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UNITED STATES NUCLEAR REGULATORY
COMMISSION'S
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

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RADIATION PROTECTION AND NUCLEAR MATERIALS

SUBCOMMITTEE

+ + + + +

FRIDAY

SEPTEMBER 25, 2015

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ROCKVILLE, MARYLAND

+ + + + +

The Subcommittee met at the Nuclear Regulatory Commission, Two White Flint North, Room T2B1, 11545 Rockville Pike, at 8:30 a.m., Dana A. Powers, Chairman, presiding.

COMMITTEE MEMBERS:

DANA A. POWERS, Chairman of the Subcommittee

RONALD G. BALLINGER, Member

DENNIS C. BLEY, Member

STEPHEN P. SCHULTZ, Member

GORDON R. SKILLMAN, Member

DESIGNATED FEDERAL OFFICIAL:

GIRIJA SHUKLA

ALSO PRESENT:

MARILYN DIAZ, NMSS

DYLANNE DUVIGNEAUD, NMSS

MARGIE KOTZALAS, NMSS

MARVIN LEWIS*

APRIL SMITH, NMSS

RUTH THOMAS, Environmentalists, Inc.*

GLENN TUTTLE, NMSS

*Present via telephone

A G E N D A

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

2 8:30 a.m.

3 CHAIRMAN POWERS: The meeting will now
4 come to order. This is a meeting of the Radiation
5 Protection and Nuclear Materials Subcommittee.
6 I'm Dana Powers, Chairman of the
7 Subcommittee. The ACRS Members in attendance are
8 Steve Schultz, who's now in the correct place;
9 Dennis Bley who finally showed up and graced us
10 with his presence; Ron Ballinger, who had to put
11 up with the other two long already. Mr. GIRIJA
12 Shukla of the ACRS is the Designated Federal
13 Official on this meeting.
14 The Subcommittee will discuss the
15 current status of the Revised Fuel Cycle Oversight
16 Process and its cornerstones. As a note, yesterday
17 we discussed the ROP itself, so that sets you up
18 for an angry and hostile Subcommittee meeting.
19 MEMBER SKILLMAN: Hey, Mr. Chairman, let
20 the record show I'm here, too.
21 CHAIRMAN POWERS: I'm sorry. Dick
22 Skillman is also here.
23 MEMBER SKILLMAN: Yes, sir.
24 CHAIRMAN POWERS: And he's agonizing
25 over an angry and hostile letter on the ROP, so

1 tread carefully.

2 MEMBER SKILLMAN: Good morning, ladies.

3 CHAIRMAN POWERS: The Subcommittee will
4 gather information, analyze relevant issues and
5 facts, and formulate proposed positions and
6 actions, as appropriate for deliberation by the
7 Full Committee. And it's my understanding that you
8 will present to the Full Committee, and that you
9 are in expectation of a letter in response to your
10 heroic labors. Right? And you would prefer that
11 letter to say you're ---

12 (Laughter)

13 CHAIRMAN POWERS: The rules for
14 participation in today's meeting have been
15 announced as part of the notice of this meeting
16 previously published in the Federal Register.

17 A transcript of the meeting is being
18 kept and will be made available as stated in the
19 Federal Register notice; therefore, we request
20 participants in this meeting use the microphones
21 located throughout the meeting room when addressing
22 the Subcommittee. Participants should first
23 identify themselves and speak with sufficient
24 clarity and volume so they may be readily heard.

25 We do have a telephone bridge line for

1 this meeting. I have no idea how it works. To
2 preclude interruption of the meeting, the phone
3 will be placed in a listen-in mode during the
4 presentations and the Committee discussions.
5 Presumably, we will open it up eventually and allow
6 comments from those on the phone. And there's some
7 indications to please silence cell phones, whatever
8 those are, during the meeting. And we can now
9 proceed with the meeting.
10 I don't really have an introductory
11 comment, so I'm going to turn it to NMSS Staff to
12 begin the discussion. However, our Subcommittees
13 have a little requirement before you begin your
14 presentation, and that is to give us a brief sketch
15 of your background and why you're qualified to
16 present before this August body. So, we would like
17 to know something about your professional
18 background, education, experience at the NRC, et
19 cetera, before you talk. So, Margie, this is not
20 your first rodeo, but it is the first time that
21 you've been in my Subcommittee, so you have to give
22 a little introduction.
23 MS. KOTZALAS: My name is Margie
24 Kotzalas.
25 COURT REPORTER: Excuse me. Can you turn

1 your mic on?

2 PARTICIPANT: Oh, there's another thing.

3 See that little --- you have to make the button ---

4 make the light ---

5 CHAIRMAN POWERS: Nearer to you.

6 MS. KOTZALAS: Okay, sorry.

7 CHAIRMAN POWERS: Fear not. The

8 Committee will remind you at regular intervals.

9 MS. KOTZALAS: Okay. Well, I'll just

10 leave it on then.

11 Okay. My name is Margie Kotzalas, and I

12 have been with the NRC about 20 years now. I have a

13 Bachelor's and a Master's degree in Chemical

14 Engineering from West Virginia University.

15 CHAIRMAN POWERS: Which is why we like

16 you.

17 MS. KOTZALAS: I had started my career

18 in the NRC in NRR, and I spent 11 years there, and

19 then I had come to Materials, and have been in

20 different Materials areas. I have been the Chief of

21 the Programmatic Oversight and Support Branch for

22 the past year. I had spent about three other years

23 in Fuel Cycle in various branches. I was the Chief

24 of the MOX Branch, but now I am focusing on the

25 Oversight Program. Is that --- okay, good.

1 So, as Dr. Powers had mentioned, we are
2 here to present to you the work we have done in
3 developing the cornerstones for the Revised Fuel
4 Cycle Oversight Process.
5 The last time we briefed you was in
6 2011, and we were developing the framework for the
7 Fuel Cycle Oversight Process. At that time, we also
8 presented to you a set of cornerstones that aligned
9 with the ROP cornerstones.
10 You provided us a letter recommending
11 that we continue to work on the development of the
12 FCOP, and it stated that it was a substantial
13 improvement over the traditional oversight process.
14 We had sent a Commission paper
15 describing the Staff's recommendation for the FCOP
16 framework and the cornerstones. This paper is SECY-
17 11-0140. And the Commission acknowledged that the
18 oversight process was effective, but that it could
19 be enhanced. And they approved our recommendation
20 and directed us to continue interactions with
21 stakeholders on the development of each element in
22 the framework.
23 Now, this slide shows the framework
24 that the Commission approved. The entry condition
25 into the FCOP is an effective CAP or Corrective

1 Action Program, and that CAP would then, to be
2 effective, it would need to meet the guidance in
3 Reg. Guide 3.75, Corrective Action Programs for
4 Fuel Cycle Facilities.
5 It is essential that licensees are able
6 to effectively identify and correct problems
7 independent of the NRC. Certain elements of the
8 framework, such as the Significance Determination
9 Process, and the treatment of performance
10 deficiencies which are not more than minor depend
11 on licensees to have an effective Corrective Action
12 Program, one that identifies and resolves problems.
13 What we are presenting today are the
14 cornerstones, and this is the area that is circled.
15 These cornerstones inform the important elements
16 that need to be measured in order to verify that
17 the NRC mission is fulfilled. The Core Inspection
18 Program is developed from the cornerstones to
19 insure that the NRC verifies conformance with the
20 most risk-significant regulatory requirements. The
21 inspection results are then evaluated in the boxes
22 in the diamond boxes after to determine whether
23 there is a performance deficiency, and whether it
24 is more than minor. If so, then the significance of
25 the inspection findings will be evaluated through a

1 significance determination process.

2 We will also evaluate the licensee's

3 performance by defining an action matrix, which is

4 over here. And this will help us determine whether

5 additional inspections or other regulatory actions

6 are necessary.

7 Developing all of these elements is a

8 multi-year project. At this point, we are only

9 seeking a recommendation on the cornerstones,

10 because this is the only element that is developed

11 enough in which to engage you.

12 MEMBER SKILLMAN: Margie, before you

13 change.

14 MS. KOTZALAS: Yes?

15 MEMBER SKILLMAN: My name is Dick

16 Skillman. Let me ask one or two questions.

17 In the notes, particularly the third

18 bullet, excuse me, the second bullet, no, it is the

19 third bullet. "This process would apply to

20 licensees with an effective Corrective Action

21 Program." Are there any licensees that do not have

22 such a program?

23 MS. KOTZALAS: No, this --- all

24 licensees have Corrective Action Programs, but what

25 we determine effective, that's like a regulatory

1 term where we say that it has to meet the guidance
2 of Reg. Guide 3.75, and also then we go out and
3 verify through inspections that it is meeting those
4 requirements. So, so far only one licensee has
5 entered into that process for an effective
6 Corrective Action Program, but our licensees do
7 have a Corrective Action Program.
8 MEMBER BLEY: Can you help me out a
9 little bit, because I don't know the details of
10 that as well as Dick does. What's the burden
11 associated with changing from whatever program they
12 have now to what you're calling an effective one,
13 one that follows the regulation?
14 MS. KOTZALAS: I don't know how much it
15 would cost, but what they would need to do would
16 be, they would need to evaluate what the
17 requirements are as stated in the Reg. Guide, and
18 then if they do not meet all of those requirements,
19 they would need to bolster their Corrective Action
20 Program. And then submit a license amendment, and
21 then have an inspection conducted.
22 MS. SMITH: So, most of the burden ---
23 most licensees will tell you that they already
24 have an effective Corrective Action Program.
25 MEMBER BLEY: That's what I would have

1 expected.

2 MS. SMITH: Right. So, they will be able

3 to look at Reg. Guide 3.75, decide where there are

4 gaps, make those adjustments. Most of the burden

5 will be in their submitting that to us. And, of

6 course, going through that license renewal process.

7 That's where I would imagine most of the burden

8 will be.

9 MEMBER BLEY: Would it be appropriate,

10 acceptable for a particular licensee who feels that

11 their --- the risk of their facility is extremely

12 low and can show you that, to request relief from

13 some of those requirements? It seems that's a usual

14 process, actually.

15 MS. KOTZALAS: We would need to evaluate

16 that, and I can't state right now whether we would

17 accept relief from it without looking at a

18 particular license application.

19 MEMBER BLEY: Of course. But they could

20 request that.

21 MS. KOTZALAS: Yes, they can request

22 that.

23 MEMBER BLEY: Okay.

24 MEMBER SCHULTZ: The process that the

25 licensee that has done this, that has gone through

1 a process of review and approval, I presume.
2 MS. KOTZALAS: Yes.
3 MEMBER SCHULTZ: Was that a voluntary
4 process ---
5 MS. KOTZALAS: Yes.
6 MEMBER SCHULTZ: --- in terms of ---
7 and was it associated with this program,
8 specifically, or did they have another reason to
9 move forward in that way?
10 MS. KOTZALAS: Well, they already ---
11 because they had a robust Quality Assurance
12 Program that met the requirements of ASME NQA-1,
13 they knew that they would meet this effective
14 Corrective Action Program, so they submitted a
15 license amendment for it.
16 MEMBER SCHULTZ: So, that requires a
17 license amendment to move forward?
18 MS. KOTZALAS: Yes.
19 MS. SMITH: So, the Corrective Action
20 Program will --- in order for it to be called
21 effective, we essentially have to approve it, and
22 then it becomes part of their license.
23 MEMBER SCHULTZ: Okay. And did you
24 evaluate in some fashion what type of burden that
25 process added for them to come and make that

1 license amendment request, and review it, and so
2 forth?
3 MS. KOTZALAS: We do not evaluate the
4 burden. Entry into the Fuel Cycle Oversight Process
5 is voluntary, just like the ROP is voluntary. If a
6 licensee does not want to have an effective
7 Corrective Action Program, they can always continue
8 with the traditional oversight program.
9 We believe, however, that there are
10 benefits to licensees, such as reduced inspection
11 burden for entering the FCOP, that licensees will
12 see value in having an effective CAP, and
13 volunteering for the FCOP.
14 MS. SMITH: And also part of the SRM for
15 going through this process is to make sure that we
16 provide those incentives for them to submit a
17 license amendment for an effective CAP.
18 MEMBER SCHULTZ: Okay, thank you. So,
19 it's a process that you are then saying that in
20 entering the process there are some elements
21 associated with a more robust self-governing
22 process, if you will, that is established for the
23 licensee that allows them to demonstrate in an
24 easier way where they stand with regard to their
25 quality products?

1 MS. KOTZALAS: Yes.

2 MEMBER SCHULTZ: Okay, thank you.

3 MEMBER BLEY: And I'd just to clarify my
4 earlier question. I spend a lot of time reading
5 incidents, not just in power plants, but in fuel
6 cycle facilities, and in all sorts of industrial
7 applications. More often than not when a serious
8 event occurs, an ineffective program is closely
9 tied to what happened, and whether there's high
10 public risk or not from these facilities, there's
11 significant risk to workers and to economics, which
12 you don't regulate, of course. But it's hard to
13 imagine not wanting to have a very good Corrective
14 Action Program.

15 MS. SMITH: Precisely. Yes?

16 MEMBER SKILLMAN: Let me ask this
17 question perhaps more for my education, but maybe
18 not so much. As I recall, 10 CFR 50 Appendix B,
19 Quality Assurance Program has a title "Quality
20 Assurance Program for Power Reactors and Fuel
21 Production Facilities." And so my question is, and
22 it's kind of getting, Margie, to your comment for
23 those, if you will, licensees that do not have a
24 Corrective Action Program. How do they --- how are
25 they licensed without a Corrective Action Program

1 when they fall under, they think, Appendix B.
2 MS. KOTZALAS: They don't fall under
3 Appendix B. It's for power reactors and production
4 facilities, and the only production facility is
5 MOX. The other ones, their Quality Assurance
6 Programs are part of what is in Part 70, which is
7 the management measures. So, that's one of the
8 reasons for the ROP. You know, the entry point into
9 the ROP was that you had an Appendix B Quality
10 Assurance Program, and it has all those 18 criteria
11 that guarantee, not guarantee, that provide
12 adequate assurance that, you know, the Quality
13 Assurance Program is --- the Corrective Action
14 Program is effective.
15 MEMBER SKILLMAN: Thank you for that
16 clarification. Thank you.
17 MEMBER BLEY: And just one more before
18 you go ahead.
19 MS. KOTZALAS: Okay.
20 MEMBER BLEY: I have a facility and I
21 don't opt in to the ROP but decide to go as I've
22 been going, I assume that means your reviews, your
23 looks at inspection findings are much more
24 qualitative than they would be if you're under the
25 ROP. Is that ---

MS. KOTZALAS: I wouldn't use the word "qualitative," but they are the way it is now. We will---

MEMBER BLEY: Tell me a bit about the difference.

MS. KOTZALAS: It will be less risk-informed. We won't be able to take into consideration some of the realities, like the significance determination process will say even though you are not taking credit for these safety-related items they do exist, you know, in your analysis, so we can take credit for them and come up with less significance for the violation.

MEMBER BLEY: Okay. And just one last thing for the record. I think you said the last time you came to see us was in 2011. I'm not sure if that's true for the Subcommittee, but in 2014 you came to the Full Committee, and we actually wrote a letter.

MS. KOTZALAS: In 2014? Okay.

MEMBER BLEY: I just wanted to put that straight.

MS. KOTZALAS: Okay.

MEMBER SCHULTZ: Margie ---

MS. KOTZALAS: Oh, that was on the

1 Corrective Action Program. Is that correct? I'm
2 sorry.
3 MEMBER BLEY: Yes, I guess so.
4 MS. KOTZALAS: Okay.
5 MEMBER BLEY: But there's so --- we
6 talked about this, as well.
7 MS. KOTZALAS: Okay.
8 MEMBER BLEY: I mean, they were all tied
9 together.
10 MEMBER SCHULTZ: You've indicated here
11 that the base inspection program would change for a
12 licensee that has opted into the program.
13 MS. KOTZALAS: Yes.
14 MEMBER SCHULTZ: Are you going to
15 describe what those changes would be? Have they
16 been developed?
17 MS. KOTZALAS: They have not yet been
18 developed because we need approval of the
19 cornerstones. When April gets into her presentation
20 you'll see that the cornerstones describe the
21 inspectable areas, and so while we have thought a
22 little bit about what we could use as criteria for
23 defining the frequency of inspections in the new
24 inspection program, we haven't begun a lot of work
25 on it until we have an approved set of

1 cornerstones. And our paper for the cornerstones
2 will go up to the Commission in January, and we
3 hope to be able to start working on a new
4 inspection program after we get approval of the
5 cornerstones.
6 MEMBER SCHULTZ: But it's an adjustment
7 to the base inspection program ---
8 mS. KOTZALAS: Correct.
9 MEMBER SCHULTZ: --- for those that are
10 participating in the program.
11 MS. KOTZALAS: Yes.
12 MEMBER SCHULTZ: The base inspection
13 program would stay as is for those that have not
14 opted in.
15 MS. KOTZALAS: Correct.
16 MEMBER SCHULTZ: Okay, thank you.
17 MS. KOTZALAS: Okay. I think --- where I
18 am. Okay, so back to what I was saying, is that
19 what we're presenting today are the cornerstones,
20 and these are the important elements that need to
21 be measured. Let me see.
22 Okay. So, I think what I need to do is
23 move to the Commission direction. So, after our
24 paper, SECY-11-0140, the Commission directed us to
25 work on the elements of the FCOP framework and to

1 come back for approval after certain elements, such
2 as the action matrix, the pilot. And they also
3 develop --- or they also requested that we interact
4 with our stakeholders to develop an optimal basis
5 for the cornerstones and to provide a Notation Vote
6 Paper by January of 2016. They told us to consider
7 how the cornerstones would be understood in the
8 context of fuel facility operations, and less as to
9 whether they resembled the Reactor Oversight
10 Process.
11 After receiving this direction, we
12 engaged our industry stakeholders through a number
13 of public meetings and workshops, and we considered
14 the uniqueness of the different processes and how
15 these processes create a multitude of accident
16 scenarios, and different potential chemical
17 exposure events.
18 So, one of the things we also thought
19 about is that there's no standardization of
20 initiating events, mitigating systems, or barrier
21 integrity for these facilities. So, all these
22 factors that led us to determine that a different
23 set of cornerstones than the ones that were
24 proposed in our SECY paper are optimal for the
25 FCOP. And while these cornerstones are different,

they do not keep us from considering initiating events, mitigating systems, or barrier integrity, but allow us to better consider these things in the context of how fuel facilities operate. So, as we go through our presentation and get into the details, we ask that you consider areas that cut across the cornerstones. One of the areas that we request your help in is to develop the crosscutting areas. And April is going to get into that as part of her presentation.

MEMBER BLEY: You mean crosscutting between the hazard and the operations space?

MS. KOTZALAS: No, the --- when she puts up the cornerstones you will see that there are areas that cut across the cornerstones, like training, human performance, safety culture, that sort of thing.

MEMBER BLEY: Okay.

MS. KOTZALAS: Okay. Before April gets into her presentation, I just wanted to refresh your memory about the facilities that would be subject to the FCOP. Those are identified on this map here. And all of these facilities are regulated by the NRC regardless of whether they are located in an Agreement State. They include eight operating

1 facilities and five facilities that have licenses
2 but not yet begun operation. And the predominant
3 hazard at these facilities are UF-6, HF releases,
4 fires, criticalities and chemical exposures.
5 Now, I want to turn the presentation
6 over to April Smith who will describe the
7 cornerstones that we have determined are optimal
8 for fuel cycle facilities. And, April, you must
9 tell them about yourself.
10 MS. SMITH: I must tell them about
11 myself. Okay. So, I am April Smith. I am the
12 Technical Lead for the Cornerstones Sub Working
13 Group. My background, I have a Bachelor's degree in
14 Chemical Engineering from the University of
15 Oklahoma. I have a Master's in Applied and
16 Computational Mathematics from Johns Hopkins, and I
17 am a hair's breath away from my Ph.D. in Systems
18 Engineering from George Washington.
19 (Off mic comment)
20 MS. SMITH: I started at the NRC in 1999
21 as a Reactor Inspection in Region I. I came to
22 headquarters as a Materials engineer to do
23 licensing primarily in renewals. And then from
24 there I went to NSIR where I was a Program Manager
25 after 9/11 and helped them restructure the

1 inspection program specifically for reactors. And
2 then from there I took some time to fulfill some
3 items on my bucket list, took about five years to
4 do that, and then I came back to the NRC in 2010 to
5 Research, where I was then given the privilege to
6 go to the Graduate Fellowship Program, which is
7 what I'm working through right now and soon get my
8 Ph.D. in Systems Engineering. And then I came to
9 NMSS as part of that Graduate Fellowship Program.
10 And I'm getting into this process learning about
11 Fuel Cycle facilities. Margie and others have been
12 great mentors to me, so I think I can take this and
13 run with it.
14 So, Margie has set the stage for our
15 motivations, and our rationale, and our approach to
16 developing the cornerstones. And what I'm going to
17 talk more about is the approach and results which
18 are our recommended cornerstones. And the approach
19 really was fairly straightforward. It can be
20 thought of in tiers or layers. You can go ahead and
21 go to the next slide, it's more visual.
22 So, we start with the NRC's mission at
23 the top, and the idea is to protect public health
24 and safety, and the environment, and common defense
25 and security. We peel back the next layer and we

1 see our strategic performance areas, which come
2 from our Strategic Plan. And underneath each one of
3 those are procedure performance areas for fuel
4 cycle facility safety and safeguards. After we
5 branch those out, we peel back yet another layer,
6 and that's where we're going to come to our
7 cornerstones, or as Margie described them, those
8 areas of licensee performance which warrant
9 oversight and in order to support, ultimately, the
10 Agency's mission. So, once we take in consideration
11 radiological and chemical hazards, and the current
12 operations environments, that where we arrive at
13 our cornerstones.
14 So, let's peel back another layer. Now
15 we get into our key attributes. Those key
16 attributes, the idea is to support the objective of
17 each cornerstone. And then underneath each key
18 attribute are our inspectable areas. So, after we
19 go through this, like I said, it's a
20 straightforward approach, we arrive at our
21 cornerstones. You can go to the next slide, please.
22 So, here's what our structure looks
23 like. Again, at the top we have the NRC mission,
24 followed by the strategic performance areas, and
25 then our cornerstones of criticality safety,

1 operational safety, occupational and public
2 radiation safety, emergency preparedness, security,
3 and material control and accounting, what we
4 normally refer to as MC&A because that's a lot to
5 say.
6 Applicable across more than one is this
7 concept of crosscutting areas, which we've already
8 sort of started talking about. As Margie said, we
9 will be seeking your input as to what those are.
10 For the ROP you have human performance, problem
11 identification and resolution, and safety conscious
12 work environment. For fuel cycle, we expect that
13 those will be similar; however, there may be
14 elements of things like management measures, or
15 more specifically, configuration control. But as
16 Margie said, we will seek your input on what those
17 may be, and for the time being we plan on
18 considering them more closely as we go through the
19 process, revise the inspection procedures, develop
20 the SDP, and at that point, hopefully, we will be
21 able to frame the appropriate crosscutting areas.
22 CHAIRMAN POWERS: In your introduction
23 you emphasized both radiological hazard and
24 chemical hazard.
25 MS. SMITH: And chemical, yes.

1 CHAIRMAN POWERS: And when I look at
2 your cornerstones, I see things that say radiation
3 a lot, and I don't see things that say chemical
4 hazard a lot.
5 MS. SMITH: So, chemical hazard and
6 chemical safety will be covered underneath
7 criticality safety and operational safety. So,
8 those elements are definitely included and central
9 within those two cornerstones.
10 MEMBER SKILLMAN: Let me pull Dr.
11 Powers' thread a little bit further. This set of
12 blocks really work well for a power reactor, but
13 when you get over into fuel facilities, the HEX,
14 the loss of HEX, the chemical hazard and hazard to
15 worker is so different than the environment at a
16 nuclear power plant. It almost begs the question,
17 shouldn't there be a chemical safety block, which
18 is what Dr. Powers is pointing to.
19 MS. SMITH: So, if we look at our
20 framework and we were to have just a chemical
21 safety block, underneath that you will end up
22 branching out into these two particular areas of
23 criticality safety and operational safety. And in
24 terms of what those key performance areas are,
25 which is the concept of the cornerstone, we would

1 want to elevate -- in terms of how they operate
2 we'd want to elevate criticality safety and
3 operational safety more to the higher level and
4 have chemical safety in those zones of key
5 attributes.
6 CHAIRMAN POWERS: I think I understand
7 that if --- the problem is criticality is first,
8 but if I put my hand over criticality safety, then
9 everything is pretty amphoteric in the sense that
10 it's either radiation or chemical.
11 MS. SMITH: Or chemical.
12 CHAIRMAN POWERS: And it's --- just
13 criticality, that's the odd man out rather than the
14 other four being odd men out.
15 MS. SMITH: That is one way you could
16 describe it, yes.
17 CHAIRMAN POWERS: I think I understand.
18 MS. SMITH: Okay. Now, do you --- did
19 that --- I'm sorry, did that answer ---
20 MEMBER SKILLMAN: Well, in a way it
21 does. Just let me just paint a little different
22 picture. So, here you have a feed cylinder, 15,000
23 pounds, there it is, and the IROF says don't add
24 heat, stop adding heat, and you don't.
25 MS. SMITH: Okay.

1 MEMBER SKILLMAN: And failing the IROF,
2 you're now putting out a lot of HEX into a small --
3 - relatively small area.
4 MS. SMITH: Okay.
5 MEMBER SKILLMAN: You've got a lot of
6 material, criticality isn't an issue, but boy,
7 you've got a chemical hazard to workers that is
8 very, very ----
9 (Simultaneous speaking)
10 MS. SMITH: So, that would be under
11 operational safety. And the objective of
12 operational safety is to make sure that the IROFs
13 are available and reliable when needed. So,
14 essentially, coming straight from our regulations.
15 So, in that sense, by having operational safety at
16 this level you're covering chemical safety.
17 MEMBER SKILLMAN: I guess what I'm
18 saying is it's a chemical safety issue in a fuel --
19 - in a centrifuge facility is a very different
20 animal than it might be somewhere else. Losing that
21 material is really, really serious, and it seems
22 like it almost gets --- it can be hidden under
23 operational safety.
24 MS. SMITH: Okay. So, your concern would
25 be that it would be hidden within operational

safety.

MEMBER SKILLMAN: Not as prominent as it needs to be as a cornerstone, is what I'm saying.

MS. SMITH: Sure. So, perhaps once we get into the key attributes and the inspectable areas, that will help you see where that ---

CHAIRMAN POWERS: Let me understand. Don't you want your cornerstones to be of generic applicability? I mean, I don't think I'd want a cornerstone that says my centrifuge works well.

MS. SMITH: Yes.

MEMBER SKILLMAN: Oh, I agree with that.

CHAIRMAN POWERS: I think I want something that says for any facility you should trot up here, including SHINE or something like that, that it fits within a cornerstone, and I know how to categorize it. I mean, I don't think I want --- like I said, I don't think I want a cornerstone that says the IROFs for the centrifuge work well.

MEMBER SKILLMAN: I agree with that, yes.

MEMBER BLEY: And, in fact, the range of facilities covered by this is so broad with so many different hazards.

MS. SMITH: Yes.

1 (Simultaneous speaking)

2 CHAIRMAN POWERS: That is NMSS' cross to

3 bear, is that there are no two facilities that look

4 anything like any other facility.

5 MEMBER SKILLMAN: Good discussion. I was

6 just trying to ---

7 MS. SMITH: It is.

8 MEMBER SKILLMAN: I'm good, thanks.

9 MS. SMITH: Thank you for your

10 questions.

11 MEMBER BALLINGER: This may be a

12 statement out of ignorance, but on the chemical

13 safety side, do these facilities also have --- I

14 know our facility does, and I found out about that

15 in painful a few weeks ago. OSHA-related chemical

16 safety --- Chemical and Hygiene Program they call

17 it. They all have one of these programs, as well?

18 MS. SMITH: Yes. And we also have an MOU

19 with OSHA to essentially pass some of that

20 responsibility in terms of chemical safety and

21 chemical hazards to us.

22 MEMBER BALLINGER: So, the cornerstone

23 would reflect that?

24 MS. KOTZALAS: The cornerstone will only

25 reflect the areas that we regulate. So, the MOU

1 clearly defines what is the NRC's regulatory
2 responsibility, and those are the chemicals that
3 either come in contact with radioactive material,
4 or are produced from radioactive material. So,
5 that's we regulate. The other pieces of the --- you
6 know, if it's a chemical that is used but does not
7 meet that definition, that's OSHA's responsibility.
8 MEMBER BALLINGER: So, in effect, the
9 facility has two masters in this case.
10 MS. KOTZALAS: Well ---
11 MEMBER BALLINGER: At least two masters.
12 MS. KOTZALAS: But we make sure that we
13 do not over-duplicate regulation, so that's why we
14 ---
15 MEMBER BALLINGER: There's an incident
16 that occurs that involves pure chemicals, no
17 radioactivity. It's not your ---
18 MS. KOTZALAS: It's not ours.
19 MEMBER BALLINGER: You don't --- gets
20 thrown up.
21 MS. KOTZALAS: Correct.
22 CHAIRMAN POWERS: April, are you going
23 to talk at all about the rationale that moved you
24 between the hazards analysis-based cornerstone idea
25 that was tied to the ISA, because everybody is

1 doing an ISA, to what you called the --- what did
2 you call it, the safety ---
3 MS. SMITH: Operations.
4 CHAIRMAN POWERS: Operation space.
5 MS. SMITH: Operation space approach.
6 CHAIRMAN POWERS: The only thing bothers
7 me about it, and it's only a little bit, is ---
8 well, I think all the facilities now have ISAs.
9 MS. SMITH: Yes.
10 CHAIRMAN POWERS: So, if you have an
11 inspection finding, claiming that against what the
12 ISA tells you about events like that seems fairly
13 important, and this seems to de-emphasize that.
14 That was my --- I don't know if it's a concern.
15 It's just I wonder how you're dealing with that.
16 MS. SMITH: Sure. So, there's a few ways
17 we can look at that. Can I ask you to find the
18 slide that has the hazards?
19 MS. KOTZALAS: Way in the back?
20 MS. SMITH: Yes, way in the back, sorry.
21 (Simultaneous speaking)
22 MS. SMITH: I have a better visual
23 context. Here we go, all right. So, this is
24 initially what we had presented. And as you see, we
25 have accident sequence initiators feeding into

1 safety controls. If you start trying to break down
2 those accident sequence initiators among the
3 different facilities and the different ways that
4 they do things, they may arrive in the same place
5 of producing fuel, and performing their functions
6 at the fuel cycle facility; however, what those
7 accident sequence initiators are are not
8 standardized as they are like in ROP. You would ---
9 we would end up going through what I would say is
10 a significant process to try to ascertain and
11 understand what each one of those would be from
12 individual plants, and ask yourself the question,
13 are we going to be better off going through that
14 exercise and finding specifically what the
15 literally thousands is what we would come up with.
16 Are we going to be better off going through that
17 process to find out what those are, or can we still
18 safely regulate and perform oversight with the
19 cornerstones that we have developed?
20 MEMBER BLEY: If you want to --- well,
21 maybe the problem hinges on the fact that the ISAs
22 aren't necessarily, although some of them are
23 quantitative so that if you go back to the ISA you
24 aren't really sure of the safety significance of
25 the issue.

1 MS. SMITH: There's that --- that's the
2 potential ---
3 MEMBER BLEY: We have all these ISAs
4 that might not be helping us much in understanding
5 what's important.
6 MS. SMITH: Yes, there is that issue, as
7 well. So, again, that would be part of that process
8 and trying to, just that particular box, figure out
9 what those would be. And once you move into the
10 next box, safety controls, you're in the same
11 situation, because each facility is going to
12 envision what those safety controls will be
13 differently. It's not standardized ---
14 MEMBER BLEY: Under the one you picked
15 and changed a little, the one you're recommending,
16 what helps us understand the importance of a
17 particular finding against that? Is it just a
18 structured use of judgment?
19 MS. SMITH: I'm sorry. Ask your
20 question again. I'm trying to understand ---
21 MEMBER BLEY: Does it help giving some
22 structure to applying expert judgment to figuring
23 out the importance of an inspection finding?
24 MS. SMITH: So, you're asking the way
25 that we're structuring it now, does that help

1 facilitate our determining the significance of the
2 importance?
3 MEMBER BLEY: Yes, what you're going to
4 do with it. I mean ---
5 MS. SMITH: What you're going to do
6 with it.
7 MEMBER BLEY: --- the whole thing ---
8 (Simultaneous speaking)
9 MEMBER BLEY: --- ought to be there to
10 help you decide what to do.
11 MS. SMITH: How to bin it, so to speak.
12 Go ahead.
13 MS. KOTZALAS: Yes. The significance of
14 a finding will be determined through the
15 significance determination process later down. What
16 the cornerstones are doing are helping us ---
17 MEMBER BLEY: Which still is evolving.
18 MS. SMITH: Yes.
19 MS. KOTZALAS: Correct.
20 MS. SMITH: The cornerstones are helping
21 us bin the findings.
22 MS. KOTZALAS: Yes.
23 MEMBER BLEY: I see how it will let you
24 bin.
25 MS. SMITH: Yes, that's the purpose of

it, to define the inspection program and to let us bin the findings in the action matrix. So, the significance is determined through that other process.

MEMBER BLEY: Okay.

MS. SMITH: That we have yet to fully develop.

CHAIRMAN POWERS: After we chatted a little bit, if we came here thinking about it, I said gee, they have criticality safety as a cornerstone because it works with a different paradigm. But all the other cornerstones, they had double contingency for instance and some things like that that don't show up really in the ISA kind of formulation. So, you really want to bin findings with respect to criticality safety differently than you do some other finding, simply because it operates in a different paradigm. It gets a --- it will undoubtedly have a different significance determination process. It will have different sets of things in the Corrective Action Program, so you want to categorize it a little bit differently; whereas, the way I was thinking about it when we first talked about these, that it was useful to bin the findings.

1 MS. SMITH: Right.

2 CHAIRMAN POWERS: And by cornerstone for
3 that reason. And some they're going to be different
4 levels; whereas, operational safety has different
5 levels of chemical versus radiation aspects to it.
6 It's still operational, and you go look at things
7 like training and other crosscutting issues for
8 that that are different than what you would for
9 criticality safety and double contingency kinds of
10 principles. That was my thinking.

11 MS. SMITH: Yes, that's ---

12 CHAIRMAN POWERS: That was an
13 assumption. You didn't tell me that. I just assumed
14 that.

15 MS. SMITH: Yes. Right. And I think that
16 that thought process works with the way that ---
17 again, that we structured and went through this
18 development. The cornerstones are meant to be
19 performance areas, so these are the things that
20 we're looking at for the licensee in areas in which
21 we expect them to perform in order to insure
22 adequate safety.

23 MEMBER BLEY: When I look at criticality
24 accidents, a number of them are operational
25 problems.

1 CHAIRMAN POWERS: Absolutely. They
2 operate in a different paradigm. The whole level of
3 ---
4 MEMBER BLEY: I'm not sure what the hell
5 that means.
6 CHAIRMAN POWERS: Well, how does a
7 criticality safety guy think? He thinks in terms of
8 double contingency principles. The only thing they
9 think about. I mean, you talk to criticality guys,
10 they speak the unknown tongue. They have K-
11 effectives, and PCMs, and things like that, but in
12 the end they look at double contingency principles.
13 That is how the safety strategy is done; whereas,
14 operational safety guys operate with a different
15 set of vocabulary and thinking about things.
16 MEMBER BLEY: Valve protection, perhaps.
17 CHAIRMAN POWERS: Well, they have a
18 significant component of a missed valving --- human
19 error components, the bypass contingencies. So,
20 they work in --- I mean, their whole vocabulary is
21 different, it strikes me.
22 MEMBER BLEY: I think their vocabulary
23 is different. I think what's happening is a lot the
24 same, they're the same kind of ---
25 CHAIRMAN POWERS: I think ---

1 MEMBER BLEY: --- human failures, the
2 same kind of mechanical problems. Anyway, I think
3 you can go ahead.
4 MS. SMITH: Go back. We can ---
5 CHAIRMAN POWERS: She obviously thinks
6 we can read very fast.
7 (Laughter)
8 MEMBER SCHULTZ: April, as you go ---
9 MS. SMITH: Yes?
10 MEMBER SCHULTZ: --- through the
11 selected cornerstones and the key up that you're
12 going to --- you said you would identify the areas
13 associated with chemical safety within criticality
14 and operational safety for us.
15 MS. SMITH: Yes.
16 MEMBER SCHULTZ: That would be good.
17 MS. KOTZALAS: Yes.
18 MEMBER SCHULTZ: Thank you.
19 MS. SMITH: Okay, perfect. Okay. So,
20 with that, so you can see the full results of our
21 approach. The next few slides I'm going to start
22 stepping through each one of the cornerstones, and
23 you'll be able to see the various layers starting
24 with the cornerstone at the top, the key
25 attributes, and the inspectable areas underneath

1 each one.

2 So, I'm going to start with criticality

3 safety. After you see a few of these, I know you'll

4 stop me and ask questions, but also feel free to

5 tell me to move on, because you'll start seeing a

6 pattern for sure, and how we thought about these.

7 So, with criticality safety, by looking

8 at the key attributes of each cornerstone you can

9 see how the key elements that we want to look at in

10 order to achieve the objective of each cornerstone.

11 So, for instance, the objective of criticality

12 safety is to prevent and, if necessary, mitigate

13 criticality events. How do you do that? You have

14 sound analyses, so our first key element there,

15 criticality analysis, adequate implementation of

16 those analyses, criticality operational oversight

17 and programmatic oversight as you're going through

18 your implementation, and then you also have problem

19 identification and resolution. So, underneath each

20 attribute we start seeing the inspectable areas.

21 And this is, again, finer layers of granularity.

22 And underneath items like criticality

23 analysis, you start seeing those pieces that are --

24 - that we would need to do oversight on in order to

25 understand their performance in that area. So,

identifying credible abnormal conditions, have they done that? Have they done it adequately? Demonstrating sub-criticality for normal and credible abnormal conditions. And each one of those items, looking at criticality analysis, you can start looking at those in terms of --- and you'll see this one in operational safety, grounded completely in chemical safety. If you go to criticality implementation, flow down of engineered and administrative controls, this same concept you'll see applied within the operational safety. And then you'll see an interface with ISA. And moving across each one, you're seeing these different elements that are to build each key operational --- excuse me, each key attribute.

MEMBER BLEY: Now, when I go across these from one to five, they read as if some of them belong to the licensee and some of them belong to the inspector. Am I misreading that? Criticality implementation looks like all things that are done by the licensee; criticality operational oversight, are you talking about oversight by the licensee?

MS. SMITH: By the licensee, yes. So, all of these areas in the middle here, one through five, those are performance areas, sub-performance

areas for the licensee.

MR. SHUKLA: Maybe that can ---

MS. SMITH: Sure.

MEMBER BLEY: Maybe I'm ---

MS. SMITH: Yes. I see you guys are ruminating so I'm not talking yet.

MEMBER BLEY: Where are actual operations hidden in there? It's not in the implementation. I guess it's over in program oversight.

MS. SMITH: Yes, actual operations in terms of criticality, or operational ---

MEMBER BLEY: Well, this is all about criticality.

MS. SMITH: This is all about criticality, right. So, if we --- we can move to the next slide, now we're into operational safety.

MEMBER BLEY: Well, no, go back one.

MS. SMITH: You want to go back. Okay.

MEMBER BLEY: Okay. Some of the things under number four ---

mS. SMITH: Yes.

MEMBER BLEY: --- strike me as very operations oriented, walkthroughs --- well, inspections and program audits, inspections belong

1 to the licensee?

2 MS. SMITH: Sure, but in this case the

3 focus is on criticality, and criticality

4 programmatic oversight, specifically. So, one of

5 the ---

6 MEMBER BLEY: So, maybe that's what's --

7 - maybe that's where Dana was. For --- are you

8 pulling out all the operations stuff that would be

9 associated with criticality and putting anything to

10 do with criticality under criticality?

11 MS. SMITH: Yes.

12 MEMBER BLEY: Okay, so anything the

13 operators do ---

14 MS. SMITH: All under criticality.

15 MEMBER BLEY: --- are all under

16 criticality.

17 MS. SMITH: There, yes.

18 MEMBER BLEY: They're not under any of

19 the other cornerstones.

20 MS. SMITH: No.

21 MEMBER BLEY: So, the other operational

22 is everything but criticality.

23 MS. SMITH: Is everything else.

24 MEMBER BLEY: So, back to Dana's

25 original point in your overall structure, it's not

1 that you have four or five boxes across, it's that
2 you have two things, criticality and everything
3 else.
4 MS. SMITH: It ---
5 MEMBER BLEY: It would make it --- I
6 don't know if --- for facility people maybe this
7 isn't a problem. For an outsider, that would help
8 if that structure showed, you know, I'm doing
9 everything about criticality under criticality,
10 including operations and all those other things
11 that would be under the other cornerstones. And
12 then I'm doing everything that doesn't have to do
13 with criticality under the other four cornerstones.
14 MS. SMITH: Okay. So, you're just saying
15 we would just clarify that that's ---
16 MEMBER BLEY: That's the structure,
17 maybe put an extra layer.
18 MS. SMITH: --- the case, that's the
19 structure, put a little box around that and say
20 everything other than ---
21 MEMBER BLEY: Or have two boxes ---
22 MS. SMITH: --- criticality.
23 MEMBER BLEY: Yes, criticality and
24 everything else, and then under everything else you
25 have operational safety, because we have

1 operational safety, radiation safety, I suppose,
2 public radiation safety and emergency preparedness.
3 Any of those that apply to criticality under the
4 criticality cornerstone, right? If I'm
5 understanding you right.
6 MS. SMITH: Yes.
7 MS. KOTZALAS: Yes.
8 MEMBER BLEY: Well, if you had some kind
9 of criticality event that could affect people
10 offsite, it would still be under the criticality
11 cornerstone.
12 MEMBER SCHULTZ: To put it a little
13 differently, if I look at --- going forward looking
14 across the structure that's underneath operational
15 safety, and then the other boxes down the chart, I
16 see a certain similarity in structure. Criticality
17 safety is different. I see it as being different.
18 It's structured differently, it's kind of a ---
19 it's more bottom up than top down, perhaps. I
20 haven't really grasped the right way to describe
21 it, but it is --- the structure of criticality
22 safety is fundamentally different in its look than
23 the other boxes down the road. And I think it's
24 because of what Dennis was describing, that it all
25 has been brought into one picture. And it appears,

1 even though you've only got one box for
2 programmatic oversight, it all looks more
3 programmatic. The others look more associated with
4 things --- if you will, things getting done. But
5 I'm not sure that that's quite appropriate for
6 criticality safety either. The differentiation
7 seems very strong between this chart and the
8 others.
9 MS. SMITH: Okay. I ---
10 MEMBER SCHULTZ: And I don't know if ---
11
12 mS. SMITH: Right. Yes.
13 MEMBER SCHULTZ: Presuming that's
14 intentional.
15 MS. SMITH: And it is. There are a few
16 reasons why we would separate those in that way,
17 and also from a regulatory standpoint. So, we have
18 regulation which specifically says criticalities
19 will be prevented and when necessary, mitigated.
20 So, that by itself takes criticality and puts it in
21 its separate space, in its separate zone. So,
22 that's part of the reason why we have made sure
23 that this is a particular cornerstone, and it
24 includes all of the elements in terms of
25 performance and oversight for us would be there. We

1 want to make sure that all of those elements are
2 there, and not necessarily that you would have to
3 look at operational safety and make a tie back to
4 criticality, and understand where that loop begins.
5 But to your other point, at least the
6 point I think you're trying to make, is that it
7 seems as though these items are programmatic and
8 not necessarily operational. Is that --- was that
9 what you were saying?
10 MEMBER SCHULTZ: That's what I said.
11 MS. SMITH: So, in other words ---
12 MEMBER SCHULTZ: An example ---
13 MS. SMITH: --- our oversight, at least
14 according to what you're seeing, seems as though
15 it's more focused on the criticality safety
16 program, versus ---
17 MEMBER SCHULTZ: For example, human
18 performance is a thread that runs all the way
19 through the other areas.
20 MS. SMITH: Yes.
21 MEMBER SCHULTZ: But it's not called out
22 on this chart, except in training and qualification
23 of staff. And it may be embedded in other areas ---
24
25 MS. SMITH: Yes, in terms of oversight.

1 MEMBER SCHULTZ: --- or just presumed
2 in other areas.
3 MS. SMITH: Yes.
4 MEMBER SCHULTZ: But it's not called
5 out. In some of the other charts it shows up twice.
6 Ms. SMITH: Right.
7 MEMBER SCHULTZ: So, I'm just trying to
8 figure out that piece of it, especially since we're
9 talking safety.
10 MS. SMITH: Exactly.
11 MEMBER SCHULTZ: And we've got the human
12 element in any aspect of safety.
13 MS. SMITH: And that was one of the
14 things that we had to consider as we were going
15 through this development, how to appropriately
16 capture that level of human performance within each
17 cornerstone. Criticality safety, operational
18 safety, the idea is to make sure that whatever
19 those key performance elements are, those are
20 captured within the key attributes. If human
21 performance is one of those key elements, then it
22 needs to be elevated to a level of a key attribute.
23 If it is more of an area where we are looking at it
24 from a --- we are looking at it from an oversight
25 process to make sure that they are executing

1 particular items in terms of training and
2 qualification, then it's put at that particular
3 level. So, this --- I want to say, we wanted to
4 make sure that things were put at their appropriate
5 level of consideration in terms of how the
6 facilities operate. And that one of the reasons
7 why you'll see human performance here, but
8 designated more in terms of oversight versus in
9 others, human performance is at that level of a key
10 ---
11 MEMBER BLEY: Let me ask it a slightly
12 different way.
13 MS. SMITH: Okay.
14 MEMBER BLEY: Have you gone back through
15 the history of criticality events and some history
16 of inspection findings and convinced yourselves
17 that every one of those events, and all of those
18 findings fit into this structure very nicely?
19 MS. SMITH: That was one of the primary
20 things that was emphasized very strongly, that yes,
21 that was done, especially for criticality safety.
22 Yes, for sure.
23 MEMBER SKILLMAN: Did you do that same
24 thing for chemical safety?
25 MS. SMITH: In terms of looking at ---

1 MEMBER SKILLMAN: Events and how ---
2 MS. SMITH: Events.
3 MEMBER SKILLMAN: --- they would fit?
4 MS. SMITH: Yes, and how they would fit.
5 MEMBER SKILLMAN: And what did you find?
6 MS. SMITH: Now, that question would be
7 harder for me to answer in terms of what we found.
8 I'm trying to see if ---
9 MS. KOTZALAS: We'll try to get our
10 chemical safety person down here.
11 MEMBER SKILLMAN: Thank you.
12 CHAIRMAN POWERS: What amazes me is that
13 you have avoided the double contingency principle
14 in your discussion of criticality safety.
15 MS. SMITH: We've avoided it? So,
16 underneath criticality analysis ---
17 CHAIRMAN POWERS: My experience with the
18 criticality community is that I can't talk --- say
19 good morning to them without them checking both the
20 calendar and the clock to make sure that it is, in
21 fact, morning, and that it is a good one.
22 PARTICIPANT: And the geometry is right.
23 CHAIRMAN POWERS: But it does ---
24 because the double contingency principle is so on
25 the present, it presents a different set of risks

1 than anything else I know. Because, for instance,
2 if you can turn a valve that will release a lot of
3 material into a facility such as chems critical,
4 there will be a second cut in that prevention layer
5 in that system. And what it does is it de-
6 emphasizes human error as an initiator in event
7 because of the double contingency. I mean, it just
8 becomes different than everything else because of
9 the double contingency. Double contingency is the
10 counterpoint to risk-informed regulation, because
11 it's totally deterministic, and it's --- it has two
12 barriers on all things, two independent barriers on
13 all things. So, that's why it made sense for me to
14 cut it out as a separate thing, because it operates
15 in a different world than everything else, things
16 like ISAs and stuff like that.
17 MEMBER SCHULTZ: So, here it only shows
18 up under criticality analysis, but you're saying
19 that it would be pervasive.
20 CHAIRMAN POWERS: Well, I mean, the
21 double contingency is pervasive ---
22 MS. SMITH: It's just that overarching
23 just from the entire ---
24 CHAIRMAN POWERS: It's just the way they
25 do things.

1 MEMBER SCHULTZ: Yes, so it's not only
2 in the analysis, it's in the way ---
3 CHAIRMAN POWERS: It is ---
4 MS. SMITH: Everything is carried out
5 based on ---
6 (Simultaneous speaking)
7 MS. SMITH: And that's why you have
8 these different areas.
9 MEMBER BLEY: It sounds a lot like a
10 single failure criterion. They've got to have two.
11 CHAIRMAN POWERS: You've got to have
12 two. And they have to be independent, and the
13 analyses on independence themselves are --- what it
14 does is it highlights configuration control as a
15 requirement. And you do have configuration control
16 highlighted here in your second level, I think.
17 Then it's interesting. Move on.
18 MEMBER BALLINGER: Back to the human
19 performance part. I'm looking at the ROP, and they
20 look at human performance as a crosscutting thing.
21 MS. SMITH: Yes.
22 MEMBER BALLINGER: So, why --- did you
23 consider that option here, and say no ---
24 MS. SMITH: We did. No, it's not that we
25 said no. So, what we said was we think we know what

1 they're going to be, and --- but in the meantime,
2 we're going to make sure we include where that
3 element should go within this space, and then when
4 we get further into revising the inspection
5 procedures, looking at the SDP and considering the
6 performance assessment process, after we've gone
7 through that, and also, hopefully, get help from
8 ACRS, after we've gone through that, we will be
9 able to say okay, yes, now we can take this human
10 performance element and move it to a piece call
11 crosscutting areas.
12 What we are taking to the Commission in
13 terms of our recommendations are the cornerstones.
14 The concept of key attributes and inspectable areas
15 can possibly change. And that makes sense if you
16 think about how an industry can change. So, as we
17 go through our oversight, and as the industry
18 matures, and as we hopefully get them all
19 interested in coming in for an effective CAP, these
20 might change. So, what we're really going forth
21 with are the high-level cornerstones, the seven
22 cornerstones. That's what we want them to consider
23 with the understanding that this is our first cut
24 as to what we believe those key attributes would be
25 in those inspectable areas. But in the future, as

1 we further develop this process, those may change
2 some, especially once we start to pull out
3 crosscutting areas.
4 MEMBER SCHULTZ: What does that mean,
5 "pull out crosscutting areas?"
6 MS. SMITH: So, if we ---
7 MEMBER SCHULTZ: You mean to recognize
8 them?
9 MS. SMITH: To recognize them.
10 MEMBER SCHULTZ: Yes, and identify them.
11 MS. SMITH: And pull them out, because
12 as you pointed out, when you start looking at the
13 other cornerstones and the other inspectable areas,
14 and the other key attributes you see human
15 performance listed and problem identification. You
16 see those there displayed prominently in one way or
17 another. So, once we decide yes, that's --- for
18 sure that's what we're going to do, they will be
19 effectively, I'd say pulled out and put in the
20 category of crosscutting issues, or crosscutting
21 areas, excuse me.
22 MS. KOTZALAS: Okay. Are we ready to go
23 on to operational?
24 MEMBER SKILLMAN: Let me ask this
25 question. Are you obligated to have only seven PIs?

1 MS. SMITH: Are we obligated to have
2 only seven cornerstones?
3 MEMBER SKILLMAN: Only seven. Yes,
4 cornerstones.
5 MS. SMITH: No, we are not obligated.
6 MEMBER SKILLMAN: Pardon?
7 MS. SMITH: No, we are not obligated.
8 MEMBER SKILLMAN: Okay, thanks.
9 MS. SMITH: We could have more, we could
10 have less, we could have a thousand.
11 MEMBER SKILLMAN: You settle on seven,
12 at least for now.
13 MS. SMITH: Yes, we settled on seven.
14 Okay, so operational safety. Again, we have this
15 same concept with the key attributes in the
16 inspectable areas. I don't want to spend a
17 significant amount of time reading through each one
18 but, again, the concept that these key attributes
19 support the objective of operational safety. So,
20 operational safety, the objective is to look at
21 your IROFs and insure that they are adequate and
22 available when needed. How do you do that? Well,
23 you look at the operational design. That means
24 there's what they said the plant is going to do,
25 and then there's what it really does; how do those

compare? There's human performance in procedure quality, and human performance in training. And when you look at your procedures, how are people able to actually perform them? And then coupled with that, is the training appropriate for what operators need to do?

Then we get into this issue of performance of management measures. As I said before, this may end up being one of those items that turns out being a management measure, because we all these interesting pieces like maintenance, surveillance, fire protection, flood protection, cold and hot weather protection, which can still cut across some of the other cornerstones. Configuration control and problem identification and resolution; those are all things that you would want to consider in trying to meet this objective of making sure your IROFs are available and reliable.

CHAIRMAN POWERS: I sure liked your words looking how the facility actually performs in comparison to what you've said it would do.

MS. SMITH: Yes.

CHAIRMAN POWERS: I thought that was a useful description of operational safety. I don't

1 think it gets highlighted in your choice for your
2 second level of boxes there. It would be useful, to
3 my mind, to make it clear that what you're talking
4 about -- you know, we want to know how the facility
5 actually operates, as opposed to what it said in
6 the FSAR, or its equivalent.
7 MS. SMITH: Okay.
8 CHAIRMAN POWERS: I think you get overly
9 human here, and less in the --
10 MS. SMITH: But in the space of fuel
11 cycle facilities, and how they do operate ---
12 CHAIRMAN POWERS: Human action is ---
13 mS. SMITH: --- human performance is --
14 -
15 CHAIRMAN POWERS: Has a very ---
16 MS. SMITH: Is an essential ---
17 CHAIRMAN POWERS: --- essential role,
18 but you've --- I think you end up with two --- I'm
19 talking about the second ---
20 MS. SMITH: The key attributes.
21 CHAIRMAN POWERS: That you've got two on
22 human and one on configuration. Configuration is
23 where you're hiding your hardware performance, and
24 you've got twice as much for human. I mean, it
25 seems to me it's over-emphasizing the human, it

1 just strikes me.

2 MS. SMITH: Okay.

3 MEMBER BLEY: I push on that a little

4 further in that --- and most industries now have

5 found if they've really studied the human

6 performance issue, that many of the so-called human

7 errors are really the result of situations that are

8 set up by the configuration of the machine they're

9 working with, the system they're working in. And

10 that the real solution to those problems lies in

11 these other areas, rather than in retraining the

12 human or writing a new procedure, redesigning some

13 part of the system so that it's less ambiguous, or

14 less prone to putting people in a spot that's real

15 difficult to get out of.

16 MS. SMITH: Okay.

17 MEMBER BLEY: And I think we kind of

18 missed that.

19 MEMBER SCHULTZ: Yes, I think what

20 you've said is, I think, very important. You have

21 operational design, configuration control, and what

22 you said is that those have a strong influence on

23 human performance. And yet, here we see ---

24 MS. SMITH: They can.

25 MEMBER SCHULTZ: --- segregation

1 between the human performance ---

2 mS. SMITH: Right. And I think that ---

3 MEMBER SCHULTZ: --- and training, and

4 it's really all wrapped up in one feature.

5 Separating it, perhaps it can be segregated, but in

6 a different fashion.

7 MS. SMITH: Okay.

8 CHAIRMAN POWERS: And it's hard to

9 understand how human performance and procedure, a

10 quality can be segregated. I mean, training and

11 performance seem to me to be intimately associate -

12 -- I just wouldn't have two boxes there. I would

13 put everything you've got in your third-level boxes

14 all under one, humans.

15 MS. SMITH: The human performance and

16 procedure quality key attribute was meant to get at

17 that concept of how configuration control, and how

18 the design, how what's around you can influence

19 what you do. So, do your procedures facilitate

20 doing what you're supposed to do given the

21 configuration? So, that's ---

22 MEMBER BLEY: I kind of understand what

23 you're doing, but I agree with Dana.

24 MS. SMITH: Yes.

25 MEMBER BLEY: I think it's ---

1 mS. SMITH: Okay.

2 MEMBER BLEY: --- a single issue, but I
3 think there's a piece missing. And the piece
4 missing is the human system interface.

5 CHAIRMAN POWERS: That's right.

6 MEMBER BLEY: And that's a key, because
7 of a lot of events when we look at things going
8 wrong, retraining the person isn't the answer. I
9 just went to an interesting seminar with our
10 friends in the security business, and they're
11 getting some models now so they can --- instead of
12 running Force on Force exercises for everything,
13 they can exercise the models and see more
14 scenarios. One of the interesting ones from a
15 fellow at one of the plants was --- I mean, Force
16 on Force, a guard gets killed, and what have they
17 always done with them? They send them back for
18 retraining. When they could look at lots of
19 scenarios, they found that 80 percent of the time,
20 no matter who the guy was, he was getting killed.
21 So, the situation was the problem rather than ---

22 CHAIRMAN POWERS: Yes.

23 MEMBER BLEY: And the retraining thing
24 is usually not the solution. So, I think that's
25 important. I think putting them all together as a

single thing, and getting something about the human system interface into the story. And I think if you look at real events, you'll see that's true.

MEMBER SCHULTZ: That's the critical part because when I looked at this, I thought oh, the inspectable areas are most likely going to identify a human performance issue. And yet, as Dennis has indicated, it's --- the problem is not necessarily, and not usually human performance. It's connected to operational design, and you've got procedures and training in there, too. But they don't lie among themselves, it all connects together. And I think the way it's set up here you're going to be highlighting problems with human performance, and that's the outcome. That's the outcome, that's not the root cause.

MS. SMITH: Point taken. Yes, we hear you and we appreciate that feedback.

MS. KOTZALAS: Okay, next.

MS. SMITH: So, occupational radiation safety.

MEMBER BLEY: I'm just curious, because I'm not sure. Are there occupational chemical safety things they need to worry about, as well?

MS. KOTZALAS: That would be covered

1 under OSHA.

2 MEMBER BLEY: Oh, okay.

3 MEMBER SCHULTZ: Is that a problem ---

4 is there a problem here that we haven't

5 confronted? In other words, you know, we talked

6 from the outset that chemical safety in terms of

7 the employee environment is extremely important.

8 We're going to do this in order to improve the

9 process by which we think the facility is

10 regulated, governed. And, in fact, our objective

11 here is to improve the safety of the facility.

12 MS. KOTZALAS: Yes.

13 MEMBER SCHULTZ: And then we've said

14 well, OSHA has the chemical piece of it, and

15 they'll do their own thing. And we do have

16 agreements with OSHA to allow us to do something

17 that's --- where the chemical is connected with

18 nuclear. Is what OSHA does --- how does that

19 compare to what this initiative is about? Is it ---

20

21 MS. KOTZALAS: I don't know that ---

22 MEMBER SCHULTZ: I'm sure they have the

23 same objectives in terms of the overall outcome,

24 but I would have thought that the objective would

25 have been at a higher level. Not to just say well,

1 OSHA has all of that, but try to integrate what
2 OSHA does with this approach.
3 MS. KOTZALAS: I'll have to take that
4 back, because I'm not sure --- I don't know, Eric,
5 if you're able to discuss how we interact from an
6 inspection point of view, and how we share
7 information? But, I mean, it's okay if you're ---
8 Eric is relatively new to fuel cycle.
9 MEMBER SCHULTZ: And I don't know enough
10 about the OSHA program.
11 MS. KOTZALAS: Okay.
12 MEMBER SCHULTZ: But it just seems like
13 to have a separate piece for a chemical hazard when
14 we're trying to improve a situation with this
15 approach is leaving something out of the ---
16 CHAIRMAN POWERS: It's my perception
17 that they have one overriding dominant chemical
18 hazard in these facilities, and it's the hydrolysis
19 of HF to release hydrochloric acid. And that is
20 there. Everything about hydrolysis of HF, of
21 Uranium Hexafluoride to give you HF belongs to you
22 guys.
23 MEMBER SKILLMAN: Let me weigh in here,
24 because that's where I am. I asked the question
25 about how many cornerstones you're allowed to have,

1 and you said you're not married to seven, you could
2 have more.
3 I spent about three years building one
4 of these facilities, and the thing that we were
5 after all the time was ventilation barriers,
6 concrete slabs, prevention of release of Hex,
7 because we were dealing with so many tons, not
8 pounds, tons.
9 MS. KOTZALAS: Yes.
10 MEMBER SKILLMAN: And a real concern is
11 what Dana said, it's release of HEX, and that's a
12 worker issue, but if it gets beyond the boundary,
13 it's a people issue, too, which kind of --- let me
14 say this. If you look at your Slide 6, if you look
15 at the facilities, what is it, 13 or 14 of them,
16 over half are going to be handling ton quantities
17 of feed cylinders when heated become the risk. So,
18 I'm wondering why there isn't a special cornerstone
19 for the fuel plants, over half are dealing with
20 this material, for chemical safety and just to
21 really stab at this right in the head, kind of like
22 you have for criticality. Because the criticality
23 risk, excuse me, the HEX risk is real. That's why I
24 asked are there any incidents that would suggest
25 perhaps a special --- I asked about incidents and

1 what the data show out of the ISA, but you said you
2 would talk about chemical risk. It doesn't show up
3 anywhere in your slides. The word "chemical" is not
4 even used. It seems like a cornerstone for chemical
5 ---
6 CHAIRMAN POWERS: I would suggest ---
7 MEMBER SKILLMAN: --- carved around the
8 same architecture as criticality ---
9 CHAIRMAN POWERS: They solve themselves
10 by just saying occupational radiation and chemical
11 safety.
12 MEMBER SKILLMAN: I don't think that's
13 good enough for at least our meeting today. I think
14 we've got to say wait a minute, this chemical risk
15 is real.
16 CHAIRMAN POWERS: But so is the
17 radiation risk.
18 MEMBER SKILLMAN: And that's why it has
19 a cornerstone.
20 CHAIRMAN POWERS: And they will --- what
21 they will have under that will be identical.
22 MEMBER SKILLMAN: That would be great.
23 CHAIRMAN POWERS: Okay. So, that if you
24 just re-labeled it occupational radiation and
25 chemical safety, there they could handle that

1 fraction of the chemical safety ---

2 MEMBER SKILLMAN: Yes.

3 CHAIRMAN POWERS: --- whether it's

4 radioactive material or it's contact with

5 radioactive material, and that's an understanding

6 that we have in looking at the cornerstones, that

7 it's just adding a word into the title. Because I

8 don't think anything will change under here.

9 MS. SMITH: So, if we get back to the

10 premise that one of the reasons why we developed

11 the cornerstones in the way we did was to look at

12 how they operate, and how they would consider items

13 like criticality safety, and chemical safety. And I

14 understand, when you said you worked three years in

15 building one of these facilities, but in terms of

16 their operation after they're built, how do they --

17 - do they operate by carving out chemical safety,

18 and having that as a focal point of their

19 operations ---

20 MEMBER SKILLMAN: Absolutely, they do.

21 (Simultaneous speaking)

22 MEMBER SKILLMAN: Absolutely. I have

23 watched them. I have watched them, you can, a feed

24 cylinder by heating it. And the precautions that

25 they go to to prevent the release of HEX are

extraordinary. But the reason I made the comment about design is the whole design is focused on insuring you can't be critical, and you can't release HEX. Those are the two things that really guide the design of the facility. I mean, it's a major objective that sets your barriers, your ventilation, what's negative pressure, where the exhaust goes. I mean, that is an overriding consideration in the design of a facility.

MEMBER BLEY: And in the operation. We did a lot of work out at Sequoyah Fuels after the fellow killed himself out there.

MEMBER SKILLMAN: It's not as if you catch up to a spill.

MEMBER BLEY: And all their focus is on HF.

MEMBER SKILLMAN: All the focus is on HF, it really is.

MEMBER BLEY: And if you freeze it in a pipe, it expands tremendously when you thaw it out, and it'll burst the pipe if you don't do it very carefully. They were much more concerned about HF than anything else in that facility.

MEMBER SKILLMAN: Right.

MS. SMITH: Okay. So, Marilyn --- I'm

1 sorry. I noticed Marilyn was trying to stand up and
2 say something to add to the discussion.
3 MS. DIAZ: So, I'm a chem safety
4 reviewer. I have not been involved in the
5 development of the cornerstones for FCOP, but I did
6 want to answer some questions about OSHA.
7 MR. SHUKLA: State your name, please?
8 MS. DIAZ: Is it on?
9 MR. SHUKLA: Your name.
10 MS. DIAZ: Oh, I'm sorry. Marilyn Diaz,
11 chem engineer for the Fuel Cycle Facilities
12 Division.
13 One comment that I have is that under
14 the inspection programs, inspection procedures we
15 do look at chem safety hazards under operational
16 procedures. So, even before I even got here, it was
17 under the operational inspection procedures, not
18 chem safety inspection procedure. And my
19 understanding, it's because we have so many
20 facilities, fuel cycle facilities that have so many
21 hazards in them that it would, apparently, make
22 more sense to have an operational than a chem
23 safety-related inspection procedure.
24 The other part about OSHA, OSHA has the
25 process hazard analysis, which compares to our

1 Integrated Safety Analysis. That's how they do the
2 process safety review and analysis. We have an MOU,
3 like it was mentioned before, so NRC jurisdiction
4 covers not only the chemicals in that site, but
5 also any chemical hazards that could affect the
6 safe operation and handling of licensed material.
7 So, it's not only commingled materials of chemicals
8 that are produced from licensed materials, but it's
9 anything that affect the safe handling of licensed
10 materials. And there's also in the MOU in the OSHA
11 Act that there's a peremptory rule that tells us
12 that anywhere where there's another regulatory
13 authority involved in the same site as OSHA
14 regulates, that responsibility automatically goes
15 to NRC, like goes to the other regulatory
16 authority. Meaning that anything that's involved in
17 the licensed material processing, OSHA doesn't look
18 at.
19 MEMBER BLEY: I think kind of what
20 you're saying kind of bolsters the discussion we
21 were having about the importance of the chemical
22 side of this.
23 MEMBER SKILLMAN: Thank you for what
24 you've added here. It's important because that kind
25 of reinvigorates my notion. I think we either have

1 an occupational chemical and radiation safety, or
2 we just march forward with a strong chin and say
3 we're going to have another cornerstone that's
4 called chemical safety. Either one would, at least
5 in my mind, identify this as a significant
6 inspection item under the revised process.
7 MS. SMITH: Okay.
8 MEMBER SKILLMAN: I think it brings to
9 the fore attention that's warranted given the risks
10 that clearly the owners of these plants understand.
11 If you talk to LES, they will say hey, HEX safety
12 is number one. We understand criticality, we've got
13 a lot of the stuff, but we're dealing with very low
14 enrichments in a lot of places. We've got a lot of
15 material, but very low enrichments. But when you go
16 to the HEX discussion, it's can you bar the door,
17 it's ventilation, it's protection, it's all kinds
18 of effort to make sure that the IROFs protect
19 particularly the feed cylinders when they're being
20 bled into the process system.
21 CHAIRMAN POWERS: And what you say,
22 Dick, is that your inspectable areas expand
23 dramatically here.
24 MEMBER SKILLMAN: Yes, sir. That's
25 exactly what will happen.

1 CHAIRMAN POWERS: And your third level
2 is incomplete as it's written now.
3 MEMBER SKILLMAN: For chemical.
4 CHAIRMAN POWERS: And grossly so ---
5 MS. SMITH: Yes.
6 CHAIRMAN POWERS: --- because --- I
7 mean, how you do it is a little bit up to you, but
8 my tendency would be to say occupational radiation
9 and chemistry --- and chemical safety, and then
10 that will --- under your plant facilities,
11 equipment, and instrumentation you're going to have
12 a lot more on things like ventilation, and
13 interconnecting valves, and things like that,
14 because that's what goes wrong, is that you hook up
15 the tank and you do something with it, and that
16 leaks, and that's what causes the headache. So,
17 that expands that level.
18 The alternative is to do what Dick is
19 suggesting, is to say I'll call out chemical safety
20 separately, and put the codicil in that it's the
21 subset of the chemistry that I'm looking at. But as
22 Marilyn points out, it's a pretty big subset
23 because anything that affects the safe handling of
24 licensed material falls in that category.
25 MS. SMITH: Right. And understanding the

other thing that Marilyn was saying, is we have an operational safety inspection procedure right now underneath which chemical safety is one of the things that is inspected in different subsets.

CHAIRMAN POWERS: Now, if you look at what you put in your inspectable areas, you de-emphasize the chemical pretty dramatically there.

MS. SMITH: Okay. Got it.

MS. KOTZALAS: Okay, we understand.

MEMBER SCHULTZ: But this is an important point, because ---

mS. SMITH: Yes.

MEMBER SCHULTZ: --- Marilyn said, it's under operational safety, and I presume that's what has been assumed as this has been structured.

MS. SMITH: Yes.

MEMBER SCHULTZ: But in the discussion we've just had, since we're developing cornerstones that are appropriate for fuel facilities, one cornerstone needs to be, we would conclude, occupational chemical safety, not underneath operational safety, not down below, but a cornerstone.

MEMBER SKILLMAN: I have a hunch if you were to look at the organization charts of the

1 plants that are using these large quantities of
2 this material, I think --- and I'm guessing there's
3 going to be a criticality safety officer reports
4 very high in the organization, and I believe
5 there's going to be a chemical safety officer
6 because of the very issues that we are pointing to,
7 it's the control of HEX and overall accountability
8 for how the procedures, structures, systems,
9 components, IROFs all fit to preclude inadvertent
10 release of HEX.
11 MEMBER BALLINGER: Yes. I think after
12 hearing what I heard about the separation between
13 what amounts to HEX in the chemical side. That's
14 the chemical side, as well. It would seem that you
15 really need to have a chemical safety part that
16 plays a major role here.
17 MS. SMITH: That's emphasized.
18 MEMBER BALLINGER: Because OSHA is not
19 going to commit --- OSHA is excluded then. Right?
20 If you have an incident your rules take precedence.
21 That's what that memorandum says? That's what the
22 law says, or whatever the ---
23 MEMBER SCHULTZ: That's what Marilyn
24 says.
25 MEMBER BALLINGER: That's what Marilyn

1 said, so if you've got to own it, then you better
2 have what amounts to a cornerstone or something on
3 chemical safety.
4 MS. KOTZALAS: Okay, thank you.
5 MEMBER SKILLMAN: Thank you.
6 CHAIRMAN POWERS: Okay. At this point,
7 we are scheduled to give April a break.
8 MS. SMITH: Thank you.
9 CHAIRMAN POWERS: The Committee can go
10 forever, and will if left to its own devices. So, I
11 think we will take a break until a quarter after.
12 (Whereupon, the proceedings went off
13 the record at 9:57 a.m., and went back on the
14 record at 10:13 p.m.)
15 CHAIRMAN POWERS: Let's go back into
16 session.
17 MS. SMITH: Okay. So, we've gone through
18 Occupational Radiation Safety, and now we're into
19 Public Radiation Safety.
20 Between the two, you'll see that the
21 structure is fairly similar with the exception ---
22 CHAIRMAN POWERS: And as we had been
23 talking in the break, you've got a chemical
24 component here.
25 MS. SMITH: Yes.

1 CHAIRMAN POWERS: And, in fact, I think
2 it's worth citing them. When we do the risk
3 analysis of these facilities, the only chemical
4 hazard that comes out is the HF release. Everything
5 else is a no never mind.
6 MS. SMITH: Okay.
7 CHAIRMAN POWERS: This one will get
8 people's attention, by the way.
9 MS. SMITH: Oh, definitely. This is the
10 one that would.
11 So, I can read through these, or I can
12 move on to the next one? So, let's move on to the
13 next one. So, let's go do Emergency Preparedness.
14 CHAIRMAN POWERS: Now, let me ask you,
15 it seems --- at first blush it seems like emergency
16 preparedness should have a cornerstone, but when I
17 stop and think about it, which I should never do,
18 why isn't that a part of public safety? Why does
19 emergency preparedness have a separate cornerstone?
20 Because it's so big?
21 MS. SMITH: The emergency preparedness
22 can cover onsite and offsite EP. So, we wanted to
23 make sure that we were encompassing both of those
24 areas. And then, also, emergency preparedness from
25 a public standpoint to have its own cornerstone

1 makes it, again, very visible that that's an area
2 of performance where we want to make sure the
3 licensee is performing as we would want them to.
4 CHAIRMAN POWERS: And it's a different
5 group of people.
6 MS. SMITH: It can be, yes.
7 CHAIRMAN POWERS: Yes. And then you have
8 an interface between the operational staff and
9 emergency preparedness, but thereafter, that's a
10 different group of people.
11 MS. SMITH: It can --- in some cases
12 they ----- or sometimes they're the same, or
13 sometimes they can cross over. But for the most
14 part you do have some separation between the two.
15 MEMBER SKILLMAN: I can see the value of
16 an EP cornerstone here because some of these
17 facilities, if you look in the backyard and see DU,
18 the depleted uranium cylinders, it's not 10 or 100,
19 it can be as many as 10,000.
20 CHAIRMAN POWERS: Were you here when we
21 had the picture of the facilities, and Ryan ---
22 MEMBER SKILLMAN: Yes.
23 CHAIRMAN POWERS: That was impressive.
24 You've got to include that picture in your ---
25 (Simultaneous speaking)

1 MEMBER SKILLMAN: Please let me finish
2 my thought for the record. Here's what I'm saying.
3 The public is keenly aware of that, and they, in
4 fact, are not happy with that. So, if you see that
5 at Hobbs, if you were to go to Capenhurst, and
6 anyone, it isn't that you see one, or ten, or 100,
7 you see maybe 10,000 of these things. So, the ---
8 CHAIRMAN POWERS: At Hobbs they use that
9 as a tourist attraction.
10 (Laughter)
11 MEMBER SKILLMAN: So, the EP is around
12 firefighting, ingress and egress, and what happens
13 if there's a grass fire back around the DU
14 containers? So, EP is an important feature in this
15 --- in your cornerstones, and it deserves a place
16 here for the same reason that chemical safety
17 deserves a place. It's important. Thank you.
18 MS. SMITH: So, let's move on to
19 security. So, in terms of security, and you'll hear
20 my broken record again. We have our key attributes
21 with the idea of supporting the objective of
22 security, access authorization, access control,
23 physical protection, contingency response measures,
24 information security, and problem identification
25 and resolution. And material control and

1 accounting.

2 CHAIRMAN POWERS: Do these facilities

3 get an IAEA inspection?

4 MS. SMITH: Some of them, yes.

5 CHAIRMAN POWERS: Who interfaces with

6 IAEA when they come in and inspect?

7 MS. SMITH: Glenn, can you help me with

8 that? I know that we accompany them on their IAEA

9 --- can you explain it a little more?

10 MR. TUTTLE: My name is Glenn Tuttle. I

11 work in the Material Control and Accounting Branch

12 in NMSS.

13 Right now we're only talking about one

14 facility that gets the IAEA inspections, and that's

15 something fairly new. I mean, they're under IAEA

16 safeguards for reporting, but most facilities ---

17 all facilities, but not necessarily under

18 inspections. And we do have the new facility, LES,

19 that would under the IAEA. And we do have a

20 program, internal procedure to - what to do when

21 that happens, when they call, and there's a great

22 deal of interaction between the IAEA and our

23 international part of our group to set those up, to

24 coordinate with the other agencies. So, it's a

25 pretty extensive coordination effort to get all

1 that done, but we do go with them. We do have, I
2 think from our group, one or two people that are
3 designated to go on those inspections, and like I
4 said, other agencies.
5 CHAIRMAN POWERS: Will they recognize
6 when an IA --- an inspector comes in, recognize
7 all these things? Ask if there's something --- if
8 he looks at what you've drawn that here, is ---
9 what's he going to look and say what's missing
10 here?
11 MS. SMITH: Yes, would there be
12 anything?
13 MR. TUTTLE: I didn't hear.
14 MS. SMITH: Okay.
15 MR. TUTTLE: Sorry.
16 CHAIRMAN POWERS: When you IAEA team
17 comes in and they look, and you put this viewgraph
18 up, they're going to say --- what are they going
19 to say is missing here? From the way they look at
20 the plant, do they have a separate set of criteria,
21 and how does it overlay with this one?
22 MR. TUTTLE: I think it's a similar
23 thing. Mostly what they're doing is taking
24 measurements, which we have on the screen. They are
25 going to verify inventory, which is another part of

1 our --- of an MC&A program. I don't know
2 specifically what's part of their MC&A program, but
3 I know that's a key part, taking independent
4 measurements and verifying inventory. Those are
5 both part of our cornerstone key attributes,
6 because those are the key things that you can
7 confirm what you have, so there's an inventory
8 verification. And then you also need to know, you
9 know, what you have, and know it well, and using
10 the correct measurement systems. And they have
11 their own instrumentation to take their
12 measurements that they need to do their inspection.
13 CHAIRMAN POWERS: Yes, I would just be
14 sure that an outside inspector comes in and doesn't
15 say oh, that you're missing the box for ---
16 M. SMITH: Okay.
17 CHAIRMAN POWERS: --- X. I don't know
18 what that is, but I'd just make sure that you can
19 say oh, no, that's in this one right here. We've
20 got that. And just because you don't want him to be
21 confused about something.
22
23 MS. SMITH: Correct.
24 CHAIRMAN POWERS: And I would want to
25 make sure that if I don't use his terminology, that

I have a dictionary that allows him to do a translation between your terminology and his terminology. I mean, I'm just ---

M. SMITH: That we're synchronizing.

CHAIRMAN POWERS: Just trying to make my life easy, that's all.

MEMBER BLEY: I'm not sure of the process. I've seen some in international facilities, but not here. When IAEA comes to make an inspection, are they looking only at the licensee, or are they looking at NRC's oversight, as well?

MS. SMITH: That I am not familiar with either.

MS. KOTZALAS: I believe they're looking at the licensee. Glenn, is that correct?

MR. SHUKLA: Right, I believe so. And their objective is different, you know. They're saying, you know, we don't know what's going on here. We need to verify. That's why they take their own measurements. Our objective is, we already know what they're trying to do. They have an MC&A plan that tells here's how we're going to meet the regulations. We're almost just trying to verify that they're doing that. The international

1 inspectors are really taking their own
2 measurements. They have a set of different
3 objectives, so it's not quite --- it doesn't
4 connect, but we have a number of people in our
5 group that are on the international safeguards side
6 of our Branch who deal with this extensively to
7 make sure the inspections are coordinated, and they
8 are able to --- and that IAEA is able to get what
9 they need.
10 CHAIRMAN POWERS: And that's --- I
11 would ask those guys to look at this slide and say
12 would you get what you need if these things ---
13 MS. SMITH: Yes.
14 CHAIRMAN POWERS: I mean, that's all you
15 need to do ---
16 MS. SMITH: Yes.
17 CHAIRMAN POWERS: --- to make sure that
18 they can read from the same sheet of paper as you
19 do, and --- because this is an area that ACRS does
20 not traditionally involve itself. We're not good at
21 accounting.
22 MEMBER SKILLMAN: I would ask this
23 question, please. In this part of the nuclear
24 industry there have been instances where MUF,
25 Material Unaccounted For, has become an issue, and

1 an international issue. And so, I would ask if what
2 you've presented here represents operating
3 experience? Are you comfortable that what you've
4 provided as your template really accounts for those
5 instances where there have been national or
6 international intrigue around loss of material?
7 MS. KOTZALAS: Yes. For each of the
8 cornerstones, in developing them we used working
9 groups of NRC experts in this area. For instance,
10 Glenn was involved in putting together the MC&A
11 cornerstones, so he insured that the important
12 things that we inspect and our operating experience
13 are included in these cornerstones, the inspectable
14 areas, and the key attributes.
15 MEMBER SKILLMAN: Thank you.
16 MEMBER BLEY: I guess I'm not completely
17 conversant here. You say, or Glenn says they have
18 different objectives. What are NRC's objectives in
19 this area?
20 MS. SMITH: I can --- I'm sorry.
21 MEMBER BLEY: I kind of know what IAEA's
22 are.
23 MS. SMITH: I can read directly what
24 we've --- the exact words. So, we have two primary
25 objectives, and that's to verify the licensee's

1 MC&A program promotes the common defense and
2 security by detecting and protecting against loss,
3 theft, diversion, or misuse of special nuclear
4 material, and facilitating the location and
5 recovering of the missing SNM. That's number one.
6 Number two, to verify that the licensee
7 adequately detects unauthorized production and
8 unauthorized levels of enrichment of SNM at
9 enrichment facilities.
10 CHAIRMAN POWERS: Okay. You have items
11 there that address everything except recovery.
12 MS. SMITH: And facilitating the
13 location and recovering of missing SNM. And you're
14 saying in here ---
15 MEMBER BLEY: In the lower level.
16 MS. SMITH: --- we do not cover
17 recovery.
18 MR. TUTTLE: And that --- yes, it's not
19 written in there, but that would be part of the
20 resolution of alarms and loss indicators. Those are
21 the big indicators, like the term that was used
22 earlier, MUF, ---U-F, Material Unaccounted For. We
23 call that Inventory Difference, but that's an
24 indicator. A large inventory difference would be a
25 loss indicator, so the resolution part would be

1 where they --- and it is part of their program. And
2 I --- you know, I should have all these memorized
3 by now, but part of the regulation is about to
4 investigate and assist, or aid in recovery of the
5 material. So, that is part of it. Yes, it's not
6 mentioned specifically there, but that --- it would
7 under that last --- that fourth attribute that ---
8 (Simultaneous speaking)
9 CHAIRMAN POWERS: Problem identification
10 and resolution.
11 MS. SMITH: Well, in order to resolve
12 alarms and loss indicators, you have to have the
13 element of recovery.
14 CHAIRMAN POWERS: If you're going to tie
15 back to your objectives, you better say something
16 about it in there. We don't have to say so much
17 here where we're just talking about cornerstones,
18 but sooner or later you're going to have to say
19 something about it, to tie it back to the Agency
20 objectives.
21 MEMBER BLEY: Are you familiar with the
22 Thorp leak from, what was it, 10 years ago,
23 something like that? Massive amount of material
24 leaked and went --- accountable material reported
25 to everybody and disappeared for almost a year with

nobody knowing it had been lost because of a series of both mechanical problems that led to it, and operational record keeping problems that allowed the loss to be undetected for that whole time. And if you're not, it would be good to get familiar with it. And if you are, what in here helps us make sure we don't have an event like that?

MS. SMITH: Thank you for that.

MEMBER BLEY: I can give you more details on it, if you want, if you're not familiar with it.

MS. SMITH: Okay.

MEMBER BLEY: But not here.

MS. SMITH: Sure, that would be great. Thank you.

MR. TUTTLE: Yes, and I think that's --- that is a good --- I do see that as maybe a missing element here, the idea of reviewing the international --- I don't think we've really thought about that. I would imagine, you know, we --- the types of things we do cover that, but that wasn't, I think, anything we really considered about the international ---

MEMBER BLEY: They thought they had it well covered, too.

1 MR. TUTTLE: Yes. So, I think that's a
2 good point to try to figure out, yes, where to fit
3 that. The other thing, as you talked about that, we
4 thought about, does there --- is there some place
5 in this where we have international safeguards?
6 Does that belong in here. It's kind of a strange,
7 you know --- you know, we do have separate that do
8 domestic safeguards versus international, and is
9 there an international element that belongs in here
10 somewhere? So, I think that's --- yes, that's a
11 good point that we need to think about, where that
12 fits, and the experience from facilities overseas,
13 or international.
14 CHAIRMAN POWERS: Yes, maybe just in ---
15 may come in through your training aspects. You
16 know, are they aware of what's going on at other
17 facilities, both national and international? That
18 may be a good place to think about putting it. And
19 this is all lower level than just what the
20 cornerstones are, which is our objective, that
21 sooner or later you have to tackle these things.
22 MS. SMITH: Yes, especially ---
23 (Simultaneous speaking)
24 MS. SMITH: Okay, moving on to the
25 summary. So, to summarize, we used our layered

1 approach starting with the NRC mission that we
2 considered how fuel cycle facilities operate, and
3 then the applicable hazards to come up with these
4 recommended cornerstones. And they represent major
5 operations at all facilities. They are risk-
6 informed via the ISA, where applicable. And they
7 align with the SRM, which is one of our ---
8 clearly, one of our objectives.
9 MEMBER BLEY: April?
10 MS. SMITH: Yes?
11 MEMBER BLEY: In your backup slides do
12 you happen to have Figure 3 from your report, which
13 is the cornerstones --- just before the one you
14 recommended. It's the one that has the little box -
15 --
16 MS. SMITH: As chemical safety?
17 MEMBER BLEY: Has the little box around
18 three, not four, but three of the elements.
19 MS. SMITH: Let me see here. We should
20 have those.
21 MEMBER BLEY: I'm not sure why you went
22 away from that one to the one that you picked. That
23 made it clear that, you know --- oh, wait a minute.
24 I'm looking at the wrong one. Never mind. No, it
25 still didn't work. You don't want --- I don't want

1 that one. I'm sorry.

2 MS. SMITH: You don't want that one?

3 MEMBER BLEY: I misread it. It almost

4 had what we were talking about.

5 MS. SMITH: Almost.

6 MEMBER BLEY: But it didn't. It still

7 had the hazard stuff in it. Okay.

8 MS. SMITH: We can still talk about it.

9 MS. KOTZALAS: No, we don't need to.

10 MS. SMITH: No?

11 MS. KOTZALAS: No, we don't need to.

12 MS. SMITH: Okay. All right.

13 MEMBER SKILLMAN: I have a question,

14 please, on your summary.

15 MS. SMITH: Yes.

16 MEMBER SKILLMAN: So, here you've gone

17 to all of this effort to revise the cornerstones.

18 So, well done. To the question from any skeptics or

19 from the Commissioners, how do you know this is

20 good enough? Have you gone to other people that

21 have used cornerstones for their processes,

22 particularly safety-related processes? How do you

23 compare with them? What have you done, if you will,

24 to certify the appropriateness of this?

25 MS. KOTZALAS: Well, one of the things

1 that we did was we worked extensively with industry
2 on this, and we've had several public meetings, and
3 we have put this out for public comment. We have
4 incorporated comments, and we also looked at the
5 ROP, and we kind of went away from those
6 cornerstones for, you know, the reasons that we've
7 stated. So, we think that these are a good set of
8 cornerstones. As we go through, you know, the SRM
9 has a lot of points where we have to interact, like
10 we have a pilot program that we have to do. And
11 then after the pilot program, we have to take those
12 Lessons Learned and then see if we need to revise
13 cornerstones, see if we need to revise the SDP. We
14 have to benchmark --- as part of the SDP, we need
15 to benchmark prior violations to see where they
16 would end up, and then put them through our action
17 matrix as they were binned, you know, in the
18 cornerstones. So, there's a lot of testing of this
19 process before, you know, it finally gets rolled
20 out in like 2019.
21 MEMBER SKILLMAN: Thank you.
22 MEMBER BLEY: I've got a related
23 question. In your discussion in your paper, the
24 reason you go away from the model of initiating
25 events, and the scenarios, and the barriers, which

1 I think still apply to most accidents that you
2 could have here, you argue that the real big
3 difference between these facilities, at least most
4 of these facilities and the reactor side is that
5 you have --- most of these facilities have very
6 small potential to have releases that would affect
7 the public. And most of the effort is on worker
8 risk, or most of the importance, most of the risk
9 deals with worker risk.
10 Given that, what do you envision the EP
11 requirements looking like if most everything that
12 can happen at most of these facilities isn't going
13 to release things offsite significant enough to
14 impact public health?
15 MS. SMITH: So, the EP piece, as Margie
16 pointed out, our current program is --- what were
17 the words we used? Adequately protects public
18 health and safety in the current program, so those
19 elements that we have within our current inspection
20 procedure for EP, we imagine most of those elements
21 will still be covered underneath this new
22 cornerstone. So, in that sense that is how we would
23 envision including the appropriate elements for EP
24 within the cornerstones. Have I answered your
25 question?

1 MEMBER BLEY: I'm not completely
2 familiar with the EP inspection requirements, or
3 the EP requirements for fuel cycle facilities. Are
4 they graded based on the radiological and potential
5 offsite chemical hazards that live within a
6 facility, or are they the same for everybody?
7 MS. SMITH: Do we have someone from EP
8 here? Anyone from EP? No, okay.
9 MS. KOTZALAS: Because we have a risk-
10 informed program, my sense is that it would be
11 graded. Facilities that have a greater risk for
12 offsite hazard, so maybe like Honeywell, we would
13 look at the inspection, or the emergency
14 preparedness program differently than we would for
15 a site maybe like ---
16 MEMBER BLEY: That sounds rational, but
17 is that true?
18 MS. SMITH: You mean true in terms of
19 what we do now?
20 MEMBER BLEY: Yes.
21 MS. KOTZALAS: The inspection program.
22 MS. SMITH: Eric, can you --- no, okay.
23 MEMBER BLEY: Sometime we'd be
24 interested in hearing about that, if the right
25 people aren't here.

1 MS. KOTZALAS: Yes, I will get that
2 answer for you.
3 MEMBER BLEY: I mean, you have a lot
4 more work to do beyond the cornerstones, and I
5 think that's where that lies.
6 MS. KOTZALAS: And that's where that
7 lies, yes.
8 MS. SMITH: Right.
9 MS. KOTZALAS: Yes.
10 MEMBER BLEY: Okay.
11 MEMBER SCHULTZ: In terms of the next
12 deliverable to the Commission, the cornerstones,
13 are you going to also discuss the crosscutting
14 issues, crosscutting areas?
15 MS. SMITH: No.
16 MEMBER SKILLMAN: Or is that coming
17 later?
18 MS. SMITH: That's later.
19 MS. KOTZALAS: That will be later. That
20 will be after we do some benchmarking, maybe some
21 pilot work to see, you know, really where do we
22 want to put them. And, also, we're looking for your
23 assistance in developing the crosscutting areas.
24 MEMBER SCHULTZ: But is there a --- so,
25 is there a time frame for when that will be a part

1 of the program? Is it a milestone to have the
2 crosscutting issues identified?
3 MS. SMITH: It is not a milestone, but
4 it is an integral part of the entire process.
5 MEMBER SCHULTZ: Right.
6 MS. SMITH: And it's an input into our
7 performance assessment process, a potential input.
8 So, it's something that we have to figure out ---
9 MEMBER SCHULTZ: Right.
10 MS. SMITH: --- in order to finish that
11 piece.
12 MEMBER SCHULTZ: It seems like it should
13 be done before the pilots.
14 MS. SMITH: Yes.
15 MS. KOTZALAS: Yes, I would say looking
16 at what is due to the Commission, I would say that
17 we would want to get that done around the time that
18 we're finishing the SDP, which is June the 29th,
19 2018.
20 MEMBER SCHULTZ: And the piloting
21 process, when --- you have the results to the
22 Commission date, but when do you envision that
23 starting?
24 MS. SMITH: Actually starting? What we
25 would be able to start it, I mean again after we

finish the SDP, and we've ---

MS. DUVIGNEAUD: Hi. Currently, we're planning to start the pilot fall of 2018, if everything goes according to schedule.

MEMBER SCHULTZ: Okay.

MR. SHUKLA: Your name?

MS. DUVIGNEAUD: Oh, sorry. DyLanne Duvigneaud, NMSS Fuel Cycle.

MS. SMITH: She's Project Manager for our COP.

MEMBER SCHULTZ: Do we envision having a pilot that covers --- since there's such a spectrum of types of facilities, is the pilot going to incorporate a look at more than one facility, more than one type of facility?

MS. SMITH: Absolutely, yes.

MEMBER SCHULTZ: So, a feel for what that would be, two, or three, or four?

MS. SMITH: Well, we currently have 10.

MS. KOTZALAS: Well, we would have to work with industry to determine who would want to pilot with us. So, that is something that we would have to work out with them, and at this point, I can't tell, you know, who will want to participate, and who will not want to.

1 MS. SMITH: But that's --- given the
2 variety, we'd want to make sure that we get a
3 representative sample.
4 MEMBER SCHULTZ: One other question. At
5 one point early you mentioned that --- I think what
6 I heard was that this approach would be the same
7 whether the facility was located in an Agreement
8 State or not. Is that true, or is there a
9 difference if the facility is in an Agreement
10 State?
11 MS. KOTZALAS: What I was trying to say
12 when I mentioned the Agreement States was that all
13 the fuel facilities are regulated by the NRC
14 regardless of whether they are in Agreement State,
15 so Agreement States are not involved in this
16 regulatory process.
17 MEMBER SCHULTZ: Good, thank you.
18 MEMBER SKILLMAN: When you began the
19 meeting you said to us if you have any thoughts on
20 crosscutting issues, we'd like to hear about that.
21 MS. KOTZALAS: Correct.
22 MEMBER SKILLMAN: I would offer one
23 man's opinion. We're a Subcommittee so we speak as
24 individuals. The two that come promptly to my mind
25 are procedure compliance. So, it's human behavior

1 but maybe at a higher level because of the toxicity
2 of the HEX. There's procedure compliance. And the
3 other is value of the robustness of the CAP
4 program. That programs pulls a lot of pieces
5 together. It identifies MUF, it identifies
6 procedural non-compliances, it identifies hardware
7 failures, it identifies human performance failures
8 when they're detected. But I would offer those two
9 for your consideration at this early point.
10 MS. SMITH: Thank you.
11 MEMBER SKILLMAN: Procedure compliance
12 and robustness of the CAP Program, whether they've
13 bought into the new standard, or not.
14 MS. KOTZALAS: Yes, thank you. That
15 emphasizes the importance of having an effective
16 and robust CAP before you can even enter into this
17 program. Thank you.
18 CHAIRMAN POWERS: That and safety
19 culture, which we have a different set of words for
20 it, but it's safety culture. Those are good ones,
21 and I think we --- in your presentation to the Full
22 Committee it would be useful if you can --- if
23 you're going to ask ACRS for help on that, if you
24 would include with this slide having your candidate
25 crosscutting issues. That's the vehicle by which we

1 comment on them.

2 MS. KOTZALAS: Okay.

3 (Simultaneous speaking)

4 MEMBER SCHULTZ: I would agree with Dana

5 that a nuclear safety conscious work environment

6 would be on my list for a crosscutting issue or

7 element. And I haven't dealt in other facilities

8 other than fabrication facilities, but I know when

9 that has been embraced by the facilities and the

10 management of the facilities, it makes a

11 difference. It makes a big difference. And I can

12 see that if this type of program is being

13 implemented, it would want to be emphasized in the

14 same type of fashion that it is in the ROP program.

15 CHAIRMAN POWERS: There's a relatively

16 good study of safety culture where they actually

17 attempt to quantify it, and it's interesting

18 because it's done for chemical plants in Great

19 Britain. And the chemical plants are wonderful for

20 looking at safety because they have lots and lots

21 of accidents, they have lots and lots of events;

22 whereas, our nuclear facilities, hopefully, have

23 very few events, so it's hard to get statistics.

24 And what they did was they had lots of chemical

25 plants doing relatively simple things, and some had

1 a lot of accidents, and some had very few. So, they
2 hypothesized dozens and dozens of possible
3 correlating variables for these, and the only one
4 that really worked was exactly what Steve said. How
5 well the first level of management embraced the
6 safety culture concept? That was the only thing
7 that correlated well against everything ---
8 incidents of events at the chemical plants.
9 Okay. Are there additional comments
10 that the Committee would care to make on this
11 subject?
12 MEMBER BLEY: I'm going to follow-up on
13 what you just said, because I've had a fair amount
14 of experience in chemical plants within a military
15 organization. And one of the big problems in the
16 safety culture area was they had one particular
17 kind of chemical that was very dangerous. And the
18 only time they applied their safety requirements,
19 and rules, and processes was when they were
20 actively dealing with that chemical, which meant if
21 they were dealing with an electric panel, if they
22 were dealing with substitute chemicals to test the
23 process, none of the safety stuff applied. And then
24 they were surprised why people didn't apply the
25 safety ideas when they were handling that agent. It

1 needs to be across the board all the time or it
2 doesn't work.
3 MEMBER BALLINGER: I'm not sure I would
4 leave the crosscutting slide to last at the Full
5 Committee.
6 MS. SMITH: Okay.
7 MEMBER BALLINGER: Because you'll just
8 continually get asked questions about that until
9 you show it.
10 MS. SMITH: Okay.
11 MS. KOTZALAS: Okay.
12 MEMBER SCHULTZ: Yes, one other
13 question. You've had an active and robust
14 interaction with industry and the public associated
15 with the development of the program to where we are
16 today. What --- so, you've gone through the --- not
17 only the development of the program through a
18 number of public meetings and then, of course, the
19 public comment ---
20 MS. SMITH: Yes.
21 MEMBER SCHULTZ: --- process, and have
22 gotten a good number of comments that you already
23 addressed in some fashion. I wasn't sure whether
24 the slides that you showed today incorporated
25 everything that came from the very recent public

1 comments.

2 MS. SMITH: Yes.

3 MEMBER SCHULTZ: But really my question

4 is, what do you envision going forward? You know,

5 this seems to still be not the cornerstone piece of

6 it, you're trying to nail that down at this point,

7 at least, to have the program go forward. But

8 there's still a lot to do, so what do you envision

9 in terms of the public involvement process going

10 forward?

11 MS. KOTZALAS: Well, we currently meet

12 with the industry every quarter, and we have had

13 over the past, I would say at least year, we have

14 had a workshop with them during these quarterly

15 meetings in which we discuss the various --- well,

16 wherever we are in the process. And mostly it had

17 been cornerstones. The next time we meet with them,

18 since cornerstones would be done, we'd start

19 talking about SDP and inspection programs. So, we

20 will continue to work with them quarterly, and if

21 we need to have additional meetings in between, we

22 would schedule those. So, I think it has been a

23 collaborative process with the industry. And, also,

24 these have been public meetings so members of the

25 public, you know, they're noticed. Members of the

1 public can attend.

2 When we get work product in good shape,

3 we'll put it out in the Federal Register for public

4 comment. And we have received comments from members

5 of the public, as well as from NEI.

6 MEMBER SCHULTZ: Are the public meetings

7 generally held here?

8 MS. KOTZALAS: They are held --- we

9 alternate. They're held here, and then they're held

10 in Atlanta.

11 MEMBER SCHULTZ: Okay, thank you.

12 MEMBER BLEY: I know you talked about

13 you commitments to the Commission. When is it

14 likely we'd get another look at where you're headed

15 with the SDP? All the claims of being risk-informed

16 are really living there, and we had a lot of

17 questions about the structure of that the last time

18 we talked about it.

19 MS. KOTZALAS: SDP; well, we want to

20 have it completed by June of 2018, but I would say

21 maybe around, what do you think, Steve, maybe

22 beginning in '17 we can start engaging --- okay.

23 (Simultaneous speaking)

24 MS. KOTZALAS: We have to be ready ---

25 you know, we have to be in a form ready enough

1 that we have engaged with our stakeholders, you
2 know, our industry stakeholders and public
3 stakeholders. And I think that that might be an
4 appropriate time.
5 CHAIRMAN POWERS: I would not wait until
6 I had a fully formed work product on that one.
7 MS. KOTZALAS: Okay.
8 CHAIRMAN POWERS: I would get engaged
9 early on that one, because it's --- I mean, quite
10 frankly, the significance determination process
11 isn't resolved in the ROP, and they had 10 years of
12 experience. So, you're --- it will be
13 controversial.
14 Are there any other comments that the
15 Committee wants to make? We have a catechism that
16 we have to follow on public comments. I --- while
17 we open up our external line, I will ask are there
18 any people in the room itself that would like to
19 offer a comment?
20 (Off mic comment)
21 CHAIRMAN POWERS: I hear the line is now
22 open. I will ask if anyone on the line cares to
23 offer a comment?
24 MR. LEWIS: Marvin Lewis, member of the
25 public.

1 CHAIRMAN POWERS: Marvin, please go
2 ahead.
3 MR. LEWIS: All right. Look, first of
4 all, thank heavens people are looking at an
5 oversight program. Second thing is what worries me
6 is they're taking an oversight program, they aren't
7 even taking a look at Table SC, which looks very
8 embattled, and not quite right, and very wrong.
9 The second thing is, somebody was
10 mentioning very small danger to public health
11 mostly to employees at the fuel cycle facilities.
12 Well, I kind of agree with that. I kind of don't
13 agree with that.
14 First of all, going from one fuel cycle
15 to another, are you telling me that this material
16 is no longer fuel cycle material? We got roads that
17 are terrible in Pennsylvania. We just had a couple
18 of months ago a train with 100 plus cars, and now
19 you're going to put radioactive materials and say
20 there's very little danger, and/or no oversight at
21 all in transporting? I'm very taken back at that.
22 Fuel cycle materials are dangerous, especially
23 Hexafluoride which especially have --- having
24 Hexafluoride called HEX. Why? Because the fluoride
25 part of it is the danger, not because it's six

1 molecules of some. And as people hear Hexafluoride,
2 maybe they would think a little bit about it before
3 they do something dangerous.
4 Look, I could go on with a thousand
5 things. I think you're missing an awful lot, and
6 one of them is the transportation issue. Thank you.
7 Bye.
8 CHAIRMAN POWERS: Are there any other
9 online comments that people would care to make?
10 MS. THOMAS: Yes, Ruth Thomas from
11 Environmentalists, Inc. Can you hear me?
12 CHAIRMAN POWERS: Yes, we can.
13 MS. THOMAS: Thank you, that's good.
14 Well, I would like the definition of public. Let's
15 see, you're talking about the meetings with the
16 industry every quarter, contacts in between,
17 contacting NEI, we put it in the Federal Register.
18 So, apparently, there are two types of public.
19 There is the public that benefits from nuclear
20 power, the utilities, the manufacturers, the
21 agencies, government agencies. What about the
22 public that gets the other end of it, that doesn't
23 get benefits, but gets impacts? How --- I'd like a
24 history of how the public has been notified. I
25 don't mean putting it on the internet, I mean how

1 have they been engaged? And when they have been
2 engaged, how were they able to do that? Well, they
3 had to, of course, have lawyers. They had to have
4 interventions, they had to force the NRC to face
5 issues that they weren't facing. So, it's just ---
6 well, I've been doing this a long time and, you
7 know, I just am amazed at how these decisions are
8 made. I'm just --- I mean ---
9 CHAIRMAN POWERS: Do you have a comment
10 on the ---
11 MS. THOMAS: About nuclear fuel
12 services, what --- and about these materials. What
13 was it somebody said? I hope I got it down
14 correctly. But there's such a small potential of
15 facilities like nuclear fuel services having any
16 detrimental effect on either the people that work
17 there, or the surrounding community. And this was
18 10 years ago, there was so much --- so many
19 problems there that they were going to have the
20 National Academy of Science have that as one of the
21 places to do health studies. And now they're not
22 going to do the health study there, and they're not
23 going to do it at the other places.
24 Now, was that money that was in that
25 grant or in that arrangement with the National

1 Academy of Science, what's going to happen to that
2 money? I'd like an answer to that directly.
3 CHAIRMAN POWERS: We, of course, cannot
4 provide you with an answer. We take information and
5 collect facts for presentation to the Full
6 Committee. Are there any other comments?
7 MS. THOMAS: Oh, and we'd like a copy of
8 the justification for --- we just submitted
9 recently on the priorities, and we'd also like a
10 response to that, because the priorities are ---
11 need to be changed, definitely, and have needed to
12 be changed for a long time. And can anybody
13 listening on this --- I think they probably are
14 already aware that as far as there being public
15 input, that doesn't exist except in the distant ---
16 you know, give somebody a few minutes after what,
17 8:30 to --- I mean, you know, if this wasn't such a
18 serious issue, this would be hilarious. Thank you.
19 CHAIRMAN POWERS: Thank you for your
20 comment. Are there any other commenters? Hearing
21 none, we can close the line. Thank you all very
22 much.
23 I think we can adjourn the
24 subcommittee. We stand adjourned waiting anxiously
25 for your full presentation. I think that Margie's

1 plan, she's going to make some adjustments in the
2 viewgraphs that you will present.
3 MS. KOTZALAS: Yes.
4 CHAIRMAN POWERS: But otherwise, I think
5 the general content of your presentation, you'll
6 get to try to do it in a half an hour. I think
7 they've boxed out an hour for this.
8 MS. KOTZALAS: Okay.
9 CHAIRMAN POWERS: So, you get about a
10 half an hour, I think, for the presentation. So,
11 you'll get to talk quickly. In fact, I think the
12 purpose is just a definition of the cornerstones
13 that will be doable.
14 MS. KOTZALAS: Okay.
15 CHAIRMAN POWERS: We stand adjourned.
16 (Whereupon, the proceedings went off
17 the record at 11:00 a.m.)
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Revised Fuel Cycle Oversight Process Cornerstones

September 25, 2015

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RFCOP Project – Current Status and Path Forward

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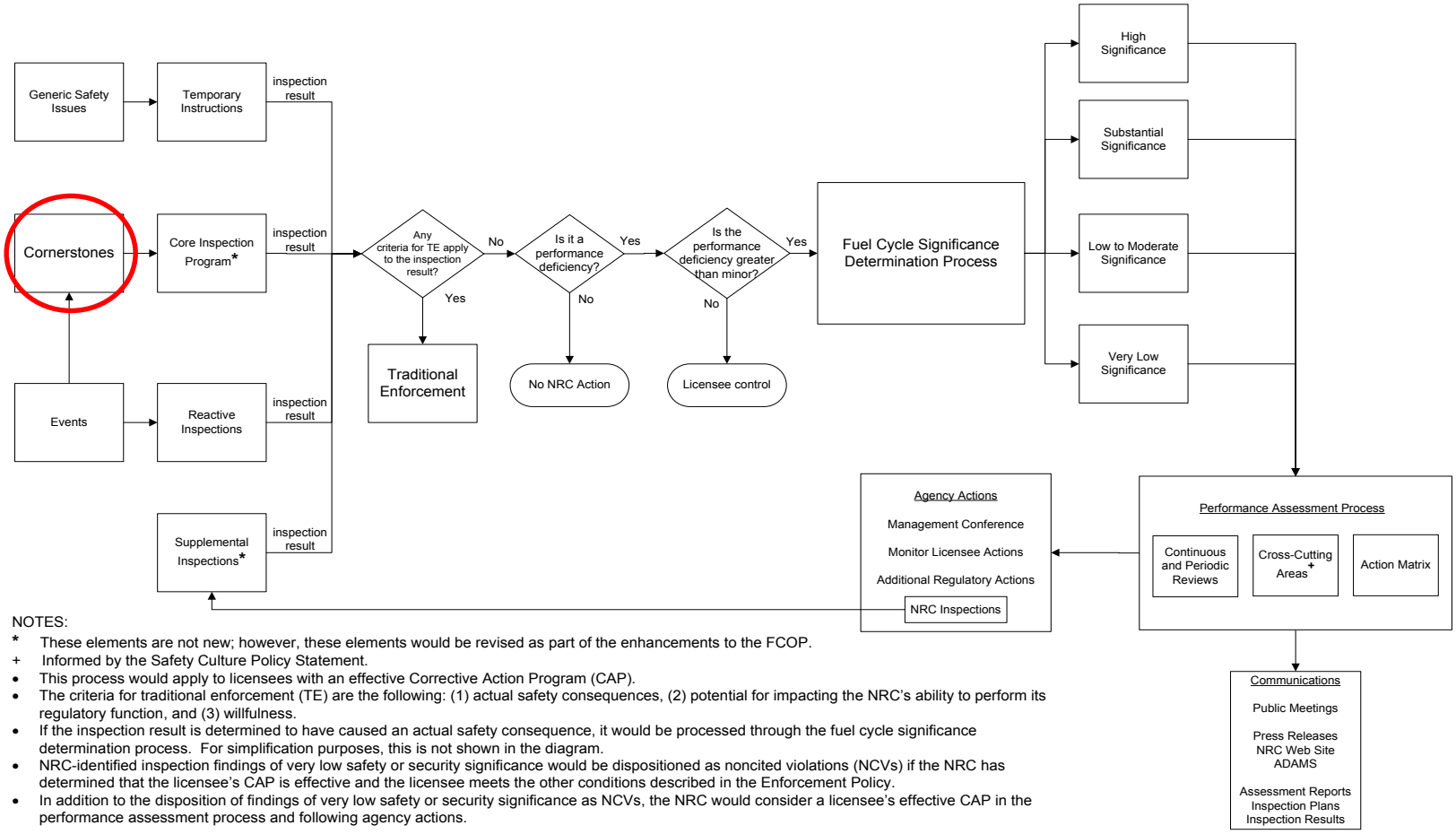
Background

- SECY-11-0140, "Enhancements to the Fuel Cycle Oversight Process" (ADAMS No. ML111180705)
  - Staff recommended the hazards analysis-based cornerstone approach.
  - The ACRS agreed with this recommendation (ADAMS Accession No. ML11284A143).
  - Staff requirements memorandum (SRM) for SECY-11-0140 (ADAMS Accession No. ML120050322) approved the NRC staff's recommendation for enhancing the FCOP.

Background (Cont.)



NOTES:

* These elements are not new; however, these elements would be revised as part of the enhancements to the FCOP.

\+ Informed by the Safety Culture Policy Statement.

- This process would apply to licensees with an effective Corrective Action Program (CAP).
- The criteria for traditional enforcement (TE) are the following: (1) actual safety consequences, (2) potential for impacting the NRC's ability to perform its regulatory function, and (3) willfulness.
- If the inspection result is determined to have caused an actual safety consequence, it would be processed through the fuel cycle significance determination process. For simplification purposes, this is not shown in the diagram.
- NRC-identified inspection findings of very low safety or security significance would be dispositioned as noncited violations (NCVs) if the NRC has determined that the licensee's CAP is effective and the licensee meets the other conditions described in the Enforcement Policy.
- In addition to the disposition of findings of very low safety or security significance as NCVs, the NRC would consider a licensee's effective CAP in the performance assessment process and following agency actions.

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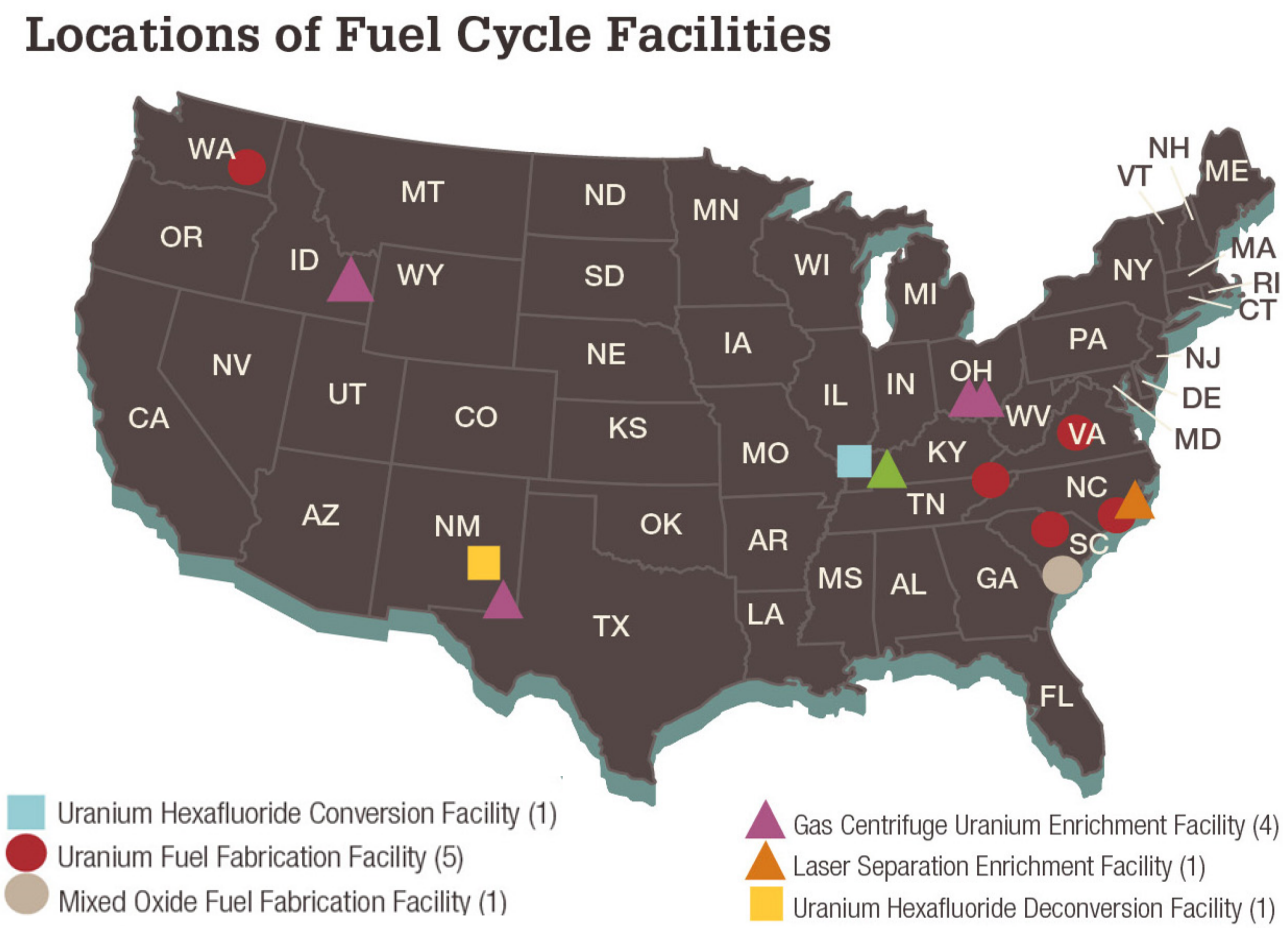
Commission Direction

- The existing fuel cycle oversight process is effective and ensures safety and security.
- Commission directed the staff to continue interaction with stakeholders to develop optimal basis for cornerstones.
- SRM directs staff to
  - Develop and implement incentives for licensees to maintain effective corrective action programs (CAP) (completed)
  - Develop the key components as presented in SECY-11-0140:
    - Cornerstones (due to Commission 1/11/16)
    - Definitions for more-than-minor (completed)
    - Definition of performance deficiency (due to Commission 6/23/2016)
    - Significance determination process (due date 6/29/2018)
    - Performance assessment process
  - Conduct a pilot program (results due to Commission 8/23/2019)
- Staff seeks ACRS input to identify cross-cutting areas

Overview of Fuel Cycle Facilities



List of Facilities

Overview of Fuel Cycle Facilities (Cont.)

- Fuel Cycle Facilities Predominant Hazards
  - Uranium Hexafluoride (UF_6) and Hydrogen Fluoride (HF) releases resulting from UF_6 interaction with moisture
  - Fires
  - Criticality Events
  - Chemical Exposures (ammonia, etc.)
  - Exposure hazards from soluble uranium
  - Facilities not affected by station black out and multiunit events

Discussion of RFCOP Cornerstones

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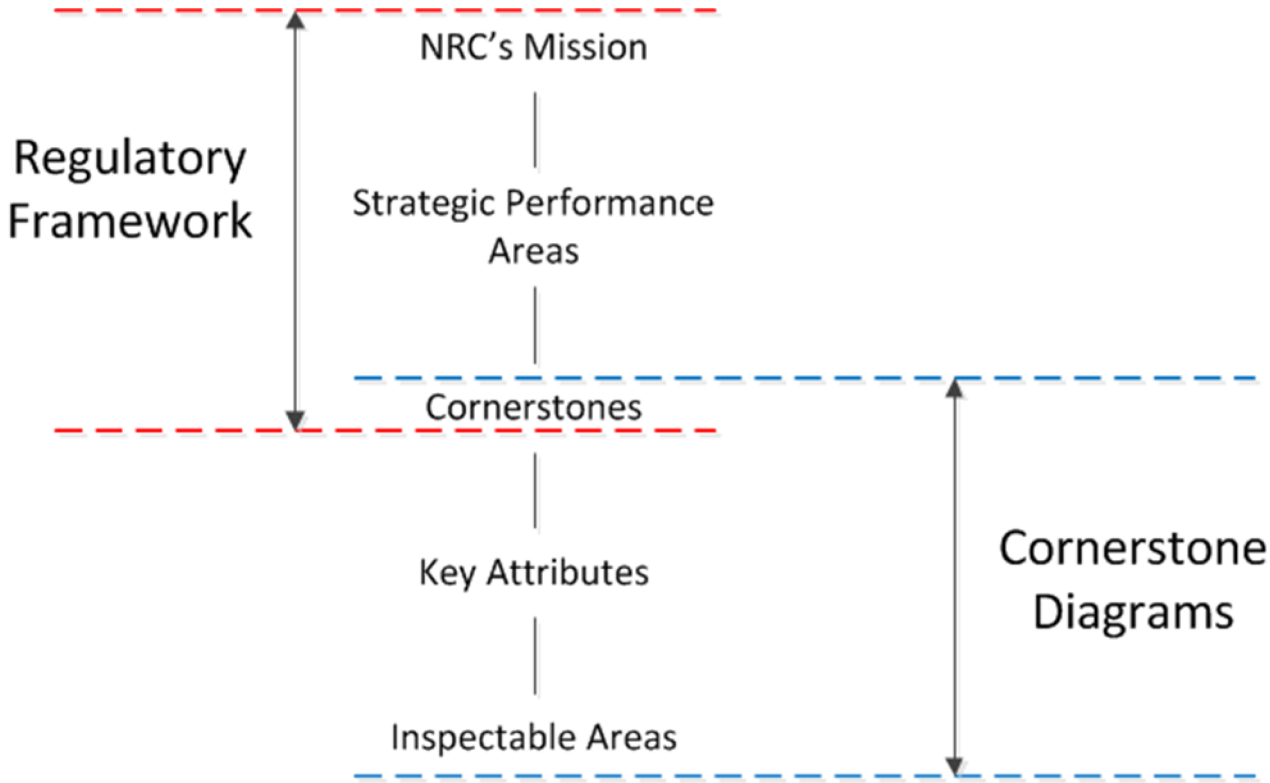
Development Approach

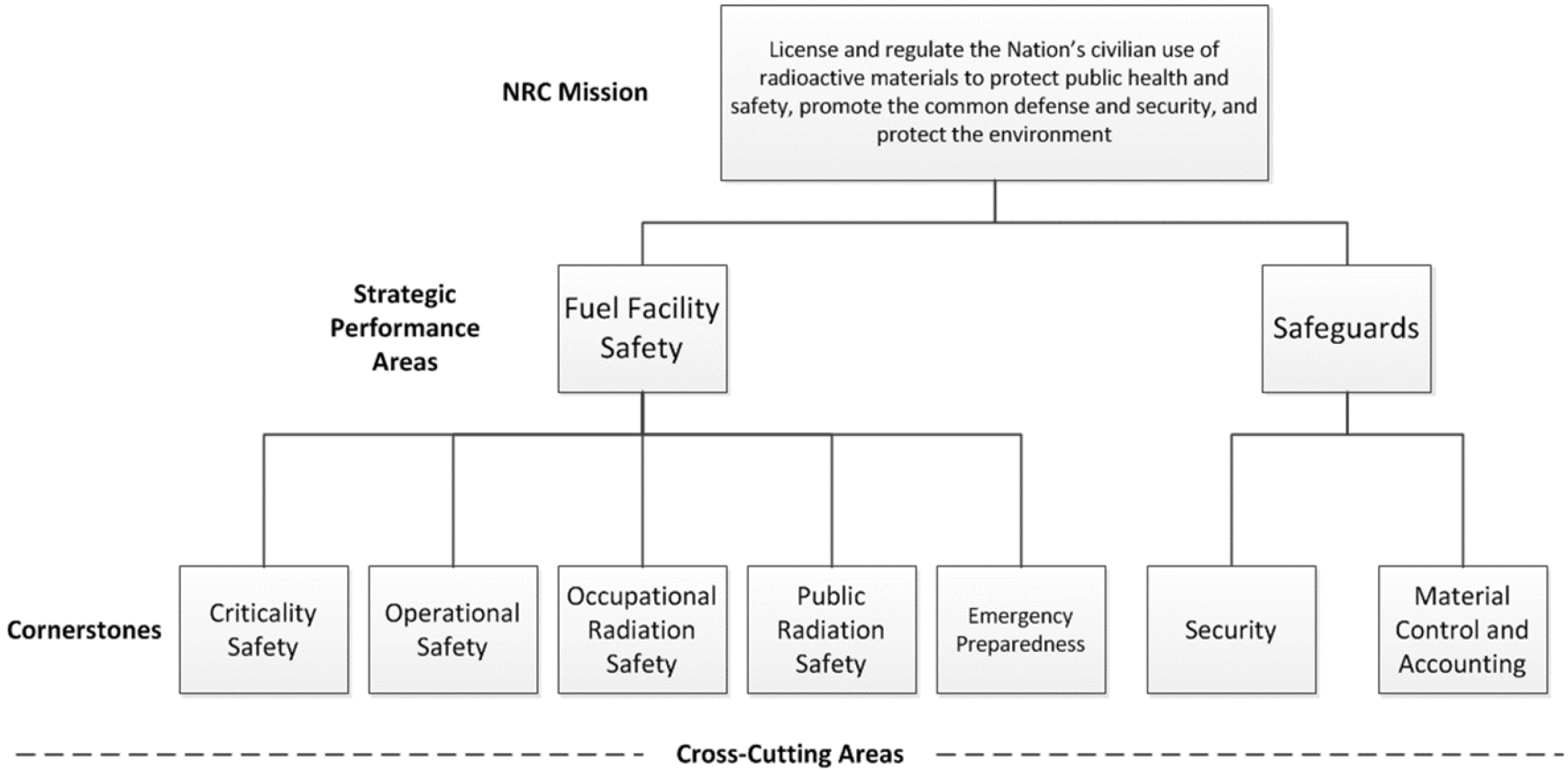
- NRC Strategic Plan (NUREG-1614, Vol. 6)
  - Mission
  - Strategic performance areas of fuel facility safety and safeguards
- Cornerstone
  - Objective
  - Key attributes
  - Inspectable areas
- Considered in context of radiological and chemical hazards and current operations environment
- Cross-cutting areas remain to be identified

Development Approach

Regulatory Framework and Cornerstone Structure



Recommended Cornerstones



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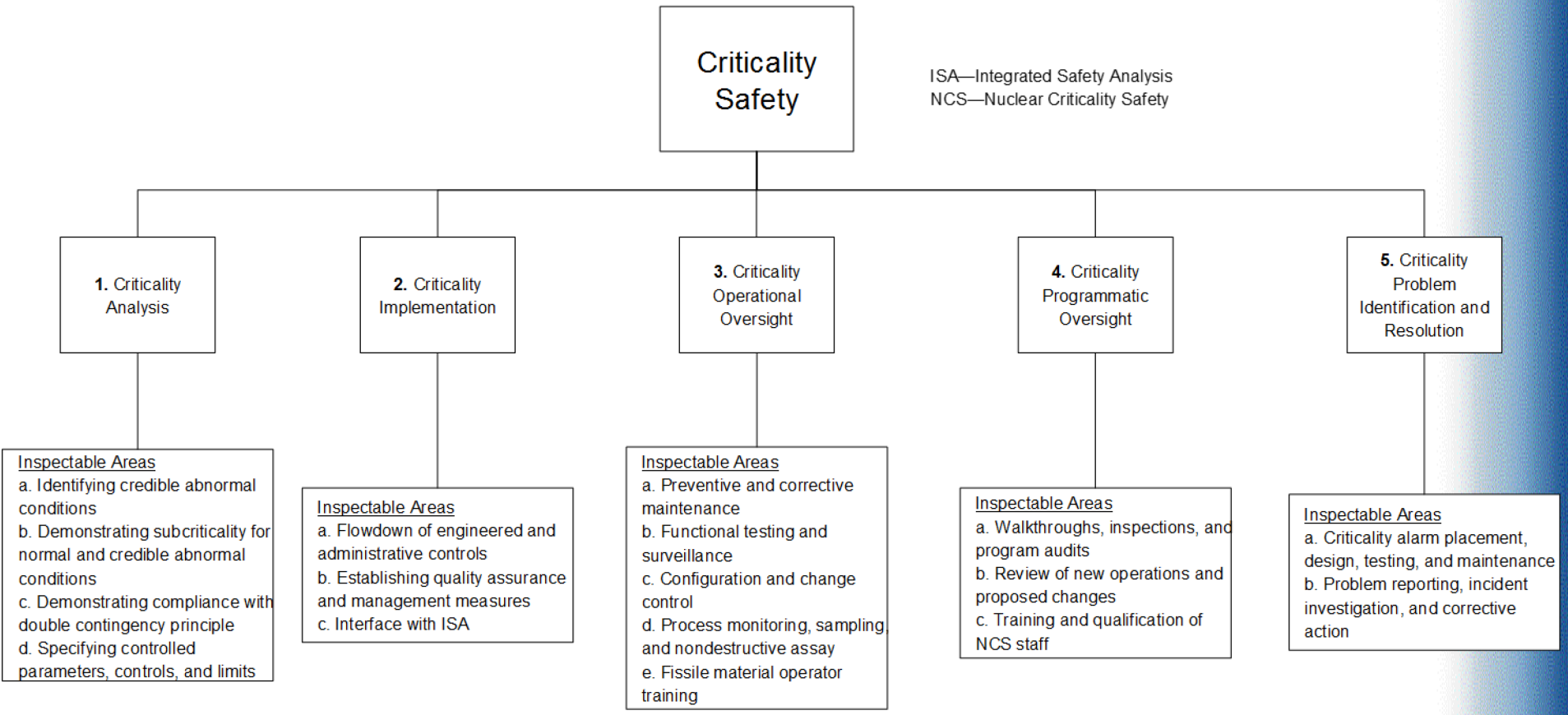
Criticality Safety



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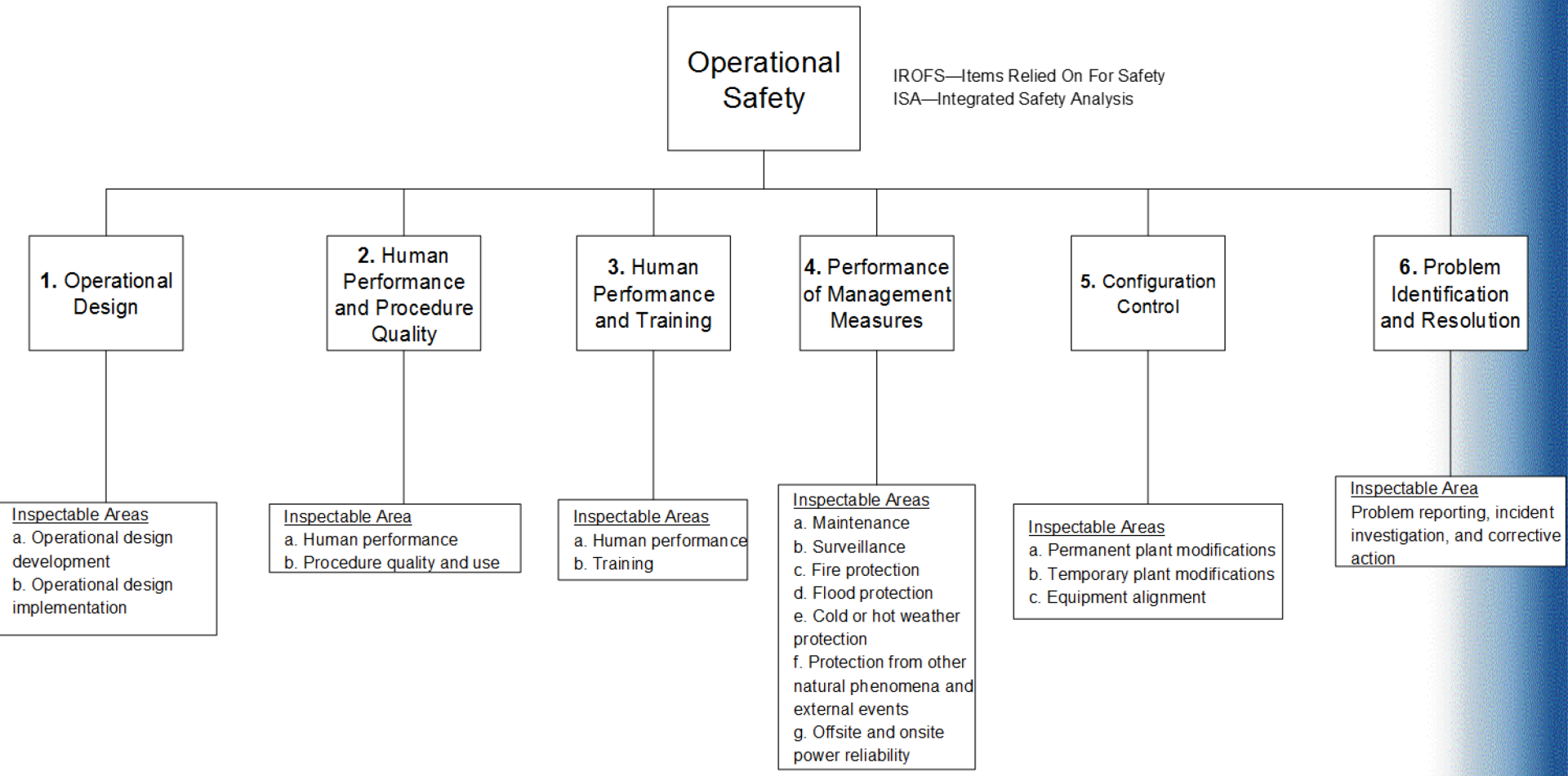
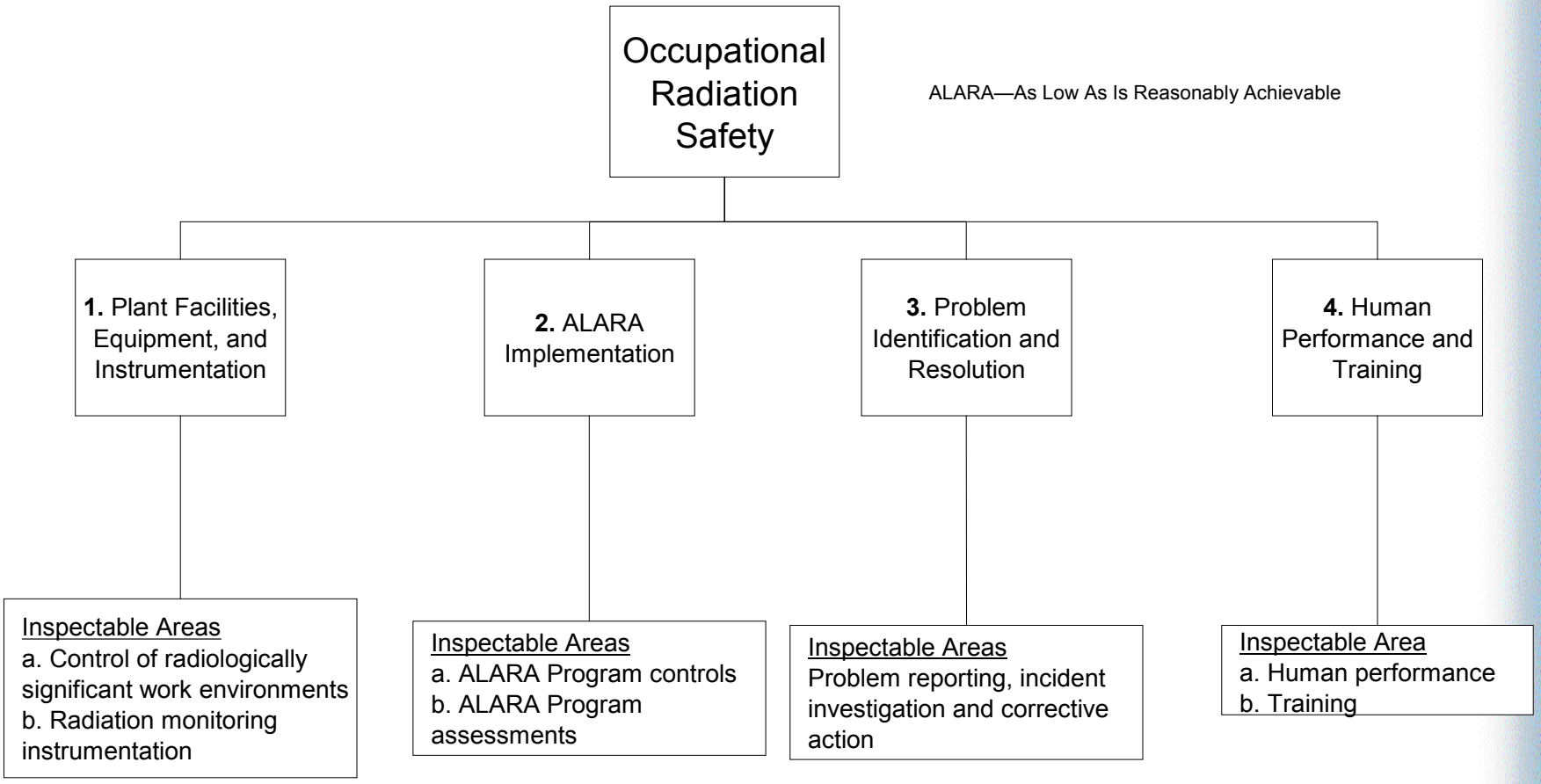
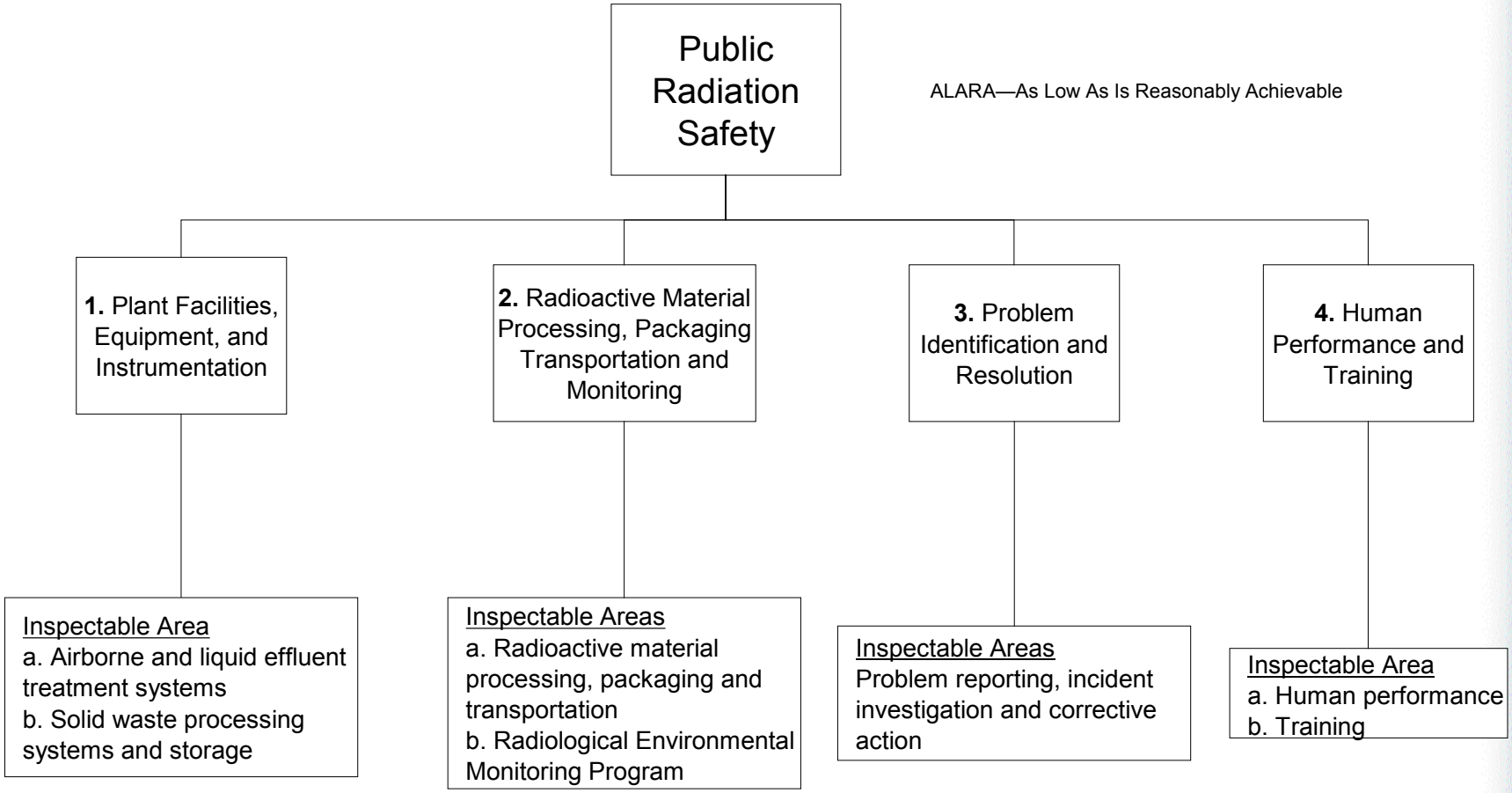
Operational Safety



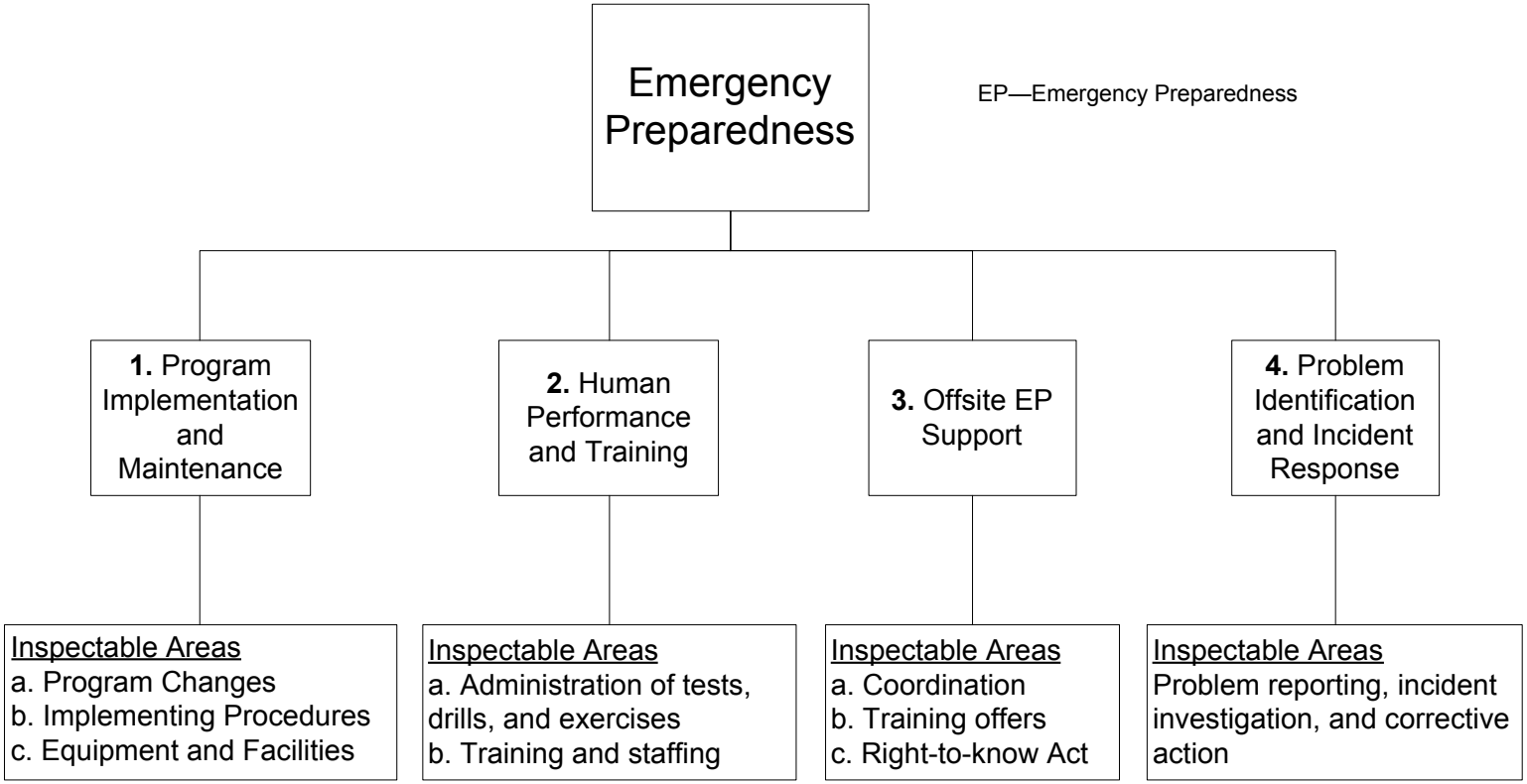
Occupational Radiation Safety



Public Radiation Safety



Emergency Preparedness



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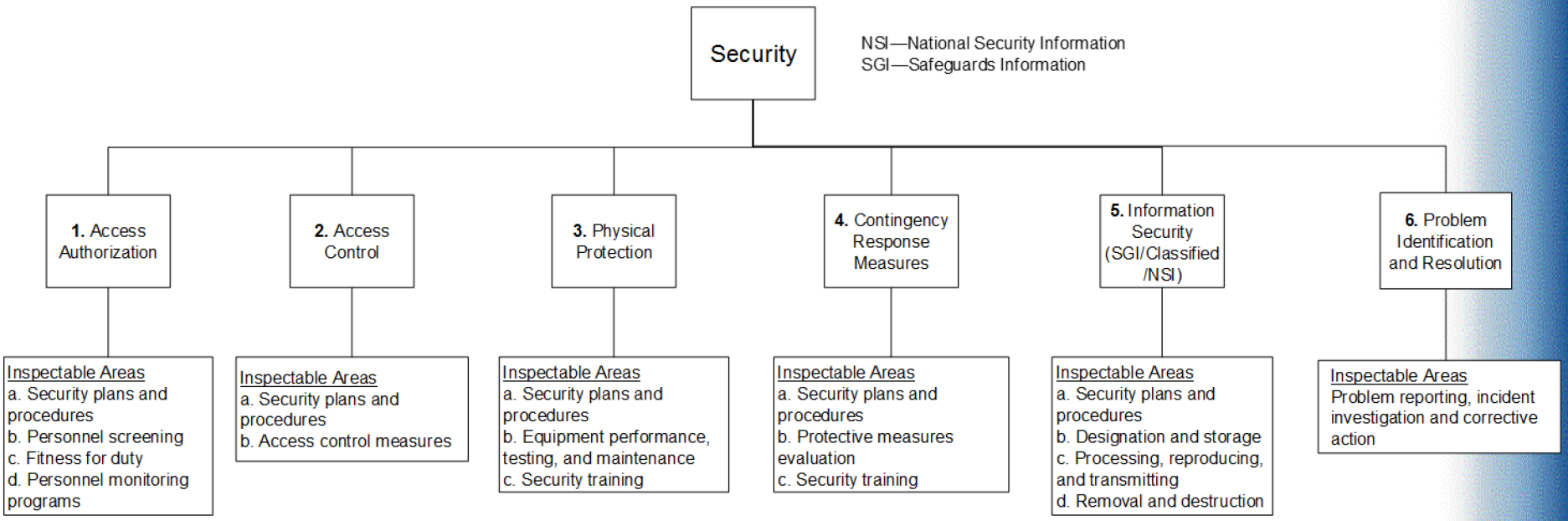
Security



Note: Because there are various categories of licensees, the regulatory and license requirements will vary. Therefore, either all or a subset of the inspectable areas will apply, depending on the licensee category.

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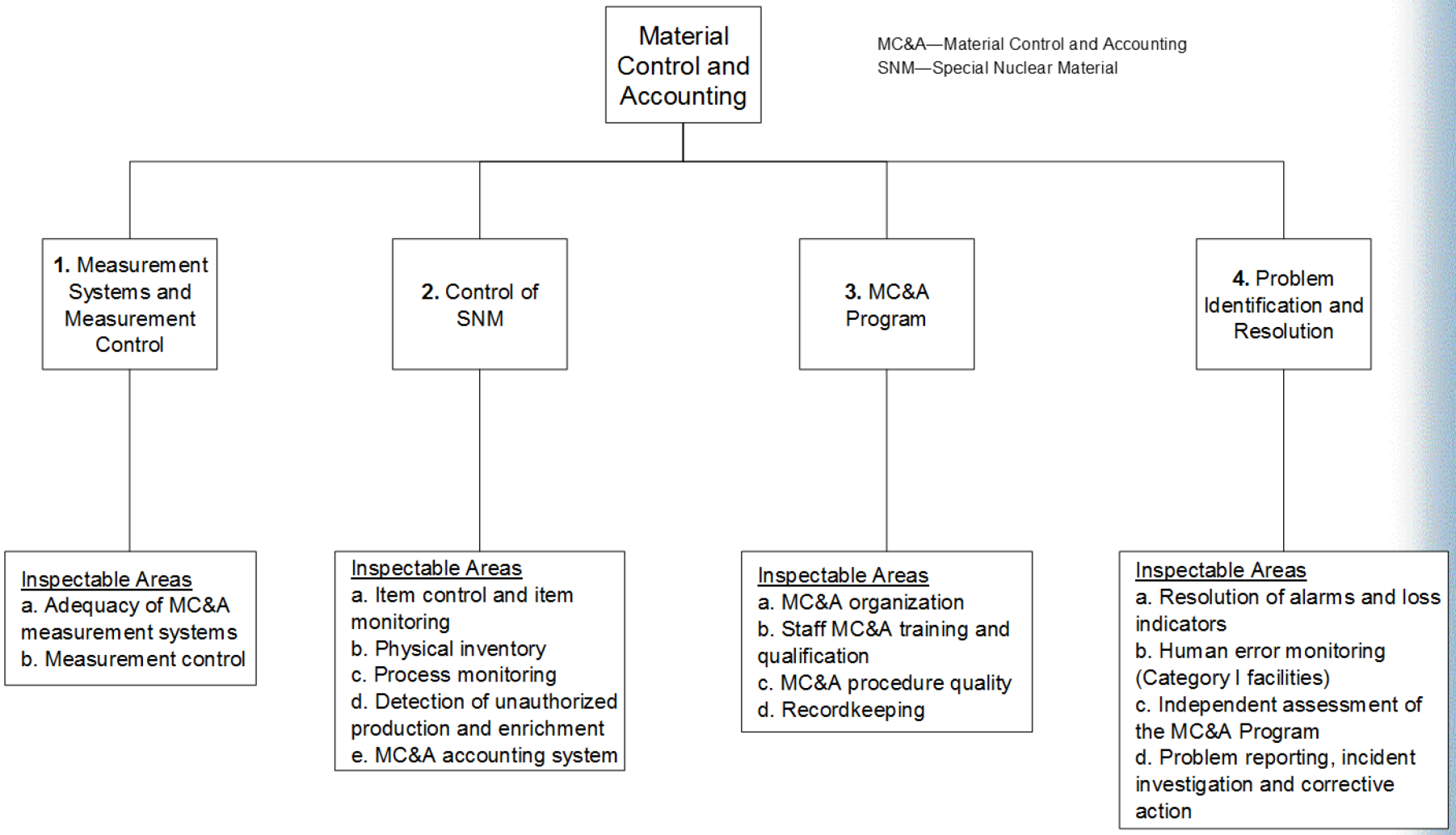
Material Control and Accounting



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Summary

- Staff considered NRC mission, applicable hazards, and operations environment to develop cornerstones
- Recommended cornerstones
  - represent major operations at all facilities
  - are risk-informed via integrated safety analysis (ISA), where applicable
  - align with SRM

Background Slides

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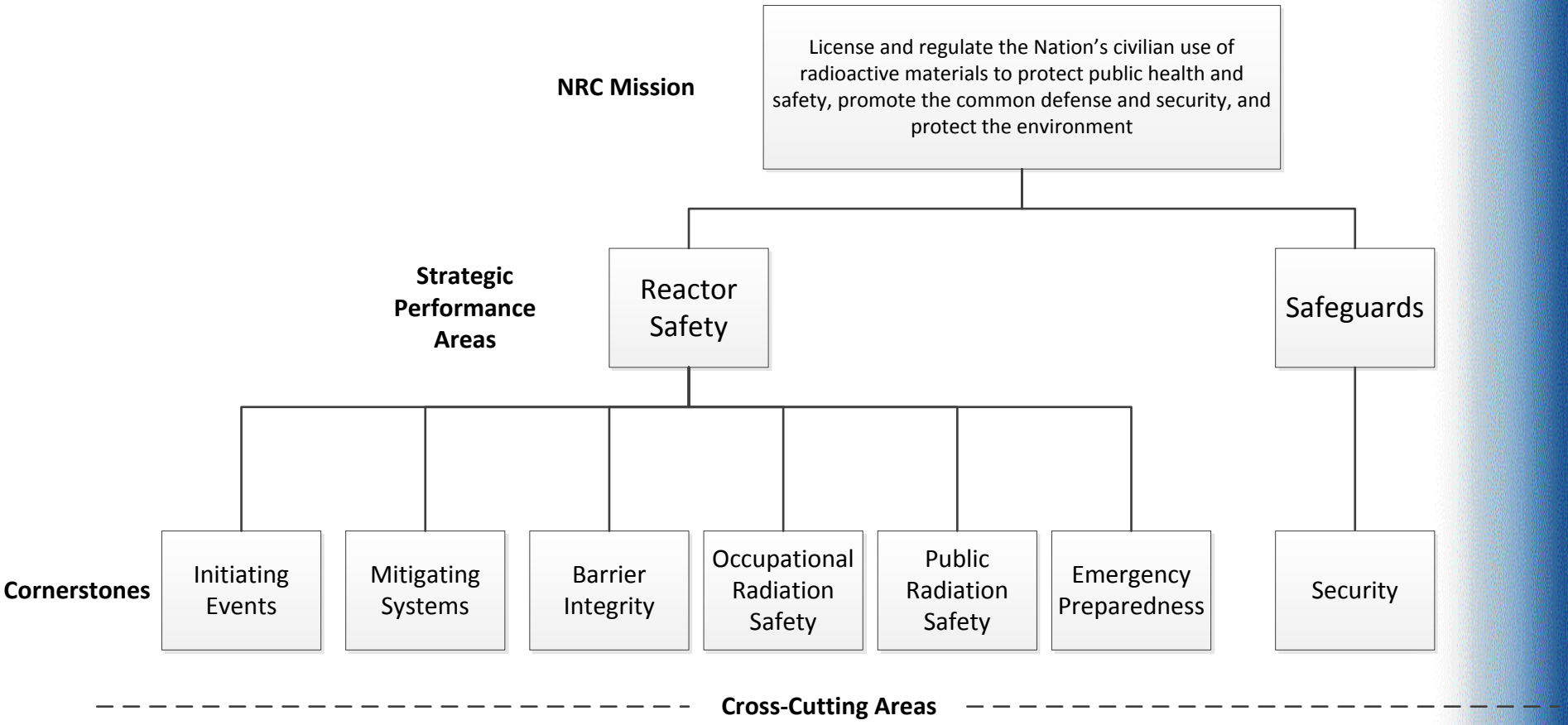
List of Fuel Cycle Facilities

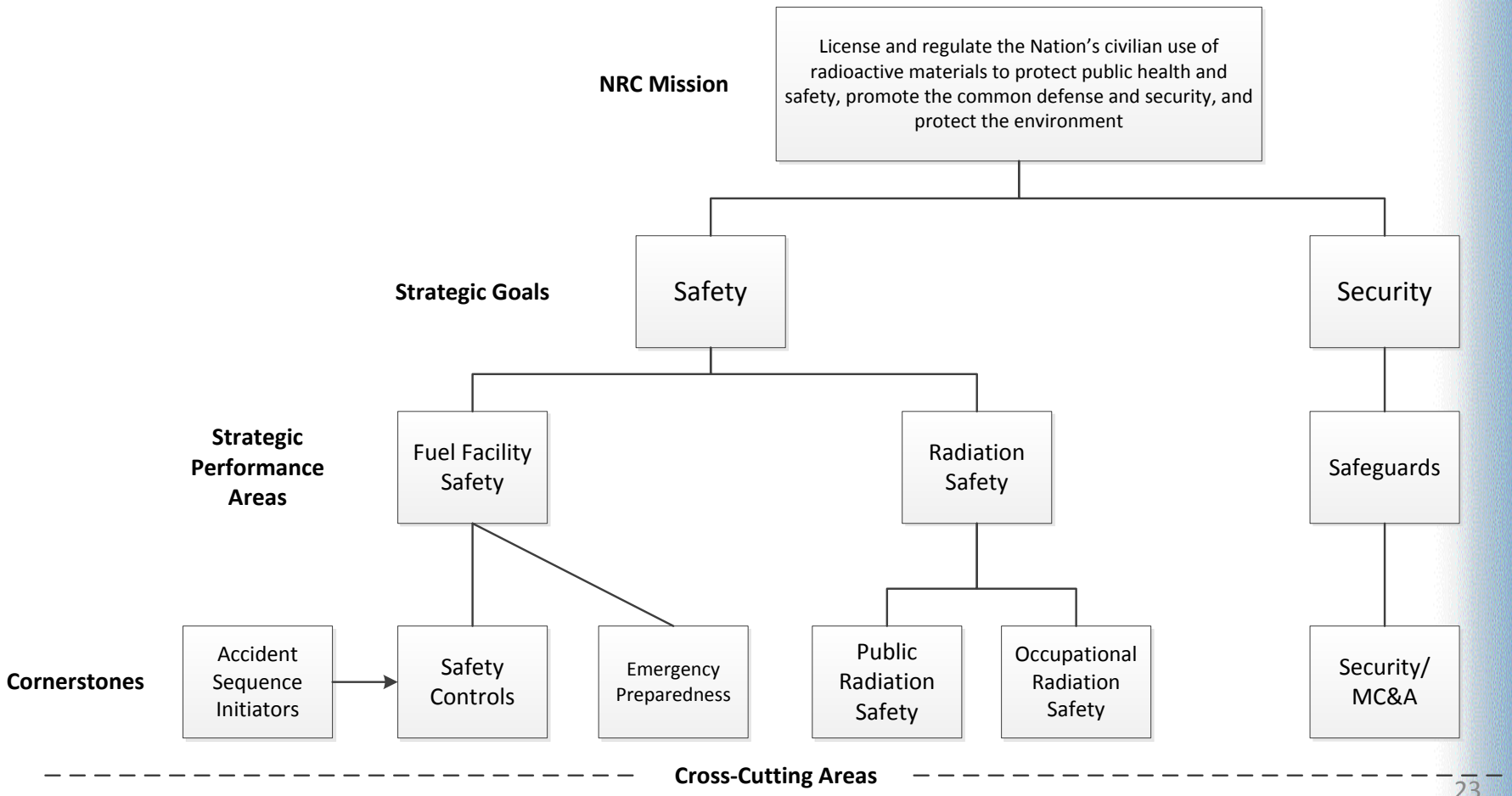
Major U.S. Fuel Cycle Facility Sites

Licensee	Location	Status	Docket #
Uranium Hexafluoride Conversion Facility			
Honeywell International, Inc.	Metropolis, IL	active	04003392
Uranium Fuel Fabrication Facilities			
Global Nuclear Fuel-Americas, LLC	Wilmington, NC	active	07001139
Westinghouse Electric Company, LLC Columbia Fuel Fabrication Facility	Columbia, SC	active	07109239
Nuclear Fuel Services, Inc.	Erwin, TN	active	07000143
Babcock & Wilcox Nuclear Operations Group	Lynchburg, VA	active	07000027
AREVA NP, Inc.	Richland, WA	active	07001257
Mixed Oxide Fuel Fabrication Facility			
Shaw AREVA MOX Services, LLC	Aiken, SC	under construction (operating license under review)	07003098
Gaseous Diffusion Uranium Enrichment Facilities			
USEC, United States Enrichment Corp. Paducah Gaseous Diffusion Plant	Paducah, KY	shutdown, certificate termination pending	07007001
Gas Centrifuge Uranium Enrichment Facilities			
USEC, American Centrifuge Operating, LLC Lead Cascade: Test and Demonstration Facility	Piketon, OH	Active	07007003
USEC, American Centrifuge Operating, LLC American Centerfuge Plant	Piketon, OH	license issued, construction halted	07007004
Louisiana Energy Services (URENCO-USA)	Eunice, NM	active*	07003103
AREVA Enrichment Services, LLC Eagle Rock Enrichment Facilities	Idaho Falls, ID	license issued, construction not started	07007015
Laser Separation Enrichment Facility			
GE-Hitachi	Wilmington, NC	license issued, construction not started	07007016
Uranium Hexafluoride Deconversion Facility			
International Isotopes	Hobbs, NM (Lea County)	license issued, construction not started	04009086

Reactor Oversight Process (ROP) Cornerstones



Hazards Analysis-Based Cornerstones



Overview of Fuel Cycle Facilities (Cont.)

70.61 Performance Requirements	Highly Unlikely	Unlikely	Not Unlikely
High Consequence Publ Dose > 25 rem Worker Dose > 100 rem Publ U intake > 30 mg Publ Chem: Irreversible+LongLasting Worker Chem : Endanger life	Acceptable	Not Acceptable	Not Acceptable
Intermidiate Consequence Publ Dose 5 - 25 rem Worker Dose 25 - 100 rem Publ Chem: Mild Transient effects Worker Chem:Irrever+LongLasting Env releases > 5000 Tbl 2 10CFR 20	Acceptable	Acceptable	Not Acceptable
Low Consequense Publ Dose < 5 rem Worker Dose < 25 rem	Acceptable	Acceptable	Acceptable
Under normal and abnormal conditions: Nuclear process must remain subcritical			

Overview of Fuel Cycle Facilities (Cont.)

- 10 CFR Part 70 (Cont.)
  - Licensees required to meet Subpart H:
    - Operating:
      - » AREVA, Richland, WA
      - » Westinghouse, Columbia, SC
      - » Global Nuclear Fuel, Wilmington, NC
      - » NFS, Erwin, TN
      - » BWXT, Lynchburg, VA
      - » LES, New Mexico
    - Construction/Waiting to start construction
      - » MOX, Aiken, SC
      - » USEC, American Centrifuge, Piketon, OH
      - » AREVA Eagle Rock,
      - » GE-Hitachi Laser Enrichment

Overview of Fuel Cycle Facilities (Cont.)

– 10 CFR Part 40
  - 40.31(j)(1)(ii) which requires, in part, an emergency plan for responding to the radiological hazards of an accidental release of source material and to any associated chemical hazards directly incident thereto.
  - 40.31(3)(ii) Types of accidents, which requires identification of each type of accident sequences for which protective actions may be needed.
  - Major 2 facilities incorporate ISA provisions similar to 10 CFR Part 70 through license conditions

Overview of Fuel Cycle Facilities (Cont.)

- Licensees required to meet Part 40:
  - Honeywell, Metropolis IL
  - International Isotopes, NM
    - » SECY 07-146 directed staff to require implementation of ISA requirements in Part 70 Subpart H

Overview of Fuel Cycle Facilities (Cont.)

- 10 CFR Part 76
  - 76.35 (a)(6) which requires, in part, that the application must include a SAR with a description of equipment and facilities which will be used by the Corporation to protect health and minimize danger to life or property
  - 76.85 which requires, in part, an analysis of potential accidents and consequences from a reasonable spectrum of postulated accidents which include internal and external events and natural phenomena in order to ensure adequate protection of the public health and safety
  - Licensees required to meet Part 76
    - Paducah GDP in Paducah, KY (Shutdown)

Overview of Fuel Cycle Facilities (Cont.)

- Conversion
  - Preparing Uranium (U) for Enrichment
  - Honeywell International in Metropolis, IL
    - Input: yellowcake in 55-gallon drums
    - Output: UF_6 in 14-ton cylinders
- Deconversion
  - International Isotopes Inc.
    - Input: Depleted UF_6
    - Output: High purity fluoride gas

Overview of Fuel Cycle Facilities (Cont.)

- Enrichment
  - Boosting concentration of U^{235} (0.71% $\rightarrow$ 5%)
    - Input: Natural UF_6
    - Product: Low-Enriched UF_6
  - Gaseous diffusion plant:
    - Paducah GDP in Paducah, KY (Shutdown)
  - Laser enrichment facility
    - GE Hitachi in Wilmington, NC (In process of issuance o license)

Overview of Fuel Cycle Facilities (Cont.)

- Enrichment (Cont.)
  - Gas centrifuge plants:
    - LES – National Enrichment Facility in Eunice, NM (operation and construction)
    - USEC – Lead Cascade Test, Facility and American Centrifuge Plant in Piketon, OH (Licensed, delay on construction)
    - AREVA – Eagle Rock Facility in Bonneville County, ID (Licensed, delay on construction)

Overview of Fuel Cycle Facilities (Cont.)

- Fuel Fabrication
  - Produce low-enriched uranium (LEU) in the form of UO_2, or Mixed Oxide (MOX)
  - Facilities:
    - AREVA NP, Inc. in Richland, WA
    - Global Nuclear Fuel – Americas in Wilmington, NC
    - Westinghouse Electric Co., in Columbia, SC
    - Mixed Oxide Fuel Fabrication Facility in Savannah River Site, SC (Construction)

Overview of Fuel Cycle Facilities (Cont.)

- High-Enriched Uranium (HEU) Facilities
  - Enrichment typically involves > 90 wt % ^{235}U
  - Support naval nuclear propulsion program and research reactors
  - HEU fuel facilities
    - Nuclear Fuel Services in Erwin, TN
    - Babcock & Wilcox Nuclear Owners Group (BWNOG) in Lynchburg, VA