we're worried about the safety of the reactor that these facilities
21 might be tied to; hydrogen is after all a difficult material to safely handle.

1 And I'm wondering the extent to which in the research that you've
2 undertaken as part of this that you have been addressing the safety issues that
3 would fall into our space relative to co-locating these types of facilities right next to
4 an operating nuclear power plant?
5 MR. SPURGEON: I don't think we have it in this, we don't have that
6 depiction of the processing facility. And when you see the way they're drawn,
7 there's one, there's a good bit of physical separation and there's certainly a good
8 bit of isolation between the reactor system and the process heat application. So
9 the answer is yes, there's not a close coupling between a large hydrogen storage
10 facility or generation facility and the reactor that could cause you to have a safety
11 concern.
12 COMMISSIONER MERRIFIELD: Well, I think that's an issue that
13 obviously you thought out. If the information has been shared with our staff it
14 certainly hasn't percolated to our level. And I think that if you've got some follow
15 up material that would be more instructive than I would be particularly interested in
16 it.
17 I think in terms of the public dialogue about where these programs
18 are going to go and the impact that they're going to have on the future units we
19 may regulate I think we've got to able to better capture that information so we can
20 articulate it in the audiences that we have to grapple with.

1 MR. SPURGEON: I think that's good. We'd be glad to give you that
2 because I think we'd like you to have that kind of … because we'd like the
3 feedback as well. That's feedback that would be helpful to us.
4 COMMISSIONER MERRIFIELD: Great, thank you, Mr. Chairman.
5 CHAIRMAN KLEIN: Commissioner Lyons do you have any more
6 questions?
7 COMMISSIONER LYONS: No.
8 CHAIRMAN KLEIN: I just had one question, and I haven't looked at
9 your 08 budget, is the Next Generation Gas Reactor in your budget for 08?
10 MR. SPURGEON: Yes, it is.
11 CHAIRMAN KLEIN: Thanks. Any other questions? Well, on behalf
12 of my fellow Commissioners and I, I'd like to thank you for coming out today. It's a
13 very helpful presentation and important dialogue, obviously a lot of work for both
14 your department and our agency as we move forward.
15 One thing I've been impressed with from the NRC's perspective is
16 that we have taken a lot of initiative with the early site permits, the combined
17 operating license activities, modifications of Part 52. So I think we've done a lot to
18 make the licensing process move as you move forward with some of your
19 concepts. So I think it's very important that we stay in communication so that we
20 do things in sequence, so again thanks for coming today.
21 MR. SPURGEON: You're welcome, thank you for having us.
22 CHAIRMAN KLEIN: Meeting is adjourned.