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13 Official Transcript of the Plenary Session

14 Tuesday, March 9, 2010

15 Speech of James O. Ellis

16 President and CEO Institute of Nuclear Power

17

18 Commencing at 10:15 a.m.

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

2 Tuesday, March 9, 2010

3 (10:15 a.m.)

4 MR. LEEDS: Thank you for taking
5 your seats. We will proceed with the next
6 guest speaker. We have the great opportunity
7 to hear from Mr. James Ellis, president and
8 chief executive officer of the Institute of
9 Nuclear Operations.

10 Mr. Ellis was elected president and
11 chief executive officer of INPO which is
12 located in Atlanta, Georgia on May 18, 2005.

13 The Institute of Nuclear Power
14 Operations sponsored by the commercial
15 nuclear industry is an independent nonprofit
16 organization whose mission it is to promote
17 the highest levels of safety and reliability
18 to promote excellence in the operation of
19 nuclear electric generator plants.

20 Admiral Ellis completed a
21 distinguished 39-year naval career as
22 Commander of the United States Strategic

1 Command.

2 In his role he was responsible for
3 the global command and control of the United
4 States Strategic and Space Forces reporting
5 directly to the Secretary of Defense.

6 Mr. Ellis is a 1969 graduate of the
7 U.S. Naval Academy and also holds a Master's
8 degree in aerospace engineering from the
9 Georgia Institute of Technology. He also has
10 a Master's degree in aeronautical systems
11 from the University of West Florida.

12 He completed the United States Navy
13 Nuclear Power Training and was qualified in
14 the operation and maintenance of naval
15 nuclear propulsion plants.

16 Mr. Ellis served for three years as
17 a presidential appointee on the President's
18 Intelligence Advisory Board and in 2006 was a
19 member of the Military Advisory Panel to the
20 Iraq Study Group. Please join me in
21 welcoming, Mr. Ellis.

22 (Applause.)

1 NR. ELLIS: Thank you all. It is a
2 real honor and a privilege for me to have the
3 opportunity to be part of this, the 22nd
4 Regulatory Information Conference, and I
5 thank Chairman Jaczko for the invitation to
6 be a part of this.

7 This is interesting. We were
8 clicking through some pretty important
9 anniversaries here. The NRC as we have heard
10 is 25 years old. INPO has just turned 30.

11 Now that doesn't imply seniority in
12 any way since certainly there are antecedents
13 to the NRC that go back decades before the
14 creation of the current agency.

15 I am delighted to be a part of a
16 conference that has the themes that you see
17 on the board behind me.

18 "Knowledge for Today and Tomorrow"
19 which is an extremely important element of
20 our continuing success as the Chairman
21 certainly pointed out in his remarks.

22 I have spoken about the knowledge

1 continuum for a long time and quite frankly I
2 believe we might even be able if we think
3 about it to take it one step further than
4 knowledge.

5 The continuum I have always
6 described goes from data to information to
7 knowledge and when you take knowledge and
8 inform it with experience you get wisdom
9 which is the next and inarguably the highest
10 level to which we can all aspire and that's
11 kind of the way I would like to approach my
12 remarks with you this morning.

13 I will talk about four areas. I
14 will talk a little bit about history, the
15 history of our industry.

16 First off, because I am a history
17 buff. I love it. Secondly, because this
18 gradually "drifts aft in our wake" as we used
19 to say in the Navy and as fewer and fewer of
20 us remember the excitement and the energy -
21 no pun intended - that was part of our early
22 industry.

1 We also need to inform ourselves on
2 the basis of what worked and what didn't, not
3 just from our industry which in some cases
4 are relatively painful memories, but in other
5 industries as well.

6 I will talk to you about INPO, not
7 about its history, but about its future and
8 where are we going. What do we need to do at
9 INPO in order to shape ourselves to better
10 serve this industry which as you have heard
11 from the earlier two speakers, both Bill and
12 the Chairman this morning, is on the cusp of
13 real and significant change.

14 Finally, I am going to talk about a
15 revised mission statement for INPO, being a
16 vision that we set for ourselves and perhaps
17 at the end I might offer a bit of a challenge
18 to all of you to join us in the challenges
19 that we are setting ourselves up to deal with
20 going forward.

21 I would like to delve a bit into
22 history. Years ago somebody once told me,

1 "If you want a newer idea, read an old book,"
2 and so I have done that. I did that when I
3 arrived in the industry five years ago and
4 with apologies to those from academia in the
5 audience and I have already encountered some
6 of you this morning, so don't hold me to
7 account on the accuracy on my description of
8 physics going forward.

9 This is the gentleman, Enrico Fermi
10 who is generally credited with being the
11 formative voice and force in the early days
12 of our industry. That is his famous nuclear
13 pile literally behind that you see over his
14 shoulder put together in a squash court under
15 the stadium at the University of Chicago.

16 It would not satisfy the reactor
17 oversight process, I am reasonably assured,
18 but clearly, at the time this was an exciting
19 moment in physics.

20 Otto Hahn and Fritz Strassman had
21 split the atom or had gotten credit for
22 splitting the atom only four years earlier in

1 1938. In actuality, if you go back and look
2 at the old data it is interesting, but Fermi
3 actually stripped the atom in 1934, but he
4 didn't get credit for it because he didn't
5 recognize that he had done it.

6 Rather than splitting it into big
7 pieces he had merely shot a glancing blow and
8 broken off some neutrons and an alpha
9 particle which were indistinguishable from
10 radiation, so he didn't get credit for it and
11 it was not until Fritz Strassman actually
12 split the atom and created barium when they
13 created fission with the uranium atom, but
14 they were clearly able to define that fission
15 that had indeed taken place in 1938, but by
16 1942 Fermi was back into it.

17 You can see that he's a "glass half
18 full" kind of guy. In his life there were
19 only two possible outcomes. If the result
20 confirms the hypothesis you've got a
21 measurement. If the results don't confirm
22 the hypothesis, then you've got a discovery!

1 So you can't lose in his life.

2 Indeed, he was the big pusher of
3 the technology and the physics in those days
4 and obviously as we all recall an important
5 element of the Manhattan Project.

6 The Manhattan Project delivered as
7 we are all aware that uncontrolled release of
8 energy that took place on July 16, 1945 at
9 5:29:45 in the morning at the Trinity Test
10 Site in Alamogordo, New Mexico.

11 If you have ever visited there,
12 what you will see is one stark black obelisk
13 that stands in the dessert that marks that
14 are that some say is the beginning of the
15 Nuclear Age from that moment.

16 It is interesting as you study its
17 history the dissenting opinions and the
18 different views and perspective that were
19 part of this even of the physics at the time.

20 There was one school of thought by
21 eminent scientists who were convinced that
22 when this device went off it would ignite all

1 of the oxygen in the atmosphere and
2 incinerate the planet.

3 Now think about the guy with the
4 finger on the button on that July morning
5 wondering how this was all going to turn out?

6 Well, clearly, it turned out
7 relatively favorably in terms of the product
8 they were trying to produce and then as you
9 know very very quickly in a matter of five
10 years they began to control this uncontrolled
11 and untrained release of energy and use it in
12 the development of nuclear propulsion plants.

13 That's the Nautilus that you see
14 there on the left with Call Number 571. My
15 uncle helped to build that thing in Groton,
16 Connecticut which is where my mother was
17 from.

18 The amazing story on that is that
19 the keel was made in June 1952, the submarine
20 was launched in January 1954, so I would
21 submit to you that we could not write the
22 specifications for a submarine in 18 months

1 these days much less build one, but that
2 shows you how far we have come and the
3 excitement of it.

4 The famous message that was sent by
5 Commander Eugene P. Wilkinson, "Underway on
6 nuclear power," and things were off to the
7 races.

8 In the middle of Nautilus'
9 construction as you may recall Dwight
10 Eisenhower on December 8, 1953, gave a famous
11 "Atoms for Peace" speech in the United
12 Nations in which he spoke powerfully, this
13 old World War II warhorse about the promise
14 of nuclear energy for the peaceful support of
15 all mankind.

16 In fact he actually proposed the
17 process by which the Petina was stripped from
18 this and it was devoted only to peaceful uses
19 in going forward.

20 As we all know that is not the way
21 things played out from a political and global
22 process, but nonetheless there were a number

1 of initiatives that were begun that attempted
2 to take nuclear energy to do amazing things
3 with it and some of these things are
4 absolutely fascinating.

5 This is a nuclear rocket.

6 This is Kiwi A and it went on to be
7 produced as Kiwi B. The concept was you
8 would blow hydrogen over an active set of
9 fuel rods and you get expansion through a
10 nozzle, you get thrust. This thing actually
11 worked and Kiwi B demonstrated for us about
12 900 megawatts - think about that - of power
13 when it was produced.

14 They actually considered carefully
15 putting this as the second and third stage on
16 the Atlas V, but decided that they could had
17 problems with what if the rocket failed with
18 pieces of the reactor scattered all over
19 South Florida.

20 The fact of the matter is they also
21 considered putting it to work as you can see
22 here on the right and using it for

1 interplanetary propulsion, an amazing concept
2 at the time when you think about it, but this
3 highlighted the things that they were
4 thinking about to do with nuclear energy.

5 Even nuclear weapons they
6 considered in Project Plowshare using those
7 to dig a sea level canal across the Isthmus
8 of Panama and the saga continues.

9 Does anybody recognize this? This
10 is the WS125. This is the Lockheed candidate
11 for the nuclear bomber, not the bomber that
12 carried nuclear weapons, but the bomber that
13 was powered by nuclear energy.

14 There was a competition between
15 Lockheed and Convair and the engine
16 competition was between General Electric and
17 Pratt & Whitney. This is a model of the
18 Lockheed version. It's absolutely restored.

19 I was giving a talk to the Lockheed
20 Retired Employees Association a couple of
21 months ago and I just mentioned this in
22 general. A gentleman in the audience was one

1 of the design engineers and he brought me
2 this picture based on a model that he had in
3 his home.

4 Absolutely incredible.

5 You can say, "But they never got
6 more beyond the concept stage."

7 Not true.

8 As a test to this they modified a
9 B-36, a large multiengine bomber and they
10 actually put an operating reactor in it,
11 3 megawatts, and they flew it for 215 flight
12 hours and the reactor was critical for 89 of
13 those hours.

14 The reactor was not powering the
15 airplane, but they wanted to evaluate the
16 concept. "Could it be done in flight?"

17 Unfortunately with the size of the
18 shielding required, and the like, this left
19 no room for payload so they decided that this
20 was not something they wanted to pursue.

21 The two engines can still be found
22 in the Idaho Patchogue Engineering Laboratory

1 if you want to go out there to take a look at
2 them. Another piece of technology that we
3 thought was going to deliver, but did not.

4 All right you car aficionados!
5 This is not an El Camino, for those of you
6 who are asking. Does anybody recognize this
7 car? This is the 1958 Ford Nucleon! I'm not
8 making this up folks. I couldn't.

9 The concept was that it would be
10 powered by that small reactor that you see
11 sitting there where the trunk is. You take
12 it into your obliging gas station mechanic
13 about every 10,000 miles and he would swap
14 out the reactor and replace it with another
15 one. You would never use a drop of gas and
16 you would have incredible mileage.

17 Now, clearly, an operating model of
18 this was never built and Ford never got
19 beyond the one third design scale model, but
20 nonetheless it gives you a sense for the
21 excitement and the opportunities that people
22 saw in nuclear energy in the late 1940s and

1 early 1950s.

2 What work and other things that
3 bring us all together today on a more serious
4 note is the commercial application of that
5 naval nuclear power plant that we saw first
6 demonstrated first with the SR1 that was
7 tested in the dessert and ultimately on board
8 the Nautilus, and here, as you can see, a
9 shipping port in 1957, a public/private
10 venture that first created the commercial use
11 of electricity on a large scale in this
12 nation and was followed by Dresden in 1959,
13 and as many of you know, this was the first
14 call commercial going into that.

15 This was an incredible opportunity
16 that people saw in this energy source that
17 was something special and unique.

18 The misquote, of course, with which
19 we are all familiar is, "Too cheap to meter."
20 Now that is not exactly what they said, but
21 nonetheless the fact was it was going to be
22 incredibly low cost, incredibly reliable and

1 really contributing to the economic
2 prosperity of the post-war American economy.

3 So 237 nuclear plants were ordered
4 or considered from 1965 to 1978. It was
5 truly a bandwagon market.

6 People got into this who had no
7 previous nuclear experience, who had no
8 complete understanding of the technology, but
9 they were just taken aback by the buzz that
10 surrounded anything atomic and nuclear.

11 There were some challenges to that
12 early success. We talk a lot about change
13 and we heard a little bit of that in the
14 Chairman's remarks this morning and in Bill
15 Borchardt's remarks as well.

16 People talk about change as being
17 hard and change as being difficult. Well,
18 change is not necessarily hard or difficult.
19 It's the rate of change that makes things
20 challenging.

21 For the engineers who are in the
22 crowd it is the first and second derivative

1 that really gets you when you think about it.
2 It's the rapid growth and the rapid expansion
3 as you try and do things quickly as you try
4 and expand industry to capacity and the like.

5 In our case we have 54 vertically
6 integrated utilities many of whom who had
7 never dealt with anything nuclear, they had
8 all run fossil plants and they treated this
9 in much the same way in terms of their
10 standards in construction and operation.

11 There was overestimation of the
12 market. Those kinds of things were not
13 unusual. Everyone projected that there was
14 going to be a huge opportunity here when in
15 fact the demand for electricity did not grow
16 in the United States as anticipated and they
17 oftentimes underestimated the risks
18 associated with that, but we will talk more
19 about that in a moment.

20 This is not unique to us because
21 this kind of response to stress and challenge
22 occurs in every industry and we have a few

1 recent examples that we can speak to.

2 Clearly, the housing market in the
3 United States over the last couple of years
4 has been a demonstration of that. Whether it
5 is subprime mortgages the way in which they
6 were bundled, the kinds of challenges that we
7 saw, clearly, that contributed to the
8 economic downturn not just domestically but
9 internationally.

10 Why's that? Relaxed standards.

11 We didn't keep the standards
12 perhaps where they should have been for what
13 we thought were the right reasons to give
14 increased opportunities and the like, but the
15 fact of the matter is that things began to
16 come unraveled with insufficient attention
17 to, and I would even add, an understanding of
18 the risks with which we were dealing.

19 Did we really understand that? So
20 we ask them, "What happens if we get the
21 alternative future that we do not expect?"

22 "Why do we assume that things are

1 going to go just as they always have?

2 "Do we confuse inertia with
3 momentum?" when you physicists know the two
4 are not the same. Those are the kinds things
5 we have to ask ourselves.

6 What about the dot com bust of
7 about ten years ago? Absolutely an
8 incredible decline in an industry that by all
9 optics was going gangbusters. It was
10 absolutely extraordinary.

11 How quickly that turned around.

12 The dot com as it is now called in
13 the Silicon Valley, "The Dot Bomb" occurrence
14 was due to a lack of experience on the part
15 of folks.

16 Great technologists didn't
17 understand the first thing about running a
18 business. They didn't understand how to do
19 balance sheets and the budgets. They did not
20 know how to predict markets and appetite.
21 They actually demonstrated an amazing lack of
22 caution.

1 Fifty percent of those companies
2 went out of business in a year with most of
3 them never having made a single dollar of
4 profit, but had stock prices that were
5 absolutely astronomical.

6 What have we learned from that?

7 The data is incredible.

8 In the year 2000, in the televised
9 SuperBowl, there were ads from 17 dot com
10 companies, but in 2001, there were ads from
11 three dot com companies.

12 That's how quickly things turned
13 around, and of course, we're well familiar
14 with our own experience.

15 This is the April 9, 1979 cover of
16 Time Magazine with TMI in the background.
17 Many of you lived through that experience and
18 know well the contributors and the causes
19 that brought that.

20 What was the implication though for
21 us as an industry? Billions of dollars lost
22 with 97 plants canceling. You can still take

1 a very interesting driving tour. You can't
2 get access to it, but you could go across
3 this country visiting the shells of what are
4 partially constructed nuclear power plants.

5 It's absolutely extraordinary.

6 Now leave it to TVA to try and
7 bring some of those folks back as they are,
8 but the real important issue is the last
9 bullet. This is what we are all here to talk
10 about. That's the thing that we at INPO can
11 really focus on, the erosion of trust.

12 It was that that cost us.

13 It wasn't just the TMI issue, but
14 it colored and affected the dialogue about
15 nuclear energy in every venue for the next
16 two decades. Over the next 20 years the
17 number of nuclear plants under construction
18 worldwide declined every year from 1979 to
19 1998.

20 Decisions about whether to shut
21 plants down or to continue them in operation
22 were all impacted by this. These are 20

1 plants that once operated in this country
2 that are no longer generating electricity
3 with nuclear energy and that is not all of
4 it.

5 It wasn't just the TMI event. It
6 was the effect that that event had on our
7 national and inarguably global
8 infrastructure.

9 The President's Commission on Three
10 Mile Island made some very specific
11 recommendations out of that setting policed
12 standards of excellence.

13 Systematic gathering and analysis
14 of operating experience and what is implied
15 here and is only said in other words in the
16 report is the sharing of information.

17 It's not enough to gather it. It
18 is how do we communicate it quickly and
19 accurately amongst ourselves because as most
20 of you know the events of TMI are very
21 similar events that occurred 18 months
22 earlier at Davis-Besse and was insight that

1 had not yet been shared with the broader
2 nuclear industry.

3 Accredited training.

4 There is an inextricable link
5 between training and operational
6 effectiveness and safety, but there was not
7 the standardization we have today and the
8 accreditation that we oversee on behalf of
9 the NRC to a memorandum of agreement. Those
10 types of things that contributed to that
11 success that we talked about earlier today.

12 Finally, operator training and
13 plant simulators clearly have been
14 responsible in large sense for the
15 improvements that we have seen over these
16 last decades.

17 This is not "Moon over Atlanta."
18 This is reflective also from the Kemeny
19 Commission Report, from the folks like Bill
20 Lee and other giants in the industry who came
21 together, INPO charts its genesis. That is
22 where we began.

1 We clicked over 30 years in October
2 of last year of service to partnership with
3 our industry and complimentary support of
4 relationship with the regulator.

5 That's entirely appropriate and now
6 our vision and our challenge is, "What do we
7 need to do for ourselves to unfold?" because
8 we have had a dramatic improvement in our
9 industry by any measure. We are in record
10 setting performance levels.

11 Bill talked about it and you can
12 see it in his charts and you can certainly
13 hear it in the theme that the Chairman
14 sounded clearly in terms of design, safety,
15 operator training, and all of those things
16 where we have had dramatic improvements and
17 we're at world beating performance.

18 It's not a competition in that
19 sense, but worldwide in the 446 nuclear
20 plants that are generating electricity
21 commercially in the world, the top five and
22 eight of top ten measured by capacity factor,

1 are in the United States of America. That's
2 something with which we out to be proud.

3 But this is something with which we
4 cannot be complacent because the fact of the
5 matter is we have all had challenges along
6 the way.

7 Even though that broad curve in
8 1979 is one of continued upward direction as
9 we look at the data from INPO and that is
10 what we do on a routine basis is we measure
11 the INPO assessments, if you will, the grades
12 that we assign.

13 We saw a peak around 2000 and then
14 we saw a decline in that performance as we
15 saw it in the industry.

16 You could argue and debate why that
17 might be. There were certainly some security
18 challenges that were flooding the industry
19 after 9/11. There were some significant
20 capital projects. Obviously steam generator
21 replacements, head replacements, and the like
22 with ownership changes and the M and A

1 activity continued as they say on Wall
2 Street, "Big fish gobbling up little fish,"
3 and finally there were the Davis-Besse
4 responses that were chartered by the
5 regulator.

6 All of these are good and
7 appropriate, but these are the kinds of
8 things that will be with us always.

9 "If it is not this, it is something
10 else," and the challenge we have as an
11 industry and the challenges that we have at
12 INPO is as to how do we find ways to sustain
13 this high-level performance that this
14 industry has risen to over these last decades
15 and that's what we are trying to do as we
16 work to shape our future.

17 Because it is bright.

18 No matter how things play out in
19 terms of the energy mix going forward, it is
20 clear that the opportunities are there for
21 this industry.

22 Everyone knows that our industry

1 generates 20 percent of the electricity in
2 this country, but we generate 73 percent of
3 the emissions free energy and so as those
4 kinds of issues become more and more
5 important there is an opportunity for this
6 industry to serve more broadly.

7 We at INPO don't do advocacy. We
8 oversee safety. That is our focus. Clearly
9 people are aware of the benefits and the
10 potential in this industry in going forward,
11 but how do we shape them? How do we insure
12 and sustain the excellent performance?

13 We deal aggressively with the
14 issues that continue to confront us. We are
15 not distracted by the inevitable things that
16 will be a part of our business and I will
17 argue most other business along the way.

18 Those things that distracted us are
19 not excuses, they may be reasons, but there
20 are no excuses for taking our eye off the
21 number one priority in this industry which
22 must and always must remain "nuclear safety."

1 These are some of the distractions
2 that we have got now. The energy policy
3 debates, carbon concerns, environmental
4 issues, again, this is entirely appropriate,
5 there are important issues that have to be
6 dealt with, but they cannot work their way
7 down through the organization to the point
8 that they distract us from our focus on the
9 things that are most important.

10 So we at INPO are trying to decide
11 what we need to change as we look to the
12 future. Not for change's sake. I am not a
13 big proponent of that and while it's true
14 that on the strategic scale what we have done
15 for the industry must continue.

16 The reality is the "how we do it"
17 has to change to be reflective of the
18 industry's needs and do an even better job in
19 support of our industry in partnership with
20 our industry going forward.

21 These are four areas that we have
22 written into our new strategic plan. We

1 didn't have a strategic plan when I arrived
2 at the company. The good news is that we
3 created one. It was a five-year plan and we
4 completed it essentially in four years.

5 That is a strategic plan and
6 certainly it is something on which we have
7 been working collectively and over 100 of our
8 employees have been involved in that effort
9 over the last year. It focuses on these four
10 areas and I would like to talk a little bit
11 in detail about that.

12 I will tell you what they are. I
13 will tell you why they are important and I
14 want tell you what we are doing in each area
15 and then I am going to try to find outcomes
16 that we hope to achieve.

17 Remember, I am focusing on INPO
18 now. This is what we can do and what we must
19 do in order to better support this industry
20 with its increasingly higher levels of
21 performance.

22 The first is accountability. This

1 focuses on INPO primarily, but it has
2 implications for the broader industry.

3 By our definition this is doing
4 better with what we already have and know.

5 We sit on the single largest
6 repository of operating experience and data,
7 how do we more quickly translate that and
8 analyze that into something that's useful for
9 the industry and get the information out in a
10 more timely manner?

11 How do we take old data and remine
12 it with new tools and techniques looking for
13 historic trends that may be of use to the
14 industry?

15 How do we identify not just
16 connecting the dots, but what is a dot so
17 that when we connect them we get the right
18 picture and we do that with much more
19 alacrity and at increasing credibility as we
20 go forward.

21 It's timely and effective
22 corrective actions is what we are trying to

1 support our industry in achieving so that is
2 how we define this whole accountability
3 model.

4 Why is it important?

5 The Chairman talked about it.

6 "Success breeds complacency." It's what Bill
7 Post calls, "The Arrogance of Excellence."

8 When you think that no one does it
9 better than you do you. You are at world
10 beating performance. You are at the highest
11 levels and the industry has seen in its
12 history, it's easy to say, "I'm just going to
13 keep doing what I have been doing on a daily
14 basis."

15 There's a leadership book that came
16 out the year before last with a great title,
17 but I'm not sure about the book. It was
18 called "What Got You Here, Won't Get You
19 There."

20 That's the message in all of this.

21 What do we need to change as we
22 look to the future? Significant events.

1 We see common causes in all of
2 this. As we look at the significant events,
3 even though they have declined dramatically,
4 they are 1/20th of what they were 20 years
5 ago in our industry.

6 That is a huge improvement in
7 performance in the industry, however we still
8 seek common threads, the understanding and
9 measurement of risk, the validity and
10 integrity and accuracy of procedures, the
11 understanding of the fundamentals on the part
12 of those that are chartered with running this
13 control room at 4:00 in the morning when
14 inevitably that's when all nasty things
15 happen.

16 Equipment reliability issues.

17 We call it production pressure, but
18 it can be a lot of other pressures as well
19 driving costs down and the like and in a time
20 of economic uncertainty, pressures that can
21 be translated unintentionally into the
22 workforce and that is as I mentioned earlier,

1 "operating experience, operate experience,
2 operating experience."

3 We rarely discover new things.

4 Most of what we find, its causal
5 factors, we knew, we just didn't understand.

6 So what are we doing? We are
7 increasing focus. We think the OE quality
8 has to be ramped up a notch. Our use of it
9 is what I am talking about now.

10 How do we deal with things? How do
11 we make our SOERs much more pointed and
12 useful to you? How do we deliver actionable
13 opportunities to our industry so that they
14 can then as they have over these last 20
15 years continue to drive incredible levels of
16 success.

17 We need to lower the threshold a
18 bit. I mentioned earlier that we need to
19 kind of find those extra dots, not by
20 connecting the dots we already have, but the
21 dots that we haven't yet added to the mix in
22 order to get that accurate picture, and

1 finally, we have to understand what we are
2 seeing.

3 We need to really wrap all of that
4 up together and we need to expand that
5 globally. Excellence does not have a native
6 USA label on it and as we laud ourselves
7 initially through Xuano and now increasingly
8 more directly as INPO we are beginning to
9 understand the learning and important areas
10 that we can bring home and share more broadly
11 in our industry including construction,
12 operating experience, Digital INC, and other
13 areas where arguably the international
14 industry is ahead of the capabilities that
15 currently exist in operating nuclear plants
16 in this country.

17 We see real opportunities here.

18 What are we looking for in
19 outcomes? Measurable improvement. It gets
20 harder. This is a limit curve. We are
21 approaching 100 percent in capacity factors,
22 performance indicator index, and those kinds

1 of things.

2 Your operating margin gets very
3 tight. How you continue to ratchet it up as
4 you go forward is going to demand a great
5 deal more focus from us, but we think we can
6 deliver that and we will talk a bit more
7 about that in a moment.

8 Finally, we have to really learn
9 from what we're getting today. These are not
10 lessons learned just because we write them
11 down. We have to take them and simulate them
12 into our organizations and make sure they are
13 really inculcated into the way we do
14 business. That's accountability. Industry
15 performance.

16 Obviously the best ever.

17 I mentioned our standing in the
18 global nuclear industry as a function of unit
19 capability factor. You can see how
20 dramatically the media capability factor has
21 changed in our industry since 1980 over these
22 last 30 years. Absolutely extraordinary.

1 We have run a great deal out of the
2 technical side of these programs, huge
3 improvements in reliability and the like as
4 we have described some of those already.

5 Bill and the Chairman talked about
6 them this morning.

7 For INPO, our challenge is now to
8 begin to broaden our portfolio and understand
9 that the contributions to this superb
10 industry's performance had come from the
11 leadership and the management, from the
12 problem recognition and correction, from the
13 equipment reliability and issues and the
14 like. How do we focus more on those as we
15 look to the future?

16 Why is that important?

17 Because we believe excellence is
18 the only standard worth having. We believe
19 when we throttle back, and say, "This is good
20 enough," that's the beginning of an
21 inevitable decline whether you do that
22 intentionally or consciously or just by your

1 behaviors and the inertia of what you have
2 already done.

3 It's very very important to us as
4 an organizational entity given the support
5 that we have been given and the imprimatur
6 that we have been given by our industry to
7 continue to focus on excellence and to
8 understand as we have all said along the way,
9 "This journey is one we make together and
10 this is a journey that's never over."

11 How are we going to do that?

12 We are going to have to focus on
13 areas that we haven't been in as deeply
14 before. We are going to have to talk about
15 leadership. We are going to have to talk
16 about management and those two are not the
17 same, by the way, leadership and management.

18 We manage things and processes.

19 We're going to have to talk as the
20 Chairman did and others have about safety
21 culture. What does that really mean? How do
22 you measure what is in peoples' minds? How

1 do you get into the processes? Is what you
2 measure really what they are thinking and
3 what they will do in a time of stress? How
4 do you deal with those issues?

5 The starting point we hope will be
6 common definitions and we have been working
7 collaboratively with the Chairman's team for
8 over a year in order to continue to move in
9 that direction.

10 We have to talk about recovery.

11 The industry is doing remarkably well in a
12 lot of areas, but as statistics always remind
13 us, "There will always be a fourth quartile."

14 The challenge for us is to minimize
15 the gap between the top quartile and the
16 fourth quartile and we have to focus on that
17 and that's the dimension I see on recovery.

18 How we deal with chronic low
19 performing plants and give them the tools
20 they need, not to succeed in a spike that
21 then declines very very quickly when the
22 leadership team leaves or something else

1 changes, but how do we bring the lower levels
2 of performance up to median and beyond?

3 Finally, if we are as good as we
4 appear to be in our statistics, how do we
5 change our focus to focus less on recovery
6 and more on sustainability?

7 How do we keep excellence at that
8 level across the broad industry? How do we
9 avoid those pitfalls of the "C" word that the
10 Chairman used and I will too use before this
11 presentation is over that being
12 "complacency."

13 We also need to work at sustaining
14 technical performance. Bill talked about
15 that this morning. As we see aging plants,
16 how do we deal with the issues of underground
17 piping and wedded cables and flow accelerator
18 corrosion, fuel reliability, the kinds of
19 things that are going to be part of our
20 industry going forward for life after forty
21 and perhaps even life after sixty?

22 These are the kinds of things we

1 need to focus on and what is INPO's role is
2 the question we are asking.

3 Sustained excellence is our goal
4 and we want to be known that INPO is a
5 "Center of Excellence." That's a buzz word
6 and I have to be careful about this. It does
7 not mean that we are the repository of all
8 knowledge. What it means is, "We know where
9 it is and if we don't have it, then we know
10 where to send people."

11 We facilitate.

12 We collaborate.

13 We bring teams together that are
14 willing to talk candidly about their
15 experiences and about how to make things
16 better and we have to do that with more
17 alacrity.

18 That's what the industry expects of
19 us and I believe that is what we must be if
20 we are going to measure up to those
21 expectations going forward.

22 Let's talk about the nuclear

1 workforce, that fourth period. Clearly, you
2 know the demographics. This is a challenge
3 that we have always faced in our industry.
4 There has been a little bit of a respite
5 perhaps from the slowing in the rate of
6 retirements as Bill talked about this
7 morning.

8 We have seen our retirements cut in
9 half at INPO as peoples' 401Ks become
10 201Ks -- I'm just kidding -- but they are not
11 as eager to move and make that transition,
12 but ultimately it is going to come and that
13 is something we need to deal with and
14 understand going forward and how we work the
15 knowledge management and transfer.

16 This is one of those areas
17 unfortunately, when all is said and done,
18 much more is said than is done. We need to
19 think now, so we're challenging ourselves at
20 INPO, "How can we specifically make a
21 difference in this area?"

22 It's interesting because my

1 predecessor several times removed, the first
2 leader of INPO, Dennis P. Wilkinson, the
3 commanding officer of that submarine that you
4 saw in that early slide gave a speech in 1985
5 about the coming crisis in the workforce in
6 the nuclear industry.

7 That was 1985, and at that time, he
8 said, "We need 25,000 new workers or we will
9 be in real trouble."

10 Well, the number today as we
11 partner with NEI and others I think it's
12 probably 50,000, or more, as we look at those
13 retirements on board, but the fact of the
14 matter is through incredible coincidence
15 Dennis Wilkinson gave that speech on
16 "Groundhog Day."

17 Well, it's "Groundhog Day" folks
18 and it's back and now the issue is, "What are
19 we really going to do about it going
20 forward?" and, "How do we deal with the
21 shortages that are beginning to appear in the
22 seniority in terms of the experience?"

1 Not just in the operators, but in
2 the contractors, the incredible partners in
3 this industry that have to support us?

4 All of us are wrestling with these
5 kinds of challenges.

6 In addition, you have the new
7 nuclear workforce. We did a seminar as many
8 did around the anniversary of the TMI event
9 last year and 75 percent of the people in
10 attendance at the seminar were not born when
11 that event happened.

12 To be a card carrying member of
13 "Young Generation Nuclear" you've got to be,
14 what, 35 or under, I think. Well, you do the
15 math from 1970. Most folks in that
16 organization would not have been born when
17 TMI occurred.

18 How do we "culturate" that?

19 That's an intentional use of the
20 term and the experiences and the things that
21 have shaped our perspective on nuclear safety
22 over these last 30 years it's a great

1 question and it begs for a great answer.

2 This is what we're going to do.

3 Not just providing broad guidance and
4 assistance. We're working standardized
5 curriculums with junior colleges.

6 We're working with NEI and
7 scholarship programs and the like. We're
8 heavy into our sponsorship for the Young
9 Generation of Nuclear, but we're going to
10 have to use different methods to deal with
11 these workforce issues going forward.

12 We're looking at how we learn as an
13 industry. We haven't changed much from
14 platform skills. We have gone from chalk
15 boards to white boards and we have gone from
16 overhead projectors to PowerPoint, but other
17 than that much of our learning has not really
18 evolved much in this industry over 30 years.

19 If you can get a Ph.D. without ever
20 setting foot on a college campus in this
21 country then why can't we do better at our
22 training?

1 So we have begun an initiative
2 called, "The Future of Learning." Not the
3 future of training, but, "The Future of
4 Learning," and that's an intentional choice
5 of words, that we hope is going to better
6 serve the industry going forward.

7 It has begun with a formal
8 nationwide instructor accreditation and
9 training course and things like that where
10 we're looking into distance learning and at
11 other opportunities.

12 This is not just a qualification
13 process. This is part of the solution to the
14 HR challenges that are going to continue to
15 confront our industry. This is what we want
16 out of it which is safety oriented with
17 highly skilled folks in sufficient numbers to
18 sit where you're sitting 30 years from now.
19 That's our goal and it has to be a shared
20 goal.

21 What now I want to talk about an
22 area that we are to increase in focus which

1 is international. We have talked about the
2 global character of this industry, well,
3 there are representatives from 27 nations
4 here today, so this is a great opportunity to
5 globalize our interaction and sharing.

6 One of our great successes I
7 believe at INPO, and I am trying not to be
8 boastful, is the collaborative character that
9 we have brought to the domestic U.S.
10 industry.

11 The question we have is, "How do
12 you legitimately share that and preserve its
13 integrity on a global scale?" and that is
14 something that we are going to have to
15 answer.

16 We all need to have common
17 standards, not at the regulatory level, but
18 in the aspirational level to which we work
19 everyday.

20 We also see huge opportunities for
21 international cooperation and shared
22 learning. What are we going to do and why is

1 this important? The growth is absolutely
2 extraordinary.

3 Fifty-six plants are under
4 construction internationally as we speak and
5 not one of them is in the United States of
6 America.

7 There are real opportunities to put
8 eyes on the ground and understand the
9 challenges that we're going to be dealing
10 with as we begin that process ourselves in
11 the next year or so.

12 International diversity.

13 We talked about the broad range of
14 folks who have very aggressive building
15 programs and the new entrants, the sixty or
16 so countries that have expressed an interest
17 in becoming commercial nuclear operators.

18 How do we deal with that? What is
19 our moral if not our legal responsibility to
20 support them as they move forward?

21 We had a new aspirant who shall
22 remain unnamed who came to INPO with great

1 interest, and in the course of conversations
2 in talking about standards of excellence they
3 had to stop the presentation, and said, "You
4 really don't have to talk to us about
5 excellence because we've been operating very
6 successful fossil plants for a number years."

7 That sounds a lot like what the
8 U.S. industry was saying in 1979.

9 So how do we deal with those issues
10 is something that's going to be very very
11 important to us as we go forth.

12 We at INPO have to look for
13 opportunities. We are not a large
14 organization. We're 400 folks and sixty of
15 them on loan from the industry to leverage
16 our folks. We cannot do everything. This
17 cannot be like the Girl Scouts cookie sales
18 where you buy cookies from the first Girl
19 Scout who comes to the door and then after
20 that you don't need anymore cookies.

21 We have some discretionary ability
22 to engage internationally so where do we put

1 that to get the most influence? Is it a more
2 robust relationship with the IAEA? Is it
3 partnering with major international
4 participants such as EDF, or expanding
5 further our involvement with Xuano even
6 though we support the Xuano Atlanta Center
7 already?

8 All of these are things we need to
9 explore and how do we exchange best practices
10 that respect and understand the cultural
11 differences that are very much a reality in
12 the international world.

13 We have to got to find ways to
14 engage effectively with international
15 colleagues. Language barriers become a huge
16 issue when you start talking subtleties and
17 things like "safety culture."

18 It's one thing to talk on the
19 technical level. It's another to talk about
20 the kinds of things that we know are
21 fundamental to the pursuit of excellence in
22 our industry.

1 This is what we want to see on the
2 international side and it's something that we
3 all share where you come from as a goal.

4 Safe operations is absolutely essential.

5 The fact of the matter is, the
6 reality is that this is a globalized industry
7 where increasingly there are no significant
8 differences between technologies.

9 These kinds of things arguably are
10 going to be even more important, consistent
11 safety standards not at the regulatory level,
12 but at the personal level where safety is
13 infused into the operators and in the
14 managers and in the leaders of those
15 organizations.

16 That's something we need to talk
17 more about and what mechanisms we might be
18 able to influence to make that happen.

19 This is where we are headed.

20 Absolutely the first and second
21 derivatives are positive in our industry, and
22 clearly, we are on the cusp of something that

1 is really special.

2 The question for us at INPO is,
3 "What do we need to do to reconfigure
4 ourselves to support that effort in going
5 forth?"

6 We don't want this outcome.

7 We have seen other situations where
8 industries including our own were riding the
9 crest of something very very special, then
10 all of a sudden we got that alternative
11 future, the outcome we had not predicted, the
12 outcome that we had not anticipated, and the
13 outcome we certainly did not want.

14 Complacency is the key.

15 We have a saying in naval aviation,
16 "We buy them books and they eat the covers."

17 That's not to be said about our
18 industry. We are smarter than that, but
19 sometimes I wonder if we remember our
20 history? If we remember those days, those
21 challenges of our past, if we understand the
22 folks that were in that control room at TMI,

1 and I walked that board with the operator on
2 duty that night, "We're smart, intelligent,
3 and working to do the right things," yet they
4 too got an outcome that they had not
5 anticipated, that they did not want.

6 You can go back to other industries
7 whether it is the home mortgage industry, the
8 dot com industry -- and that's a Toyota in
9 the upper right! -- that's just to remind
10 you, "Hey, it can happen! It can happen."

11 That's how we deal and posture
12 ourselves and present ourselves and the real
13 collaboration and cooperation that we
14 generate over these next years is going to
15 prevent it from happening.

16 I like to quote Aristotle because
17 nobody believes that a fighter pilot can.
18 "Excellence then is not an act, but a habit."
19 That's the habit that we have cultivated and
20 that's the habit that I believe that in this
21 U.S. industry we have developed over these
22 last 30 years. Our challenge is how to

1 sustain it.

2 So looking into the future, INPO
3 has had to do few modifications to some of
4 our governing documents. First is the
5 mission statement.

6 You may recall the classic INPO
7 mission statement, "To promote the highest
8 levels of safety and reliability. To promote
9 excellence in the operation of nuclear
10 electric generating plants."

11 Well, we changed it last year.

12 I expected temples to shake and an
13 earthquake to happen. But it didn't. This
14 is how we modified it.

15 To have excellence in operation of
16 commercial nuclear power plants. To reflect
17 the broadened definition that Xuano has
18 always had.

19 To reflect the reality that the
20 individual responsible for the operation of
21 the Chalk River facility producing 60 percent
22 of the world's medical isotopes today in an

1 INPO employee on reverse loan to that
2 industry.

3 To help understand that there are
4 commercial applications for this technology,
5 for the power that comes from these reactors
6 that are now potentially taking us in new
7 directions whether it is processed steam and
8 even have one of our members that was
9 approached by somebody who wanted to make
10 ethanol.

11 Think about that as a conundrum
12 making ethanol using processed steam from a
13 nuclear power plant. The fact of the matter
14 is it's not a huge change, but it's a subtle
15 and an important change in our mission
16 statement.

17 I would like to then move on to a
18 vision statement. We didn't have a vision
19 statement for 30 years. We had a vision. We
20 wanted to help to make this industry what it
21 could be and to some degree while we got very
22 very careful at INPO not to take credit for

1 the industry's success.

2 We did not do that. The industry
3 did that with 30 years of concentrated effort
4 and sweat, but we do believe that we made
5 real contributions to that success over these
6 last 30 years.

7 We decided that it was time to have
8 a vision statement. Vision statements, as
9 you all know, to work them are hard to crack.

10 First off they need to be
11 aspirational. They are not what you are now.
12 They are what you aspire to be if you do
13 everything you can as well as it can possibly
14 be done.

15 So, please, as you read this
16 statement, think about it in those terms.
17 This is our vision. "Setting the Global
18 Standard in Nuclear Safety."

19 That can sound arrogant. It can
20 sound dictatorial. But let me put it in
21 context. We believe the only way you can
22 actually set a standard is not to publish

1 anything. Not to promulgate it, but as I
2 said, to do your work as well as it can
3 possibly be done so that others come and tell
4 you that that's where you are.

5 This is not INPO wearing one of
6 those funny foam fingers that you see at the
7 football games saying, "We're Number One!"
8 That is not what this is.

9 I believe, if over the next five
10 years we deliver on some of those initiatives
11 that I described to you, if we continue to
12 support this industry collaboratively and we
13 listen to what we are being told and
14 remember, listening is not the same as not
15 talking. It's not.

16 If we listen and hear I believe
17 that perhaps both domestically and
18 internationally we will be known as an
19 organization that has the highest standards
20 in the world in supporting nuclear safety.

21 It has to begin at home.

22 We have to command that excellence

1 of ourselves before we can expect it of
2 others and like all organizations there are
3 lots of things that we need to do better and
4 we are working harder.

5 When I say we demand it of
6 ourselves and we expect it of others, there
7 is a subtlety here as well.

8 "We are looking for a coalition of
9 the willing," in military parlance here, we
10 want to be associated with folks that share
11 the same standards.

12 They may not be at the levels that
13 they or we aspire to yet, that's
14 understandable, but is that where their heart
15 is? Is that where the commitment is or are
16 they just going through the motions?

17 It is not about who brings in the
18 biggest paycheck or who wants to buy the most
19 INPO representation or participation.

20 "The brand is not for sale."

21 But I guarantee you that anyone who
22 comes to the door with a genuine personal

1 commitment to excellence will be welcomed.

2 We believe we have a rich history
3 and we share that with our industry. We have
4 watched with pride things that we have
5 contributed that have helped the industry to
6 get to record breaking performance.

7 We believe we have the keys to our
8 own future success within us if we think
9 about it and look at what we do insightfully
10 to determine how we can do it better going
11 forward.

12 I have talked about our mission
13 change and our vision, our aspirational
14 vision. That is not where we are, but that
15 is what we want to be.

16 I have talked about a shared
17 commitment that's necessary to make it all
18 happen. You may think that based on what I
19 am saying that this is a good time to get off
20 the stage, but it isn't, because I know
21 what's going through your mind. I know what
22 you're thinking.

1 "Great words, but how are you going
2 to do it?" The fact of the matter is we are
3 not standing out there alone saying, "This is
4 going to work."

5 We have got to build that
6 coalition. The people that want to talk to
7 us and interact with us they share the same
8 kind of standards and aspirations as we do,
9 and if we do that, if the standards are right
10 and we plant the flag in the right location
11 and we maintain our own personal standards
12 and commitment, then I don't think that we
13 are going to have any shortage of friends.

14 There will be lots of people who
15 will want to be part of this effort and we
16 welcome that.

17 I do some work for another company
18 that had an interesting ad campaign a year or
19 two ago and I have stolen that campaign and
20 reworded it to reflect the other question
21 that is in your mind, and that is, "What's it
22 going to take to get this done?"

1 Between the mission and the vision,
2 between the present and the future, between
3 the reality and the dream, there is one
4 important word and it is how.

5 How do we encourage agility and
6 responsiveness while still retaining our
7 focus on true insight and the integrity of
8 what we are doing?

9 How do we get quicker and more
10 agile and even more effective? How do we
11 collaborate across personal and
12 organizational and institutional and
13 international boundaries for that matter and
14 not let those boundaries become barriers so
15 that we still act with one more powerful
16 voice?

17 How do we model INPO? For
18 continuous learning we demand of our industry
19 as individuals, as organizations, and as an
20 industry to achieve what we are capable of,
21 that continuing improvement?

22 How do we apply focus, oversight,

1 and real accountability through improved
2 results today even as we focus on tomorrow?

3 It's all question of how and it is
4 the how that makes all the difference.

5 Thank you.

6 (Applause.)

7 MR. LEEDS: If we could just take a
8 couple of minutes to go through a few
9 questions?

10 MR. ELLIS: This is their lunch you
11 know.

12 MR. LEEDS: But they are still
13 seated, so let's give it a try!

14 THE WITNESS: But I hear stomach
15 grumblings.

16 MR. LEEDS: Oh, just do a couple?
17 This first question was obviously inspired by
18 the beginning of your presentation and the
19 question reads as follows.

20 "I am new to the nuclear industry
21 and am non-technical. Can you recommend any
22 good books on the history of the Nuclear

1 Age?"

2 NR. ELLIS: Yes, I can. I am the
3 proud owner of a McKindle and I tell you they
4 are everywhere. There are wonderful
5 histories of the technologies that I have
6 touched on here and believe me I would not
7 presume to give you a specific endorsement,
8 but if you see me afterwards there are lots
9 of them written by people who were
10 interviewed who were the pioneers that were a
11 part of all of that.

12 I just get an excitement from it.
13 We forget. We tend to think of ourselves
14 particularly on the electric power side as
15 being part of a very lethargic and coupon
16 clipping industry.

17 When this all began it was dynamic.
18 This was the "dot com" of its time, nuclear
19 energy. It's very very exciting and
20 sometimes you shake your head a little bit
21 when you see what they did as I have
22 described to you, but it's worth reading and

1 it's important that you do that.

2 That's what I did when I came into
3 the commercial industry which was to go back
4 and read all of the old manuscripts and board
5 proceedings and the like about the founding
6 of the company and the challenge that the
7 industry faced at the time.

8 Without that context you cannot
9 understand where we are today. We're all a
10 product of all of that, so I do encourage
11 your interest in that. It's a great point.
12 Thank you.

13 MR. LEEDS: One more question, Jim.
14 "Given the integral operations between
15 nuclear power plants and the supporting
16 nuclear fuel cycle infrastructure, is INPO
17 prepared to expand its coverage to include
18 fuel cycle facilities, spent fuel storage and
19 transportation?"

20 MR. ELLIS: Yes to some. We have
21 begun a very specific interaction with a
22 broader definition of the nuclear industry,

1 and in fact, I think it was Chairman Klein
2 who raised that a few years ago about how we
3 need to define the commercial industry more
4 broadly than just fuel storage and
5 transportation as there are so many important
6 contributors to that.

7 We have begun to go down the cycle
8 a bit. Initially, the fuel manufacturers and
9 we worked with them through our supplier
10 participant program, they cannot be members
11 of INPO, but they are important suppliers so
12 we have helped them and actually have done
13 some visits in their facilities to hope
14 identify processes and things that we have
15 some expertise in that help them in their
16 continuous efforts.

17 We also have enrichment partners in
18 the supplier program as well, so we're
19 working our way up. We have not gotten to
20 the fuel storage or transportation issue yet,
21 and quite frankly that doesn't seem as
22 directly related to our role, but we have

1 expanded our interactions with now the more
2 broadly defined industry as I think we
3 should.

4 MR. LEEDS: Thank you.

5 MR. ELLIS: Thanks, Eric.

6 (Applause.)

7 MR. LEEDS: Thanks, Jim, and thanks
8 to all the speakers this morning. Just one
9 note before we break for lunch.

10 There were a number of questions
11 that were very specific and technically
12 focused. We are going to try to get those
13 questions to our technical session
14 chairpersons so they can try to address those
15 at the specific technical session where they
16 most well apply.

17 Now we're on break and we will take
18 a break until one o'clock and then reconvene
19 to hear from Commissioners Klein and
20 Svinicki. Thank you so much.

21

22

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