

UNITED STATES OF AMERICA NUCLEAR REGULATORY COMMISSION

Title: BRIEFING ON CENTER FOR NUCLEAR WASTE REGULATORY ANALYSIS

Location: ROCKVILLE, MARYLAND

Date: AUGUST 15, 1988

Pages: 1 - 53

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1 UNITED STATES OF AMERICA
2 NUCLEAR REGULATORY COMMISSION

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4 BRIEFING ON CENTER FOR NUCLEAR WASTE REGULATORY ANALYSIS

5 ***

6 PUBLIC MEETING

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8
9 Nuclear Regulatory Commission
10 One White Flint North
Rockville, Maryland

11 Monday, August 15, 1988
12

13 The Commission met in open session, pursuant to
14 notice, at 2:00 p.m., the Honorable LANDO W. ZECH, Chairman
15 of the Commission, presiding.
16

17 COMMISSIONERS PRESENT:

18 LANDO W. ZECH, Chairman of the Commission

19 KENNETH M. CARR, Member of the Commission

20 KENNETH C. ROGERS, Member of the Commission
21
22
23
24
25

1 STAFF AND PRESENTERS SEATED AT THE COMMISSION TABLE:

2 S. CHILK

3 W. PARLER

4 V. STELLO

5 J. LATZ

6 W. PATRICK

7 H. THOMPSON

8 J. BUNTING

9 G. ARLOTTO

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P R O C E E D I N G S

(2:00 p.m.)

CHAIRMAN ZECH: Good afternoon, ladies and gentlemen. Today the Commission will be briefed by Mr. John Latz. Is that the correct pronunciation?

MR. LATZ: That is correct.

CHAIRMAN ZECH: Thank you, sir. Who is the President, and Mr. Wesley Patrick who is a Technical Director for the Center for Nuclear Waste Regulatory Analysis at the Southwest Research Institute in San Antonio, Texas. Also, the Office of Nuclear Material Safety and Safeguards will provide a summary of the activities of the Center for Nuclear Waste Regulatory Analysis.

The Center was established in October of 1987 to provide long-term continuity in technical assistance and research in various areas of the high level waste licensing program. The Center was also established to avoid a potential conflict-of-interest in the licensing of a national high level waste repository.

As we approach the end of the first year of the operation of the Center, the Commission is interested in hearing how well the Center is performing in terms of meeting the contractual requirements. Additionally, we would like to know how well the Center has been able to attract people to the program and provide technical

1 assistance to the staff.

2 We would like to have the staff provide a summary
3 of planned activities for the Center for the coming year.

4 Do any of my fellow Commissioners have any
5 comments to make before we begin?

6 (No response.)

7 CHAIRMAN ZECH: If not, I understand view graphs
8 are available as you enter the room. This is an
9 information briefing this afternoon. Mr. Stello, you may
10 proceed.

11 MR. STELLO: Thank you, Mr. Chairman. We will
12 give you a very short summary view of how the Center has
13 progressed with the passage of nearly a year. I think the
14 bottom line is that we are pleased that the progress that
15 has been made we think is ahead of the schedule that we
16 indicated we would try to follow at our briefing last year
17 when we began.

18 I will ask Mr. Hugh Thompson to introduce the
19 speakers at the table and get right into the briefing.

20 CHAIRMAN ZECH: Thank you very much. Mr. Thompson,
21 you may proceed.

22 MR. THOMPSON: Thank you. As you know, Mr.
23 Chairman, this has been an area of intense Commission
24 interest in our establishing the Center and we certainly
25 appreciate the support. I have been particularly pleased

1 in my activities in overseeing the activities of the Center
2 and the staff's effort to get it up and established. In
3 fact, I would say in my 15 years with NRC, it is probably
4 the most successful integration of both the office of OGC,
5 NMSS, Research, the General Counsel's office, and the
6 administrative support, the Contracts Division, Division of
7 Integration, Resource and Management. It is an activity that
8 really has achieved what I was hoping to achieve with this
9 activity of having many diverse contracts out there into
10 one larger contract to focus all of our attention on the
11 system integration, the systematic effort, to look at it to
12 make sure that we are all ascribing to achieve the excellence
13 that we think and we plan to achieve for this.

14 This morning Mr. Bunting, who is the Program
15 Manager for NRC, we are going to highlight briefly what we
16 expected to get not only for this year but for the coming
17 year on the contract. The Center President, Mr. Latz, will
18 give us a quick summary of the items you discussed, followed
19 by Mr. Wesley Patrick, who is the Technical Director, who
20 will talk about some of the program architecture or the
21 systematic and the regulatory too which is one of the key
22 products that we are looking for this year to get.

23 In fact, when we talk about being accelerated,
24 this activity has in essence been accelerated over what we
25 originally planned back in '84 in that the Department of

1 Energy now has focused on one site and we are focused on
2 one site. So, many of the activities now can be better
3 focused, as well as our own acceleration, to look at the
4 rulemaking and regulatory actions that we have got to take.
5 Joe.

6 CHAIRMAN ZECH: Before you go, I apologize, I
7 should have mentioned earlier that Commissioner Roberts will
8 not be with us this afternoon. He is out of town on a long-
9 standing commitment. But he did ask me to express his
10 respects and make sure you realize, especially our people
11 from Texas, that it is not because Commissioner Roberts is
12 not interested. It is just because he can't be with you
13 here today. He asked me to pay his respects which I am
14 pleased to do.

15 Let's proceed.

16 MR. BUNTING: Okay. Could we have chart three
17 first, please?

18 (Slide.)

19 MR. BUNTING: To set the stage for the Center's
20 presentation, I would like to take a few minutes to remind
21 you about the requirements for year one and year two. First
22 of all, to be an FFRDC, OMB's office of Federal Procurement
23 Policy requires that the contractor establish an independent
24 center of excellence. It is just this development of the
25 Center for Nuclear Waste Regulatory Analysis into a center

1 of excellence which is our primary requirement during these
2 early years.

3 Now, over the past ten months, the Center's
4 management has been engaged in learning the program, coming
5 to understand exactly what NRC must accomplish, and to secure
6 the high quality technical expertise in the appropriate
7 disciplines. The learning process continues, however,
8 significant insights have been gained and there has been a
9 substantial increase in the technical staffing over the last
10 three months. Mr. Latz will discuss that in detail in his
11 presentation.

12 During this period, we have also required several
13 contractual deliverables which will assist the Center
14 management and the newly acquired technical experts in
15 understanding the NRC mission, give us insights into just
16 how that is progressing, and deliver some very needed
17 products. Principal among these is the applications of
18 systems engineering and integration techniques to the
19 development of the program architecture.

20 Now, during the remainder of the presentation, you
21 will hear references to systems engineering and program
22 architecture. The program architecture is defined as a
23 system description. Simply stated, the applications of
24 systems engineering techniques just means a top down
25 systematic analysis of the applicable regulatory requirements

1 to establish that system description.

2 This analysis is focused on identifying each
3 regulatory requirement, its element of proof or that is what
4 must be proven -- its compliance determination method and
5 that is what must be proven. It also includes assessing
6 the lack of certitude about all of that, that is what does
7 the regulation require, any uncertainty about what must be
8 proven or any uncertainty about how to prove it. It will
9 also include the Center's recommended technical programs
10 to reduce those uncertainties.

11 Finally, it reflects the NRC's decisions on those
12 recommended programs and priorities. Once the decisions have
13 been made and the uncertainty reduction methods are being
14 executed, it will then include the corresponding specifics
15 of what should be included in the format and content guide
16 and the standard review plan, each of those key to the
17 specific regulatory requirement. It was felt that such a
18 program which systematically addresses each regulatory
19 requirement would develop the technical basis that would be
20 needed to support not only the programatic decisions but
21 also decisions by the Licensing Board.

22 Through a recent contract change in June of this
23 year, this development process has been changed so as to
24 focus the analysis on certain regulations which are time-
25 phased to DOE's production schedule. For example, siting.

1 We are attempting to produce interim reports on siting by
2 the end of this calendar year. Doctor Patrick's
3 presentation will cover this subject and the Center's
4 progress in greater detail.

5 Now, for year one, we have also specified four
6 research projects which have begun or will begin. They are
7 the integrated waste package, geochemistry, thermohydrology
8 and seismic rock mechanics. Support to the staff production
9 schedules is very limited during this first year, although
10 the Center has undertaken a transportation risk study in
11 support of the Division of Safeguards and Transportation.

12 As we come to understand the program and gain
13 insights from the development program architecture, the
14 Center is also expected to put together plans to facilitate
15 the transfer of technology from our existing contractors
16 into the Center.

17 Now, given the time available today, the Center's
18 presentation is intended to be focused on these first two
19 requirements and that is the development of the Center itself
20 and the development of the program architecture.

21 If we could turn to chart four which are the year
22 two requirements.

23 (Slide.)

24 MR. BUNTING: I would like to remind you that our
25 internal planning envisioned a three-year phase-in to the

1 Center of essentially all of our technical assistance work
2 and our existing contractors. Therefore, development of
3 this Center into a center of excellence is still the
4 priority assignment for year two.

5 Also, during year two, the Center is required to
6 develop the program architecture to the point where it can
7 be baselined and we can control further enhancements and
8 changes through configuration and control procedures. The
9 four research projects that were begun in year one will
10 continue on through year two. And, of interest here will be
11 the delivery of an integrated research plan which is a
12 deliverable stemming from this development of the program
13 architecture. It will reflect the research the Center
14 believes is necessary to reduce these uncertainties which
15 it has identified.

16 Now, the technical support to the NRC staff
17 production schedules and the rate of technology transfer
18 will increase substantially during the second year. For
19 example, performance assessment, that will be a new start
20 in year two and we will try and bring that onboard and by
21 the end of year two have all of the support currently being
22 provided by Sandia transferred either to the staff and into
23 the Center.

24 As a further example, the Division of High Level
25 Waste Management intends to phase-out all of its existing

1 contractors during year two with only a few exceptions.
2 This phase-out will be accomplished primarily with the use
3 of residual funds that were unexpended in fiscal year '88
4 and most all of the FY-88 funds will be redirected to the
5 Center.

6 Now, this reflects an acceleration of the three-
7 year phase-in plan such that we are attempting to be complete
8 with it in two years rather than three years. There are
9 some concerns which I will speak to and Mr. Latz will speak
10 to pertaining to that acceleration.

11 CHAIRMAN ZECH: Now, this phase-in plan you are
12 talking about, is this a schedule? Is it the same thing
13 as transferring of men from the national laboratories to the
14 Center?

15 MR. BUNTING: Yes, sir.

16 CHAIRMAN ZECH: Is that what you are talking about
17 there?

18 MR. BUNTING: Yes. We have contracts now with the
19 national laboratories and also with private contractors.
20 The notion is to ramp those down and bring that technology
21 into the Center.

22 MR. THOMPSON: Right. To the extent that we need
23 to keep some of the private contractors technical assistance,
24 it might well be assisting in some of the site
25 characterization plan reviews, some of the real near-term

1 type of review activities that we might have because we will
2 likely get a fairly significant review early on in the next
3 fiscal year. But to the extent that we can, the essence is
4 really to get the expertise into the Center.

5 Again, I think it will be an issue that will be
6 discussed concerning there are some management decisions
7 that have to be made in order to make that a reasonable
8 transition.

9 CHAIRMAN ZECH: Have you also decided what level
10 of technical assistance or research would be conducted at
11 the Center itself?

12 MR. BUNTING: In terms of funding level, yes, sir,
13 we have.

14 CHAIRMAN ZECH: But how about the research itself
15 and the technical material? In other words, what will they
16 do as far as the technical assistance is concerned at the
17 research center, or will they be contracting it out or
18 farming it out or whatever?

19 MR. BUNTING: We intend for most of it to be done
20 at the Center.

21 CHAIRMAN ZECH: At the Center.

22 MR. BUNTING: Yes, sir.

23 MR. THOMPSON: But there is a balance. They do
24 have the authority to go outside and bring in some
25 consultants as they bring up the expertise.

1 CHAIRMAN ZECH: Okay.

2 MR. THOMPSON: So, that is part of the technique
3 to give you that flexibility but the intent is, to the extent
4 that you can have the expertise in the Center and it fits a
5 long-term objective, that's the way you want to get it.

6 CHAIRMAN ZECH: Okay. But we also have some
7 expertise here on our staff.

8 MR. BUNTING: Yes, sir, very much.

9 CHAIRMAN ZECH: What relationship is that staff
10 expertise going to be to the Center?

11 MR. BUNTING: We hope to have it as a team. I
12 think, if you were down there last week, you could see the
13 beginnings of that. We had a meeting with the Center on
14 developing elements of proof. If you were there, you would
15 see at one time the spokesperson getting up would have been
16 the Center, at one time the spokesperson was the Center's
17 subcontractor, and another time the spokesperson was the NRC
18 staff. They were all working as a team.

19 CHAIRMAN ZECH: Well, I am well aware that we have
20 on the staff a lot of expertise. I had a chance fairly
21 recently to go up and down the floors of this new building
22 and see some of the fine people we have. So, I hope we are
23 using them in a very strong position too and doing as much
24 as we can within our own staff capabilities.

25 MR. THOMPSON: The staff typically is a bit more

1 reactive to either some issues that come up in the short-
2 term, issues dealing with review of the site
3 characterization plan as we did this past year, whereas the
4 Center, we have a bit more stability and long-term planning
5 with what we call some of the rulemaking activities, the
6 research activities, that are planned there.

7 So, basically they are an extension of the staff
8 and they are under the direction of the various technical
9 monitors for the contracts. So, they work very closely
10 together. So, I think it is, as Joe was saying, a very
11 important balance that we have both involved. That is one
12 of the reasons by going to a Center that the level of
13 communication and contact on the same technical issues can
14 be enhanced.

15 CHAIRMAN ZECH: All right. Thank you.

16 MR. BUNTING: The reliance on the Center is no
17 greater than we have had in the past on relying on the
18 individual contractors. They have just been numerous,
19 located at different places and disjointed.

20 CHAIRMAN ZECH: But the purpose of the Center of
21 course is to be a focal point for expertise that we would
22 ordinarily perhaps get from the national labs or from DOE
23 facilities because of the conflict-of-interest concern.

24 MR. BUNTING: That is correct.

25 CHAIRMAN ZECH: That is important to recognize

1 and, therefore, the people that they bring on and they
2 contract with should stand the test, a conflict-of-interest
3 test, at any hearing that should come forth.

4 MR. BUNTING: That is correct.

5 CHAIRMAN ZECH: I am sure our people here
6 understand that. I would like to hear from you in that
7 regard when you take the floor. But I do believe that it
8 is important that our staff here, that we do as much as we
9 can ourselves, and that the technical center will be an
10 extension of what we can't do because we don't have the
11 entire expertise available to us.

12 MR. BUNTING: Yes, sir.

13 CHAIRMAN ZECH: We must keep and we are trying I
14 know to keep the expertise within the staff with the Center
15 as an extension of our staff so we don't have a conflict-of-
16 interest there so we can actually perform as a competent
17 regulator and make the proper decisions regarding regulatory
18 issues.

19 All right. Let's proceed, please.

20 MR. BUNTING: Okay. I would just like to note
21 that because of the recent change to the contract that
22 accelerated this program architecture, the contractor is
23 fairly well committed from now through the end of December
24 to produce these products that I mentioned. So, these new
25 starts in year two and the acceleration in year two won't

1 materialize very much until after the first of the calendar
2 year.

3 CHAIRMAN ZECH: All right.

4 MR. BUNTING: Okay. Now, let's turn to chart five
5 and speak to the development of the Center.

6 (Slide.)

7 MR. BUNTING: We have indicated that the
8 development of the Center's technical excellence is the
9 highest priority. This means that we must have a clear
10 vision of what long-range we want the Center to be. Now,
11 this vision was expressed in the statement of work in terms
12 of a balance between research and technical assistance.

13 Our attempts to accelerate the phase-in of support
14 provided by existing contractors to the Center does pose
15 certain risks and we are carefully considering these
16 potential impacts. For example, if the long-range vision
17 is neglected, it is possible to create an imbalance by
18 consuming all your staff resources for short-term things.

19 Now, given the relative small size of the Center,
20 we are not going to lose sight of that. We are particularly
21 paying attention to maintaining this balance over the long
22 run. So, at this point, I would like to present Mr. Latz,
23 the President of the Center, who will present the progress
24 and accomplishments of the Center during its brief ten months
25 of existence.

1 MR. LATZ: Mr. Chairman, thank you very much for
2 the opportunity to be with you today. Before I commence, I
3 would call to your attention that in the handout we have
4 given you there is an organizational chart that reflects the
5 organization of the Center and its relationship to the
6 Southwest Research Institute.

7 I would like to acknowledge today the presence
8 with us of a fellow vice president of the Institute, Amos
9 Holt. Amos Holt, like I, report directly to the President
10 of the Institute, but Mr. Holt is also responsible for the
11 Institute-wide quality assurance program. The Center, while
12 it will have and does have in place now its own quality
13 assurance program, that quality assurance program is subject
14 to conformance to and audit by the Institute.

15 Amos, if you would please stand up and let the
16 gentlemen, the Commissioners, see you.

17 CHAIRMAN ZECH: Thank you very much. Welcome.

18 MR. HOLT: Thank you.

19 MR. LATZ: We wish to briefly outline the life of
20 the Center to date and inform you of the Center's current
21 status and share with you our vision of the future as the
22 Center grows and its capability to serve the NRC and the
23 mission mandated by the Nuclear Waste Policy Act. We invite
24 your questions at any time during or after our presentation.

25 Chart two, please.

1 (Slide.)

2 MR. LATZ: Mr. Bunting has stated quite clearly
3 the history of and the rationale for the creation of the
4 Center -- avoidance of real and perceived conflict-of-
5 interest, provide for long-term continuity and locus of
6 institutional memory and technical assistance in research
7 work, provide a central capability for performing and
8 integrating all aspects of the high level waste licensing
9 process.

10 During the first ten months of the Center's
11 existence, we have diligently strived to keep these purposes
12 clearly in mind.

13 Chart three, please.

14 (Slide.)

15 MR. LATZ: These underlying purposes have helped
16 us to clearly focus the general objectives of the Center,
17 to function in a timely and cost-effective manner. Even
18 within prudent budgetary and cost bounds, we anticipate that
19 the high level waste program will be carried out within a
20 much broader budgetary constraint. It, therefore, behooves
21 us to move very deliberately in the continuing formation
22 of the Center in order to assure that within those constraints
23 the Center will attain its ultimate objectives to develop
24 and sustain a high level of technical competence within the
25 Center. I give emphasis to those words. These few words

1 express a simple clear concept. They also, however, carry
2 with them the consummate challenge to create an environment
3 which attracts those professionals of high competence,
4 stimulates and motivates those same professionals to high
5 performance, and maintains a high morale among those
6 professionals.

7 We must assure their continuing association with
8 the Center, instilling in them the confidence that they
9 will obtain that professional satisfaction which constitutes
10 their dominant remuneration. I can't emphasize that point
11 strongly enough.

12 The Institute as a whole has a turnover ratio of
13 something around six percent. The Center, being relatively
14 small in numbers, must strive for a much better turnover
15 ratio. So, in order to attain that objective, we must create
16 an environment which not only attracts but motivates and
17 retains the interest of those high professionals to provide
18 technical support and testimony when required on NRC staff
19 decisions, to facilitate streamlining of the licensing
20 process.

21 We are confident that the top down systems
22 engineering approach which Doctor Patrick will address
23 momentarily embodies in the program architecture -- embodied
24 in the program architecture -- will identify those areas of
25 uncertainty which can and must be reduced. The methods to

1 accomplish this objective can range from clarification of
2 definitions to revision of existing rules or the promulgation
3 of new rules where necessary.

4 Chart four, please.

5 (Slide.)

6 CHAIRMAN ZECH: Well, before you go on to that,
7 how have you been doing as far as attracting the type of
8 people that you obviously want for the program?

9 MR. LATZ: I plan to address that momentarily, if
10 I may, Mr. Chairman.

11 CHAIRMAN ZECH: Fine, certainly. Please just go
12 ahead.

13 MR. LATZ: But I will elaborate as you wish.

14 CHAIRMAN ZECH: Thank you. Go ahead.

15 MR. LATZ: To develop and evaluate compliance
16 determination methods, to identify research needs and
17 priorities. These needs and priorities will be driven by
18 the effort to reduce uncertainties. To develop and sustain
19 expert socioeconomic, institutional and environmental
20 analysis capability.

21 Chart ten, please.

22 (Slide.)

23 MR. LATZ: In the material handed out to you are
24 several charts which depict key milestones and accomplishments
25 and the like for the Center. We will not take your time to

1 walk in detail through these charts. Generally, they refer
2 to the early original staffing of the Center, the
3 development of operations plans for each program element,
4 the approval of such plans, and significant accomplishments
5 which were embodied in these operations plans.

6 Mr. Bunting has earlier alluded to the process of
7 the development and implementation of these operations plans.
8 The preparation and implementation of these operations plans
9 was performed by the original core staff of the Center. That
10 core staff is the management of the Center now and will be
11 for the foreseeable future.

12 This exercise, in addition to being a necessary
13 management first step, had the very salutary effect of
14 bringing the Center and the NRC's program management staff
15 to a common understanding of the basic elements of the
16 program as well as the definitive tasks to be initiated in
17 the first year.

18 The dominant accomplishment to date has been the
19 preliminary design of the program architecture and its
20 support system.

21 As Mr. Bunting has indicated, the second contract
22 year will see the completion of the construction of the
23 program architecture. At that time, with the initial
24 exercise of the program architecture, the Center will be
25 able to methodically and rationally determine appropriate

1 areas for uncertainty reduction including those areas of
2 research with the highest cost time benefit potential.

3 Additionally, we will initiate performance
4 assessment work. This performance assessment work should
5 serve to further assure that the Nuclear Waste Policy Act
6 technical program is appropriately and properly focused and
7 directed for best use of the time and resources available.

8 Also during year two, we will be engaged in
9 technology transfer. One of the principal tasks of this
10 technology transfer will be the assessment, evaluation and
11 assumption of all appropriate existing computer codes and
12 models. The Center now has on its staff all necessary
13 disciplines to make these codes resident at the Center.

14 Chart eleven, please.

15 (Slide.)

16 MR. LATZ: Translating the above activities to
17 specific numbers, we now have 20 professional and six
18 clerical employees of the Center. At the end of our first
19 contract year, we propose to have 21 professional and eight
20 clerical employees. At that time, we will have the ultimate
21 depth in expertise, or we will not have the ultimate depth
22 of expertise the Center will require but we will have the
23 essential breadth of expertise we will need.

24 We will have recognized professionals in geology,
25 geochemistry, material sciences, mining, rock mechanics,

1 geomechanics, nuclear health physics, transportation,
2 environmental sciences, chemistry, system analysis and
3 regulatory analysis. We have yet to add a competent
4 hydrologist.

5 At that time, deficiencies in depth of staff will
6 continue to be met by Southwest Research Institute staff and
7 approved subcontractors and consultants. It is a
8 contractual requirement and goal of the Center to possess
9 within its core staff by the end of the third contract year
10 all essential required full-time expertise. Only those
11 "less than full-time" requirements will at that time continue
12 to be met by subcontractors.

13 Responding to your earlier question, Mr. Chairman,
14 we feel we have been imminently successful. We have had
15 numerous opportunities to bring to the Center a
16 geohydrologist. We have not had that one opportunity for
17 the competent geohydrologist that we seek. We are still
18 pursuing that.

19 Chart 12, please.

20 (Slide.)

21 MR. LATZ: This chart does not present a problem.
22 Rather, it reflects, as a consequence of the acceleration to
23 which Mr. Bunting alluded, acceleration of the development
24 of the Center. And, it is a necessary preoccupation of my
25 own. It rather reflects the delicate balances that we must

1 make in order to build to the full balance staff presently
2 envisioned.

3 Let me emphasize that this issue is well
4 understood by the NRC's program management staff and we are
5 addressing it hand-in-hand. It may be of interest to note
6 that the Center's organizational design covers the same
7 breadth of disciplines reflected in the recommendations to
8 the President by the National Academy of Sciences for
9 membership on the Technical Review Board created by the
10 Nuclear Waste Policy Amendments Act. There is not a single
11 discipline mentioned among those recommended by the NAS to
12 the President that the Center has not included in the Center's
13 present organization design.

14 In closing, let me state our gratitude to the
15 NRC's program management staff. Their clear vision and
16 unswerving dedication has been instrumental in bringing the
17 Center to its present state. That dedication exists today
18 and assures our mutual success in achieving the Center's
19 goals.

20 Doctor Patrick is now prepared to discuss with you
21 the Center's work to date in developing the systems approach
22 to the program. However, if there are any questions, Mr.
23 Chairman, about the staffing of the organization or any
24 other aspects of the organization, we would be happy to
25 address those.

1 CHAIRMAN ZECH: I think we can proceed now.

2 MR. LATZ: All right.

3 CHAIRMAN ZECH: We will come back to the questions
4 in a little while if that is all right with my colleagues.

5 (No response.)

6 CHAIRMAN ZECH: Doctor Patrick, you may proceed.

7 MR. PATRICK: Mr. Chairman, Commissioners. Could
8 I have chart number 13, please.

9 (Slide.)

10 MR. PATRICK: I would like to start out setting the
11 stage by indicating to you the four principal goals that the
12 Center is focusing its attention on between now and the end
13 of this calendar year. There are four bullets noted there,
14 the first two of which deal with our role in assisting the
15 NRC staff in fulfilling its regulatory responsibilities.

16 Our approach is to examine the pertinent
17 regulations and to identify those uncertainties that exist
18 within them, focusing on the regulatory but also looking at
19 those institutional issues and technical uncertainties that
20 may exist. You will note there in that first bullet that
21 this years focus is on siting, looking to the submittal of
22 the DOE site characterization plan.

23 Beyond just identifying those uncertainties, we
24 are looking for recommending solutions. It is the second
25 bullet that deals with those recommendations, prioritizations

1 and, probably most important, an examination of the rationale
2 as to which of those candidates might be recommended for
3 rulemaking and which ones might be able to be dealt with
4 simply by further definition for the clarification of what
5 the Commission's staff meant when those rules were
6 originally written and posed.

7 The second two items address another high priority
8 item, mainly the staff review of the site characterization
9 plan. In analyzing the regulatory requirements, we find
10 that although all must be met they range quite broadly in
11 terms of their importance and time critical nature.

12 The third bullet speaks to our analyzing,
13 evaluating and assessing the relative importance that these
14 various requirements might have so that within the resource
15 available we might be able to make some recommendations for
16 which of those site characterization sections should receive
17 the highest priority and which ones would receive secondary
18 priority and so forth depending on the availability of staff
19 resources to address the site characterization plan.

20 Chart number 14, please.

21 (Slide.)

22 MR. PATRICK: Now, 14 and 15 deal with some
23 rather general statements which I won't take our time to
24 address but I would call them to your attention.

25 If we could move to chart number 16, please, we

1 will begin some comments on the systems engineering approach.

2 (Slide.)

3 MR. PATRICK: The approach that the Center has
4 embarked on working shoulder-to-shoulder with the NRC
5 staff --

6 CHAIRMAN ZECH: Do you have the right slide here?

7 MR. PATRICK: We should be on 16, the systems
8 engineering approach. It should be a five bullet item.

9 CHAIRMAN ZECH: I think there is a new slide 16
10 but I don't have it myself I don't think. Let me see if I
11 can find it now. That's 16, huh.

12 MR. PATRICK: There should be a 16 in that packet,
13 sir.

14 CHAIRMAN ZECH: All right. That's a new one, a
15 different one. Thank you.

16 MR. PATRICK: It should be headed systems
17 engineering approach.

18 CHAIRMAN ZECH: Thank you. Proceed.

19 (Slide.)

20 MR. PATRICK: There are five principal attributes
21 of the approach that the Center is undertaking, the first of
22 which is that the approach is very much mission oriented.
23 By that, we mean that it focuses in on the requirements of
24 the Nuclear Waste Policy Act as amended in December of 1987.
25 That provides for us the scheduled drivers that the staff

1 needs to march to in terms of its proactive work, the
2 rulemakings that need to be in place, as well as the more
3 reactive review of site characterization plans, study plans
4 and things of this nature.

5 The second item is that it is requirements-based.
6 By that, we mean that we start with the primary regulation,
7 10 C.F.R. 60, then incorporate any other NRC regulations,
8 other agency regulations that are incorporated in that
9 document by reference, and build up the fundamental
10 requirements which DOE must be shown to be in compliance
11 with, making a very top down broad systematic review of what
12 is required of the DOE.

13 The third principal point to be made is that it
14 is a very proactive approach. By that, we mean instead of
15 waiting until an initial document is submitted by the
16 Department of Energy, our goal in assisting the NRC staff
17 is to identify those areas where maybe additional guidance
18 or clarification of current guidance is needed on a timely
19 basis so the DOE will know as precisely as possible what
20 needs to be provided in some of these crucial documents such
21 as their SCP updates and, above all, the license application
22 itself.

23 The fourth bullet speaks to integration. That is
24 a word that I think means a lot of different things to
25 different people. Here we are taking it to mean two

1 principal things, organizational integration and having the
2 Center properly augment the NRC's broad capabilities as they
3 exist today, and then the functional aspects of integration,
4 so that not only the research needs are met but also those
5 needs that exist in technical review, technical assistance
6 sorts of activities, the special needs that exist in
7 transportation and its transportation risk study, but full
8 integration both organizationally and functionally.

9 If one takes a top down system view, you can
10 identify all of those various interfaces that should exist
11 between the organizations. You can identify the overlaps
12 that could possibly develop between say research and
13 technical review, eliminate those sorts of possible overlaps,
14 and focus the work more closely with the given resource.

15 COMMISSIONER ROGERS: Just on that --

16 MR. PATRICK: Yes, sir.

17 COMMISSIONER ROGERS: -- are you going to say
18 something about what the state of affairs is with respect
19 to integration work and how far along you are with anything
20 involving integration. In particular, are you looking, for
21 example, to test your whole approach to how integrated we
22 are within our NRC activities themselves?

23 MR. PATRICK: Now, there is a leading question.
24 I think, to draw upon the same example that Mr. Bunting
25 gave earlier this week, every day that goes by we are

1 testing that integration. We are seeing with every meeting
2 we have and there is today and tomorrow going on meetings
3 with both your technical review personnel as well as your
4 research personnel in the areas of geochemistry. For
5 instance, we are testing those out day by day, case by case,
6 putting real integration, not just words, in integration of
7 our programs together.

8 So, we are seeing, for instance, in the
9 geochemistry area, a clear definition of the work that is
10 research versus those activities that are more correctly
11 and properly done within the technical review function.
12 Now, within the Center itself, the integration is done quite
13 handily because they are typically very similar sorts of
14 people or, in the case when you have one each geochemist,
15 they are the same individual who is responsible both for
16 the research activity and also the technical review
17 activity.

18 Are those the types of subjects that --

19 COMMISSIONER ROGERS: Well, I don't want to derail
20 your presentation but there is a distinction between
21 considerations of what I would call coupling between parts
22 of the organization and activities to see that they are
23 linked together. The notion of integration seems to me the
24 one that is really all-encompassing. It takes a look at the
25 whole picture and you are talking about a systems

1 engineering approach which does exactly that.

2 I was just asking if you could apply that thinking
3 to a state of affairs of our own involvement and use of our
4 own resources within NRC and how well they are integrated
5 together?

6 MR. PATRICK: We have certainly not made an
7 attempt to make that sort of an application.

8 COMMISSIONER ROGERS: Well, is it possible to do
9 that with that machine?

10 MR. PATRICK: Yes, yes. What we do, just to allow
11 myself to derail the presentation a little bit here, the
12 database that we are developing and will speak to shortly
13 here, what we call a relational database, identifies not
14 only the responsible parties but also the various essential
15 areas of expertise and the support areas of expertise and
16 identifies those various organizations who have primary
17 action for accomplishing each of these uncertainty reductions.

18 So, through that program architecture, through
19 that relational database feature, one is able to do just
20 that sort of assessment. It requires that the database be
21 loaded fully and that of course has not yet been accomplished
22 at this date.

23 COMMISSIONER ROGERS: Thank you.

24 MR. PATRICK: The last point then on slide 16 that
25 I would speak to is the notion that the systems engineering

1 approach must be and is a very dynamic thing. By that, I
2 mean that it can adapt to the changing environment. It can
3 adapt to new legislation being passed, rules being changed,
4 the state of scientific knowledge, gradually improving
5 itself in the coming months and years, and the systems
6 engineering approach accommodates those sorts of changes.

7 Slide 17 speaks to a top down approach that is
8 being used.

9 (Slide.)

10 MR. PATRICK: Speaking to the breadth of the
11 program, the first bullet certainly is the focus, the mine
12 geological disposal system, also known as the repository.
13 But there are also three very important components to that
14 system -- the monitored retrievable storage system, at-
15 reactor storage and the transportation interfaces. Each one
16 of those three can affect ultimately the configuration of
17 the geological repository because each one of those has an
18 interplay in the type of waste form that eventually shows up
19 at the repository.

20 The rates of receipt at that repository and of
21 course configuration of those waste forms is a key to the
22 safety aspects, the nuclear safety aspects, of those
23 operations.

24 The fifth item is a rather broad statement. Taking
25 a top down approach, one forces oneself to monitor various

1 alternative programs which may arise as time goes on. The
2 Nuclear Waste Policy Amendments Act spoke specifically to
3 the possibility of research in the subseabed area. We are
4 not committing any resources into that area at this time
5 other than just to maintain an awareness of what is going on
6 in the subseabed area and any other alternative programs
7 that may develop in the coming months.

8 Slide 18, please.

9 (Slide.)

10 MR. PATRICK: Where the previous slide spoke to
11 the breadth of the program, slide 18 addresses itself to how
12 far the program needs to be capable of going in the future,
13 and it examines the complete timeframe involved.

14 Again, the immediate focus is on construction
15 authorization and the processing of DOE's license application.
16 But 10 C.F.R. 60 speaks to the entire licensing cycle all
17 the way through the decommissioning process. 40 C.F.R. 191,
18 the EPA regulation, even addresses post-closure monitoring
19 during a period of institutional controls. The approach we
20 are taking, although focusing on the license application
21 process, it is amenable to continuing extension and updating
22 to handle all of the phases of the licensing of the high
23 level waste repository.

24 Slide 19 speaks to some of the practical results
25 we hope to achieve. I won't speak further to that today. We

1 will move directly to item number 20.

2 (Slide.)

3 MR. PATRICK: The following four slides address
4 some of the fundamental products that are going to be able
5 to be obtained from having taken a systems engineering
6 approach. I would also bring to your attention in the
7 handout item number four which is titled "Program Architecture
8 Functional Allocation Diagram". It's a neat little block
9 schematic that you might want to have open at your side
10 there as we speak through these four additional slides.

11 The first block that you see there in the page
12 four handout is called the PASS system control. PASS stands
13 for the program architecture support system. You can view
14 that as the software, the front end, sitting at the computer
15 side, that allows you to have access to all of the databases
16 that will be generated in taking a systems engineering
17 approach. You could do systems engineering using a pencil
18 and paper approach in document rooms and so forth. But we
19 anticipate that the mass of documents that will be made
20 available in this licensing program and the crucial inter-
21 relationships among those various documents and analyses
22 is going to be too complex to be able to handle in that sort
23 of an approach.

24 So, we are building a very user friendly front end
25 that will allow NRC staff, ourselves, Commissioners who have

1 so desired, to examine what is in here, to look at things
2 that we will be talking about here in a few minutes that I
3 have termed products.

4 These next four slides that are called products,
5 you might think of at this stage of development more in terms
6 of capabilities that are going to be provided for in the
7 program architecture and will be made available through the
8 program architecture support system.

9 Slide number 20 refers to the relational database
10 which you will note there is also a block on the far right
11 for in your little diagram. The first bullet is very likely
12 the most important that we are dealing with right now. It
13 is the requirements analysis. If you will recall, back in
14 the initial goals slide that I spoke to, it is analysis of
15 those requirements that have been laid down in 10 C.F.R. 60
16 and the various regulations that are incorporated in it by
17 reference. We are going to focus between now and December
18 on those that are siting-related, and those will be our very
19 detailed requirements analyses, so that we understood, to
20 key in with Mr. Bunting's presentation, we need to
21 understand what must be proven to show compliance with each
22 one of those regulatory requirements.

23 I draw your attention also to the third bullet
24 on this slide, namely issue identification and resolution
25 status. Although it speaks to a statusing function, there

1 is also resident in the relational database recommended
2 programs for reducing the uncertainties and for bringing
3 issues that may arise to resolution.

4 Slide number 21, please.

5 (Slide.)

6 MR. PATRICK: A second set of capabilities deal
7 with the matter of text management. I bring your attention
8 here to the first bullet, the storage, retrieval, and
9 contextual searching of regs, statutes, and a variety of
10 other things that will be lodged in what we call the
11 relational database. There are a variety of programs
12 available commercially and custom programs that will allow
13 you to search certain limited databases but what those
14 databases don't provide for the user is a relation of those
15 regulations and statutes to anything else.

16 In this database, we will relate each requirement
17 that is expressed in a regulation directly to the
18 uncertainties that may exist in the programs that the NRC
19 and the DOE have put in place to reduce those uncertainties.

20 The third bullet I would call your attention to
21 deals with a very essential item that we are purposely
22 designing into the system to avoid any duplication. That
23 is shown schematically on your handout on the left-hand side
24 speaking to systems interfacing. We call out three particular
25 items there. The first two are NRC staff items, the open

1 item management system and the work planning system that
2 are available to the staff. The third one is the licensing
3 support system which is currently the subject of rulemaking
4 and will be funded by the DOE and will most likely be
5 administered by the NRC.

6 Slide number 22 addresses --

7 COMMISSIONER ROGERS: Excuse me.

8 MR. PATRICK: Yes, sir.

9 COMMISSIONER ROGERS: Let's go back for a moment.
10 Could you just say sometime a little bit about how your
11 text management program, the last bullet on there, the
12 interface and retrieval from LSS, how that is set up
13 relative to the contemplated structure of LSS? Is there an
14 identity there? Are you using exactly the same technology
15 way of structuring search capabilities and so on and so
16 forth or do you have a different one?

17 MR. PATRICK: We anticipate that the technology
18 will be very, very much the same. Right now the LSS is very
19 much a thing of the future that is in a definitional stage.
20 We are staying very much abreast of it. In fact, we are
21 working with people in the NRC staff specifically to review
22 the key LSS documents as they become available to both
23 provide the expertise that is available at the Center to the
24 NRC to aid them in their analyses and also to at that point
25 bring in the interfaces that are needed so that we can

1 identify what DOE is proposing and what their contractors
2 are developing so that that interface is properly defined.

3 The situation we find ourselves in though is that
4 we have certain contractual requirements that we need to
5 meet now. Waiting until 1990 really isn't an option for us.
6 So we are using search capabilities very similar to those
7 that you would find say in WESTLAW or INQUIRE or some of
8 those types of databases. More specifically, keeping track
9 of the NRC's TLSS, the transitional licensing support system,
10 and as it comes on line will bring the program into
11 compliance with the capabilities of that system.

12 But a key not to lose track of is that with regard
13 to regulations and statutes, we divide them up in a
14 particular way and relate those to these uncertainties and
15 these uncertainty reduction programs, specific staff actions
16 that need to be taken, but we really can't have an effective
17 interface there. Now, that is a relatively small overlap
18 in capabilities but that overlap does exist. We feel it is
19 justified because of the additional requirements that the
20 Center has and the NRC technical staff have for relating
21 these bits and pieces of regulatory requirements to actions
22 they are taking. The simple TECH searching, things of that
23 nature, we anticipate will be completely handled within the
24 LSS once it becomes available.

25 COMMISSIONER ROGERS: It's just a question of

1 compatibility --

2 MR. PATRICK: Yes.

3 COMMISSIONER ROGERS: -- of the systems.

4 MR. PATRICK: Yes.

5 COMMISSIONER ROGERS: That's very important.

6 MR. PATRICK: And, not only compatibility, but we
7 feel divorcing ourselves from duplicative system, maintaining
8 only those portions that need to be present say in the post-
9 1990 timeframe.

10 COMMISSIONER ROGERS: Well, you know, that economic
11 and that's avoiding waste but if they are not compatible,
12 they can't even talk to each other and that is a totally
13 different kind of problem.

14 MR. PATRICK: We anticipate that the compatibility
15 will be there given the documents we have seen in the LSS
16 planning stages. Any other questions on that?

17 CHAIRMAN ZECH: Let's proceed, please.

18 MR. PATRICK: Turning quickly to resource
19 management, there are really only a couple of points that
20 I would like to make there.

21 (Slide.)

22 MR. PATRICK: One, we are speaking of -- if you
23 look at your block diagram -- both critical path method
24 planning, network display type capabilities, cost budget
25 control features, the normal sorts of project management

1 capabilities that the staff would need available to them
2 and that our staff needs available to it to accomplish its
3 mission.

4 I would point out that our highest order schedule
5 in the network program is the NWPAA mandate and its
6 implementation via the DOE mission plan. Knowing what DOE
7 is doing and interfacing with them is the only way that we
8 are going to be able to maintain the kind of a timely
9 program in terms of regulatory analysis and in terms of
10 review of their documents. It's essential to the program.

11 Slide number 23 speaks to a variety of special
12 reports --

13 (Slide.)

14 MR. PATRICK: -- which the systems engineering
15 approach, in particular its implementation, using the
16 program architecture support system, will provide for the
17 NRC. Long-range planning capabilities in terms of resource
18 loading and so forth are project management types of
19 capabilities that are provided. The open item tracking
20 and reporting capabilities are also noted there.

21 The last two items are two that are of very keen
22 interest. That is the format and content guides for the
23 license application which provides DOE with the guidance it
24 needs in preparing its license application and, the final
25 item, the standard review plans which staff will use in

1 reviewing that license application.

2 That summarizes my comments on the systems
3 engineering approach that the Center is taking. I will be
4 happy to entertain any further questions that you might have
5 at this time.

6 COMMISSIONER ROGERS: Could you just say a little
7 bit more about the PASS system control, just how that really
8 does function, particularly with respect to the relational
9 database? It seems to me from what I can glean from your
10 presentation that the real heart of the matter is all in
11 the relational database. That's where all the action is
12 and that is really the whole thing. Almost everything else
13 is supporting that.

14 So, how does the PASS system control relate to
15 the relational database? Just how functionally does that
16 work?

17 MR. PATRICK: We have schematically viewed it very
18 much like a wheel with a hub in the middle. You can put
19 whatever you want in the hub. Our particular hub had the
20 program architecture support systems control at the hub.
21 Now, you can proceed out any one of five spokes on that
22 wheel and find yourself located at monitoring and reporting
23 functions, text management function, network display, cost
24 and budget, or the relational database.

25 What you find in doing that though is that, with

1 the exception of text management, you always pass through
2 and you always go down the spoke that contains the relational
3 database. I think that speaks to the point you are making.
4 With the exception of text management, you always pass
5 through the relational database to pick up the information.
6 That gives you a special report dealing with cost, with
7 schedule, with monitoring and reporting, open item tracking
8 and so forth.

9 CHAIRMAN ZECH: Commissioner Carr, any questions
10 at this time?

11 COMMISSIONER CARR: Yes, I have got one question
12 which I think Commissioner Rogers was approaching if I
13 understood him right. That is how many bosses do you have
14 at the NRC?

15 MR. LATZ: I will answer, if I may. There is one.

16 COMMISSIONER CARR: Who is that?

17 MR. LATZ: Mr. Joseph Bunting.

18 COMMISSIONER CARR: So, all requirements to you
19 go through him.

20 MR. LATZ: Yes, sir.

21 COMMISSIONER CARR: So, you don't have coming in
22 laterally from the sides do this and do that.

23 MR. LATZ: I don't know what Mr. Bunting has
24 coming on him but we don't.

25 COMMISSIONER CARR: Okay. That satisfies me.

1 Thank you.

2 CHAIRMAN ZECH: Commissioner Rogers, do you have
3 any other questions?

4 COMMISSIONER ROGERS: Yes, just a little bit. How
5 is the negotiated rulemaking incorporated into the program
6 architecture? In particular, how does it show up in the
7 process diagram? Does it? Should it?

8 MR. PATRICK: Are you speaking particularly to the
9 LSS negotiated rulemaking?

10 COMMISSIONER ROGERS: Yes.

11 MR. PATRICK: It shows up in the sketch, item
12 number four, as accommodating the interface with the LSS.
13 In terms of impact that the program architecture and the
14 systems approach might have on the negotiated rulemaking,
15 I think it would be inaccurate to say that we are having
16 much of an influence at all because that rulemaking was so
17 far along when the Center came into existence.

18 Another possibility I think, to look at how program
19 architecture is affecting rulemaking more broadly, would be
20 to look at the interactions that we have begun with NRC
21 staff on such other potential rulemakings that are being
22 contemplated such as groundwater travel time and some of
23 that nature. We began in fact just this last week working
24 very closely with those NRC staff members who are putting
25 in place the technical work that may very well likely lead

1 to rulemakings in those areas that are currently being
2 contemplated.

3 COMMISSIONER ROGERS: Well, if I look at the
4 process diagram for developing and maintaining the program
5 architecture.

6 MR. PATRICK: That's slide number three.

7 COMMISSIONER ROGERS: Whatever number it is. It
8 doesn't have a number here.

9 MR. PATRICK: Uh-huh.

10 COMMISSIONER ROGERS: This flow diagram.

11 MR. PATRICK: Uh-huh. If you would move to block
12 15, we generally cover there those uncertainty reduction
13 methods and the related information requirements in the NRC
14 programs that would lead to reduction in uncertainty. Now,
15 depending on the type of uncertainty it is, if one gets to
16 block 15 via 4a and 4b up in the upper left, we are speaking
17 of institutional and regulatory types of uncertainties which
18 are best addressed through rulemaking or some other related
19 action.

20 If one is looking instead at 4c, a technical
21 uncertainty, the uncertainty reduction methods would more
22 likely be some sort of a research program or a recommendation
23 that DOE undertake a research program. So, that would be
24 where you would see rulemaking coming up as a specific
25 recommendation to reduce regulatory uncertainties or

1 institutional uncertainties that might exist.

2 COMMISSIONER ROGERS: I see. So, that's how it
3 fits into this general process. All right. You said
4 something in one of your slides and I have changed my packet
5 here in the meantime, so I don't even remember which one it
6 was on now, but you referred to the various elements that
7 could influence each other. That is why you are taking
8 the systems approach. But what is your present thinking
9 about the status of the at reactor storage insofar as it may
10 affect the repository itself?

11 In particular, we have been hearing lately about
12 packaging and the possibility of standardization. So, we
13 are very sensitized to the whole question of at reactor
14 storage and how that is being done or might be done in the
15 future. How does that fold back into looking at the
16 repository itself?

17 MR. PATRICK: Are you asking for the kind of
18 effect it might have or how we are dealing with it?

19 COMMISSIONER ROGERS: Well, what is your thinking
20 just on that?

21 MR. PATRICK: Okay.

22 COMMISSIONER ROGERS: Have you given some thought
23 to it? Is it too early for you right now to comment on that?

24 MR. PATRICK: I always want to jump in, sometimes
25 when I shouldn't, but the part of it that we have looked at

1 ever so briefly is the matter of what happens before one
2 does at reactor storage. If there is a step of consolidation,
3 you begin changing the source term, both in terms of radio-
4 nuclide content and also in terms of heat output, both of
5 which have an effect on the repository. Now, nuclide content
6 also is going to have an effect on the transportation aspect
7 but at the repository then you begin changing the temperature
8 environment that would exist around the waste packages and
9 you could affect the technical performance of the repository.

10 COMMISSIONER ROGERS: Well, I don't know to what
11 extent you have been in that, but it seems to me that it is
12 very important that we start to link these things together
13 in our considerations. If we are talking about packaging
14 and standardization of packages for at reactor storage and
15 later on they are going to go into this repository, I think
16 it is well to try to take the systems approach on this whole
17 thing and perhaps something in your activities could be
18 helpful in supporting that.

19 CHAIRMAN ZECH: Do you have any comment?

20 MR. PATRICK: No additional comment at this time
21 anyway.

22 CHAIRMAN ZECH: Thank you. Well, perhaps we could
23 hear from the staff on any planned activities they have for
24 the Center for the coming year.

25 MR. THOMPSON: As you know, probably the key

1 element we are looking for is the December deliverable of
2 the program architecture as it relates to the siting
3 activities. I think those were highlighted earlier to us
4 during the briefing today and, generally, there may be some
5 others in the research program but that is the one that we
6 see will be giving us an effective tool looking at the site
7 characterization activity plans that DOE is developing, as
8 well as identifying primarily those programs that we will
9 use both in the research area and either our rulemaking
10 activities to reduce some of this uncertainty that we have
11 talked about in our own regulations and whether we need to
12 make any changes into our branch technical positions or
13 acceptance criteria.

14 Joe, you may have some other ones.

15 MR. BUNTING: Well, we do have the December
16 deliverable which is the first slice of these regulations
17 trying to take it through block 15 of this complex diagram
18 that you see here. But the major deliverable in year two
19 will be to try and take all of these regulatory requirements
20 all the way through step 22 by the end of the second
21 contractual year. And, I hope you can appreciate the
22 complexity and the ambition of that undertaking.

23 In fact, when we start off on doing this, we don't
24 get very far before we modify the chart one more time to
25 reflect things we didn't know when we started. But that is

1 the fundamental thing we are trying to get done. In
2 addition to that of course pick up all of the -- be in a
3 position to pick up all of the existing contractors and move
4 that work into the Center at the end of year two which means
5 all those plans have to be made at the same time we are
6 trying to go through this process.

7 So, we have some very strong competing priorities
8 to try and execute in year two.

9 CHAIRMAN ZECH: And, do I understand that you are
10 trying to get your staffing completed also by the end of the
11 second year?

12 MR. LATZ: We are accelerating it, Mr. Chairman,
13 under the proposed operations directives which the program
14 management staff is discussing with us for year two. If,
15 indeed, that is the way they finally direct us, then, yes,
16 we would be at the end of year two on the accelerated basis
17 very close to year three staffing.

18 CHAIRMAN ZECH: That was my understanding.

19 MR. THOMPSON: But that is a key element that we
20 are discussing right now at the Center to make sure that
21 this approach doesn't create an imbalance. Again, it is
22 their ability to find the right individual at the right
23 time. They are, you know, a fairly small organization, as
24 we are small, so it is an effort on both of our parts and
25 a requirement on both of our parts to make sure that that

1 staffing is done very appropriately.

2 CHAIRMAN ZECH: Well, I appreciate your emphasis
3 on the right kind of people too because that is important.
4 I recognize you are a small group but that is even more
5 reason for making sure that you select the highest quality
6 experts that you possibly can. They will be advising you
7 and they will be advising the staff and the Commission in
8 extremely important matters for our country. I certainly
9 would encourage you to attempt to get the highest quality
10 experts you can.

11 But you will be trying to do that at the end of
12 the second year, to fill out your staff to the best of your
13 ability with the highest quality you can; is that correct?

14 MR. LATZ: Yes, sir, Mr. Chairman.

15 CHAIRMAN ZECH: Are there any other comments?

16 MR. LATZ: No, sir, that's all I have.

17 CHAIRMAN ZECH: All right.

18 MR. THOMPSON: Well, let me say research is an
19 important part of this and we certainly are working very
20 closely with research to integrate that in effectively in
21 our program. I have been very pleased with the support that
22 research has given us throughout the program. Certainly one
23 of the products I think we are looking for next year is, you
24 know, some focus on some of the research activity and
25 starting to really implement those activities.

1 CHAIRMAN ZECH: Mr. Arlotto, would you like to
2 comment, please?

3 MR. ARLOTTO: I would like to say, Mr. Chairman,
4 that you have hit on a couple of other things of concern,
5 and that is particularly this transfer of technology is an
6 extremely difficult thing. I think the Center understands
7 that issue. We have built up a certain capacity and
8 capability with our contractors, particularly in the
9 laboratories that now must be transferred to the Center,
10 which it has built up over many years. We are going to try
11 to do that in a relatively short timeframe for them to come
12 up to speed regarding technology as evolved over many years.
13 I think that that is an issue that the Center recognizes is
14 a very difficult one.

15 The use of staff I think will be variable.
16 Initially I would expect that our staff will be very, very
17 heavily involved with helping the Center come up to speed
18 with the transfer of technology as well as providing a direct
19 service to Mr. Thompson. I am speaking now of the research
20 staff. But because we do have a significant capability in
21 modeling in particular and in hydrology which will help I
22 think solve some of these issues.

23 Of course the real big issue that must be faced
24 by the Center is the integration of all these variables,
25 the development, the hiring, development of staff, addressing

1 short-term issues of NMSS, preparing for longer term
2 research issues and obviously the transfer of technology
3 I just mentioned. These all must be integrated into the
4 plan while they are trying to staff up. It's very, very
5 difficult.

6 We will be working closely with them. Within the
7 staff, I have no difficulty. We meet monthly on the highest
8 levels in the waste and research. So, we know exactly where
9 we are coming from and how we are going to integrate.

10 CHAIRMAN ZECH: Thank you very much. Commissioner
11 Rogers, you had another comment or question.

12 COMMISSIONER ROGERS: Well, I think at our last
13 meeting that you presented to us some months ago, as I
14 recall there were certain initiatives that you felt were
15 important for you to take that you took despite the fact
16 that you weren't budgeted for them as I recall. I wondered
17 how that kind of a situation is working out and are there any
18 other items that you feel at this time are important for
19 the coherence of the program that somehow we have had
20 difficulty getting budgeted?

21 MR. LATZ: Commissioner, yes, I do recall our
22 conversation. Let me hasten to say that part of that
23 conversation was to assure you of the commitment of Southwest
24 Research Institute to see that the needs of the Center are
25 satisfied. Now, having said that, please accept that the

1 first years exercise is quite a learning experience. We
2 knew how to work hard. We are now rapidly learning how to
3 work smart. That has not been all of our own doing. It
4 has been with the very excellent guidance, direction,
5 cooperation, working shoulder-to-shoulder with program
6 management staff within the NRC.

7 Those kinds of issues to which you allude are well
8 understood by the program management staff and I feel as we
9 approach the operations plans for contract year two, they
10 will all be resolved. So, I guess the short answer to your
11 question, Commissioner, is I think we are past those
12 problems.

13 COMMISSIONER ROGERS: Thank you.

14 CHAIRMAN ZECH: Any other comments from the staff.

15 (No response.)

16 CHAIRMAN ZECH: Well, let me on behalf of the
17 Commission thank you Mr. Latz and Doctor Patrick for being
18 with us here today. I want to thank the staff for their
19 monitoring of this important initiative. It would appear
20 that we have gotten off to at least a reasonable start on
21 a very important project for the first year. I would say
22 that the people involved in it are probably the most
23 important element of any kind of initiative like this.

24 The Center has a very important role to play of
25 course in the NRC's pre-licensing and licensing activities

1 for the national high level waste repository. As the Center
2 develops further expertise and experience and attracts
3 additional people, we will feel that we have indeed a
4 capability that we can count on to help us make these
5 important decisions.

6 I believe it would be useful though for the staff
7 and for the EDO perhaps to put together an information paper
8 that would kind of summarize the performance of the Center
9 for this first year and the activities that have taken place,
10 briefly summarize the planned activities for the Center in
11 this coming year, and how these activities would fit into the
12 overall waste program. I think a status report paper like
13 that might be appropriate. The Center might contribute to
14 that paper with the staff so that we would have a brief
15 paper summarizing the activities in writing. I believe the
16 Commission might be served with something along that nature.

17 But, again, thank you very much for an excellent
18 presentation. We will count on your continued energetic
19 and competent performance at the Center and your continued
20 advice to the staff and to the Commission.

21 With that, thank you very much. We stand adjourned.

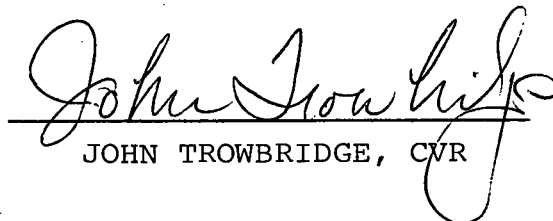
22 (Whereupon, at 3:20 o'clock, p.m., the Commission
23 meeting was adjourned.)
24
25

CERTIFICATE OF TRANSCRIBER

This is to certify that the attached events
of a meeting of the U.S. Nuclear Regulatory Commission
entitled: BRIEFING ON CENTER FOR NUCLEAR WASTE
REGULATORY ANALYSIS (CNWRA)

TITLE OF MEETING: Public Meeting
PLACE OF MEETING: Washington, D.C.
DATE OF MEETING: August 15, 1988

were transcribed by me. I further certify that said
transcription is accurate and complete, to the best
of my ability, and that the transcript is a true and
accurate record of the foregoing events.


JOHN TROWBRIDGE, CVR

Ann Riley & Associates, Ltd.

COMMISSION BRIEFING
ON
CENTER FOR NUCLEAR WASTE
REGULATORY ANALYSES
AUGUST 15, 1988

OVERVIEW

JOINT NRC / CNWRA BRIEFING

1. NRC STAFF - CENTER REQUIREMENTS
2. CENTER - PROGRESS REPORT
 - START-UP AND ACCOMPLISHMENTS
 - SYSTEMS ENGINEERING/INTEGRATION
3. NRC STAFF - SUMMARY

BACKGROUND

10/12/85 - SECY 85-388 NOTICE OF INTENT
06/27/86 - SECY 86-192 CONTRACT APPROVAL
10/15/87 - CONTRACT AWARDED
10/21/87 - NRC COMMISSION BRIEFING
04/05/88 - SECY 88-96 (STATUS)
05/12/88 - NRC BRIEFING TO COMMISSION
06/30/88 - NRC/CNWRA BRIEF ASSISTANTS
07/22/88 - NRC/CNWRA BRIEF ACNW

YEAR ONE REQUIREMENTS

PRIMARY - DEVELOP THE CENTER

- DEVELOP PROGRAM ARCHITECTURE
- RESEARCH (FOUR SPECIFIC PROJECTS)
- TECHNOLOGY TRANSFER
- LIMITED SUPPORT FOR STAFF
PRODUCTION SCHEDULE

YEAR TWO REQUIREMENTS

PRIMARY - CONTINUE CENTER DEVELOPMENT

- COMPLETE ARCHITECTURE BASELINE
- CONTINUE RESEARCH
- BEGIN PERFORMANCE ASSESSMENT
- INCREASE TECHNOLOGY RATE TRANSFER
- MODERATE SUPPORT TO STAFF SCHEDULES

DEVELOPMENT OF THE CENTER

VIABILITY/CAPABILITY DETERMINED BY STAFF

SHORT TERM VS. LONG TERM REQUIREMENTS

TECHNICAL ASSISTANCE VS. RESEARCH NEEDS

EXECUTE PHASE-IN CAREFULLY

NRC STAFF SUMMARY

PRIMARY REQUIREMENT -- DEVELOPMENT
OF THE CENTER

SECONDARY REQUIREMENT -- THE
DELIVERY OF TECHNICAL PRODUCTS

YEAR TWO, SUBSTANTIAL SUPPORT TO
NRC STAFF SCHEDULES

CAREFUL CONSIDERATION REQUIRED
IN EARLY BUILDUP

BRIEFING
CHARTS

**CENTER FOR NUCLEAR WASTE
REGULATORY ANALYSES**

**BRIEFING TO THE
COMMISSIONERS**

August 15, 1988

THREE PURPOSES FOR FFRDC

- AVOID CONFLICT-OF-INTEREST**
- PROVIDE LONG-TERM CONTINUITY
IN TECHNICAL ASSISTANCE
AND RESEARCH**
- PROVIDE CENTRAL CAPABILITY FOR
PERFORMING AND INTEGRATING ALL
ASPECTS OF HLW LICENSING
PROGRAM**

CENTER'S GENERAL OBJECTIVES

- **FUNCTION TIMELY AND COST EFFECTIVELY**
- **DEVELOP AND SUSTAIN HIGH LEVEL OF
TECHNICAL COMPETENCE**
- **PROVIDE TECHNICAL SUPPORT/TESTIMONY ON
NRC STAFF DECISIONS**
- **FACILITATE STREAMLINING OF THE LICENSING
PROCESS**

CENTER'S GENERAL OBJECTIVES

- **DEVELOP AND EVALUATE COMPLIANCE DETERMINATION METHODS**
- **IDENTIFY RESEARCH NEEDS AND PRIORITIES**
- **DEVELOP AND SUSTAIN EXPERT POLICY, SOCIOECONOMIC, INSTITUTIONAL, AND ENVIRONMENTAL ANALYSIS CAPABILITY**

KEY MILESTONES

-
- CONTRACT EXECUTED - 10/15/87
 - EMPLACEMENT OF ORIGINAL
CENTER CORE STAFF - 10/26/87
 - POST-AWARD KICK-OFF MEETING - 10/26/87
 - OPENED WASHINGTON OFFICE - 12/ 9/87

KEY MILESTONES

- APPROVAL FOR COMMENCEMENT
OF WORK
 - WASTE SYSTEMS ENGINEERING/
INTEGRATION – 12/ 9/87
 - EBS, GEOLOGICAL SETTING, QA,
REPOSITORY DESIGN,
SPECIAL PROJECT – 12/11/87
 - TRANSPORTATION RISK
STUDY – 1/12/88

KEY MILESTONES

- TRANSMITTED FINAL
OPERATIONS PLANS - 1/15/88
- APPROVAL OF RESEARCH
OPERATIONS PLAN - 1/20/88
- SUBMITTED QUALITY
ASSURANCE MANUAL - 2/26/88
- TRANSMITTED RESEARCH
OPERATIONS PLAN - 2/29/88

KEY MILESTONES

- COMPLETED LITERATURE
SEARCH FOR TRS - 3/28/88
- SUBMITTED CENTER'S ADP PLAN - 5/24/88
- APPROVAL OF SEISMIC
RESEARCH PROJECT PLAN - 5/31/88
- APPROVAL OF INTEGRATED
WASTE PACKAGE RESEARCH
PROJECT PLAN - 6/ 5/88

KEY MILESTONES

- APPROVAL OF OVERALL
RESEARCH PLAN - 8/ 1/88
- APPROVAL OF GEOCHEMISTRY
RESEARCH PROJECT PLAN - 8/ 1/88
- APPROVAL OF THERMOHYDROLOGY
RESEARCH PROJECT PLAN -

SIGNIFICANT ACCOMPLISHMENTS

- LITERATURE SEARCH FOR TRS - 3/28/88
- M.S. 18 PROGRAM ARCHITECTURE
PRELIMINARY DESIGN AND
PASS PROTOTYPE - 4/20/88
- INITIATED TRANSFER OF
"CONVO" COMPLIANCE
DETERMINATION MODEL - 5/26/88
- NATURAL RESOURCES STUDY - 6/15/88

CENTER STAFFING

DATE	PROFESSIONAL	CLERICAL
10/26/87	11	1
CURRENT	20	6
10/14/88 (EST.)	21	8
10/14/89 (EST.)	33-37	8
= = = = =		
POTENTIAL END OF YEAR 5		65 TOTAL

POTENTIAL FOR AND RISKS OF ACCELERATED GROWTH

- **CONTROLLED ADDITION OF UP TO 11 STAFF
DURING FY1989**
- **ACHIEVE YEAR 3 STAFFING DURING YEAR 2**
- **EXPERTISE MIX BECOMES FIXED**
- **EXPERIENCE-LEVEL MIX BECOMES FIXED**
- **RELATIVE FUNDING LEVELS BETWEEN NMSS AND
RESEARCH NEED TO BE FAIRLY STABLE**

IMMEDIATE GOALS OF SYSTEMS ENGINEERING

- **ANALYZE INSTITUTIONAL, REGULATORY, AND TECHNICAL UNCERTAINTIES PERTAINING TO SITING**
- **RECOMMEND, PRIORITIZE, AND PROVIDE RATIONALE FOR CANDIDATES FOR RULEMAKING**
- **ANALYZE, EVALUATE, AND ASSESS IMPORTANCE OF REGULATORY REQUIREMENTS**
- **IDENTIFY PRIORITY ASPECTS OF THE SCP FOR NRC STAFF REVIEW**

NWPA ESTABLISHED LICENSING ENVIRONMENT

- **TECHNICALLY SOPHISTICATED AND COMPLEX**
- **SEVERAL INTER-RELATED COMPONENTS**
- **FORMAL ADMINISTRATIVE LAW PROCESS**
- **MULTIPLE-PARTY EVALUATION AND APPROVAL
PROCESS**

NWPA ESTABLISHED LICENSING ENVIRONMENT

- **INSTITUTIONALLY COMPLEX**
- **INTENSE PUBLIC SCRUTINY**
- **RIGOROUS 3-YEAR LICENSE REVIEW SCHEDULE**

THE SYSTEMS ENGINEERING APPROACH

- MISSION ORIENTED
- REQUIREMENTS-BASED
- PROACTIVE
- BASIS FOR INTEGRATION
- DYNAMIC

"TOP DOWN" APPROACH USED

- REPOSITORY (GEOLOGIC DISPOSAL)
- MONITORED RETRIEVABLE STORAGE
- AT-REACTOR STORAGE
- TRANSPORTATION INTERFACES
- ALTERNATIVE PROGRAMS (e.g. SUBSEABED)

COMPLETE TIMEFRAME

- **CONSTRUCTION AUTHORIZATION**
- **LICENSE TO OPERATE**
- **OPERATIONAL MONITORING**
- **DECISION TO CLOSE AND DECOMMISSION**
- **POST-CLOSURE MONITORING**

PRACTICAL RESULTS ACHIEVED

- **SCHEDULE RISK IS REDUCED**
- **RESOURCES ARE CONSERVED**
- **PUBLIC CONFIDENCE IS INCREASED**

PRODUCTS: RELATIONAL DATABASE

- **REQUIREMENTS ANALYSIS**
- **COMPLIANCE DETERMINATION CRITERIA**
- **ISSUE IDENTIFICATION AND
RESOLUTION STATUS**
- **METHODOLOGY SPECIFICATION**
- **PROJECT JUSTIFICATION AND PRIORITIZATION**
- **ORGANIZATIONAL AND FUNCTIONAL INTERFACES**

PRODUCTS: TEXT MANAGEMENT

- **STORAGE, RETRIEVAL, AND CONTEXTUAL
SEARCHING OF REGULATIONS, STATUTES,
AND COMPLETE CONTENTS OF RELATIONAL
DATABASE**
- **KEY WORD AND CROSS REFERENCING**
- **INTERFACE AND RETRIEVAL FROM LSS,
OIM, ETC.**

**PRODUCTS:
RESOURCE MANAGEMENT**

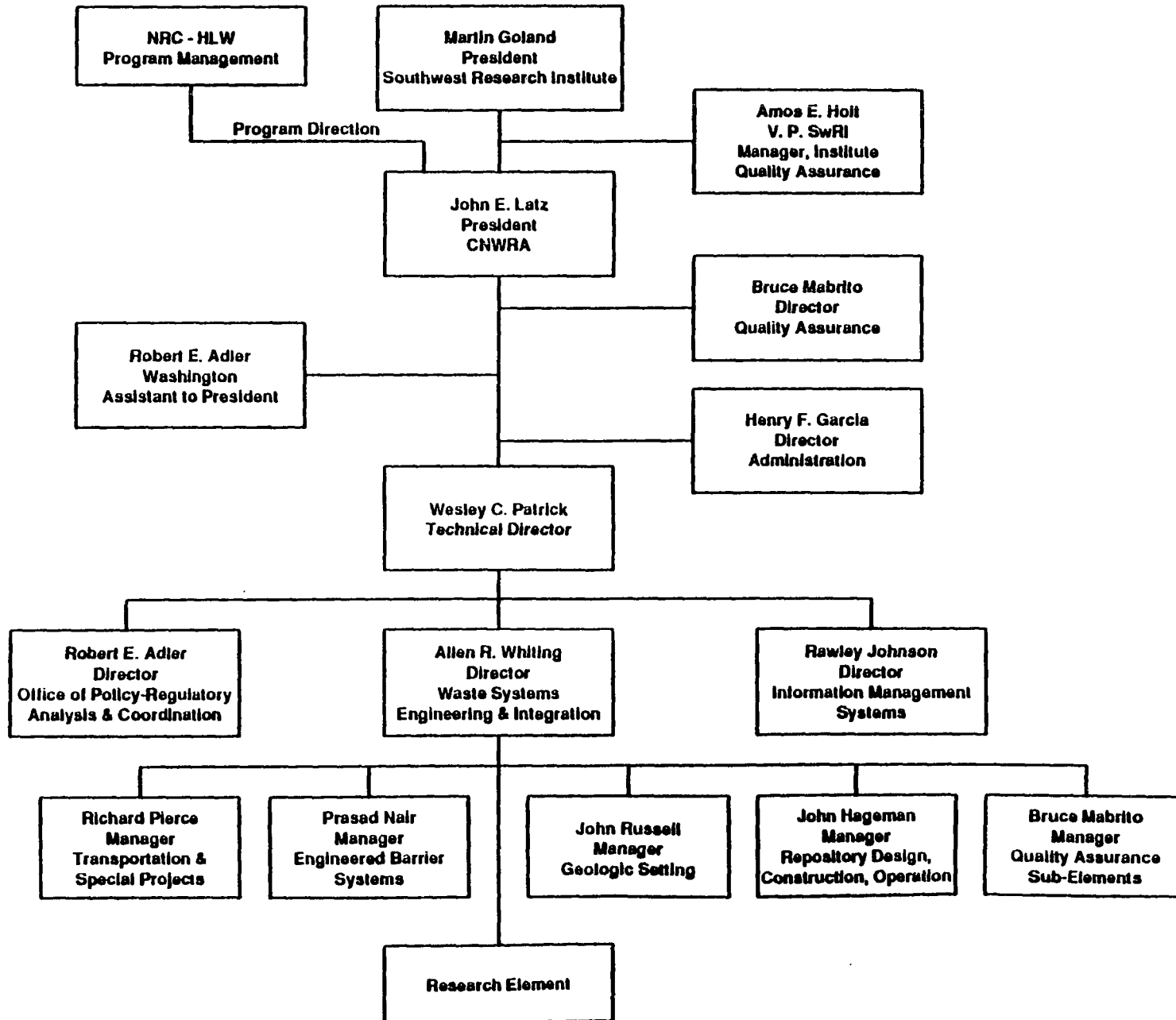
- **RESOURCE ESTIMATION AND ALLOCATION
FROM ISSUE-LEVEL TO TOTAL PROGRAM**
- **FORECASTING, TRADE-OFF, AND
IMPACT ANALYSES**
- **VARIANCE ANALYSIS AND REPORTING**

PRODUCTS: SPECIAL REPORT

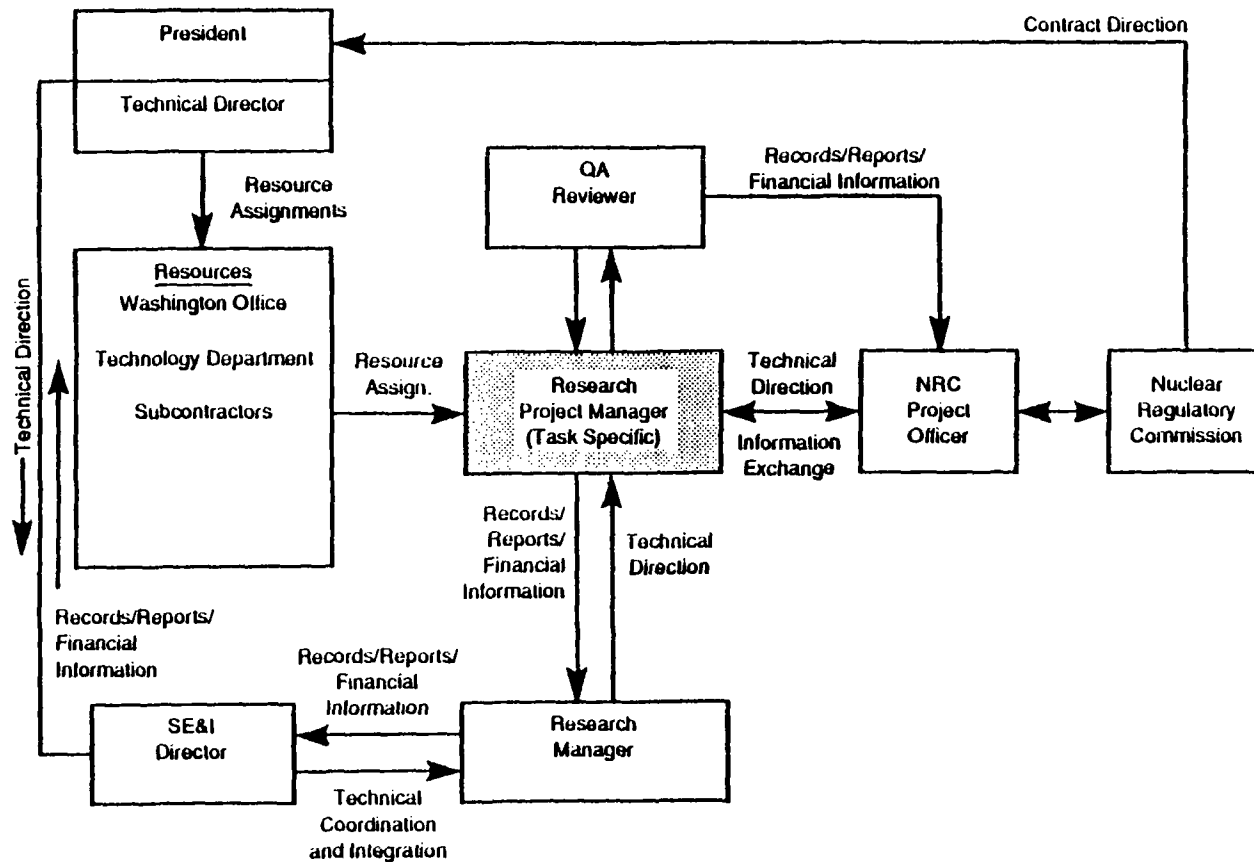
- **LONG-RANGE PLANS**
- **OPEN ITEM TRACKING AND REPORTING**
- **REGULATORY COMPLIANCE AND ISSUE
RESOLUTION MONITORING**
- **FORMAT AND CONTENT GUIDES**
- **STANDARD REVIEW PLANS**

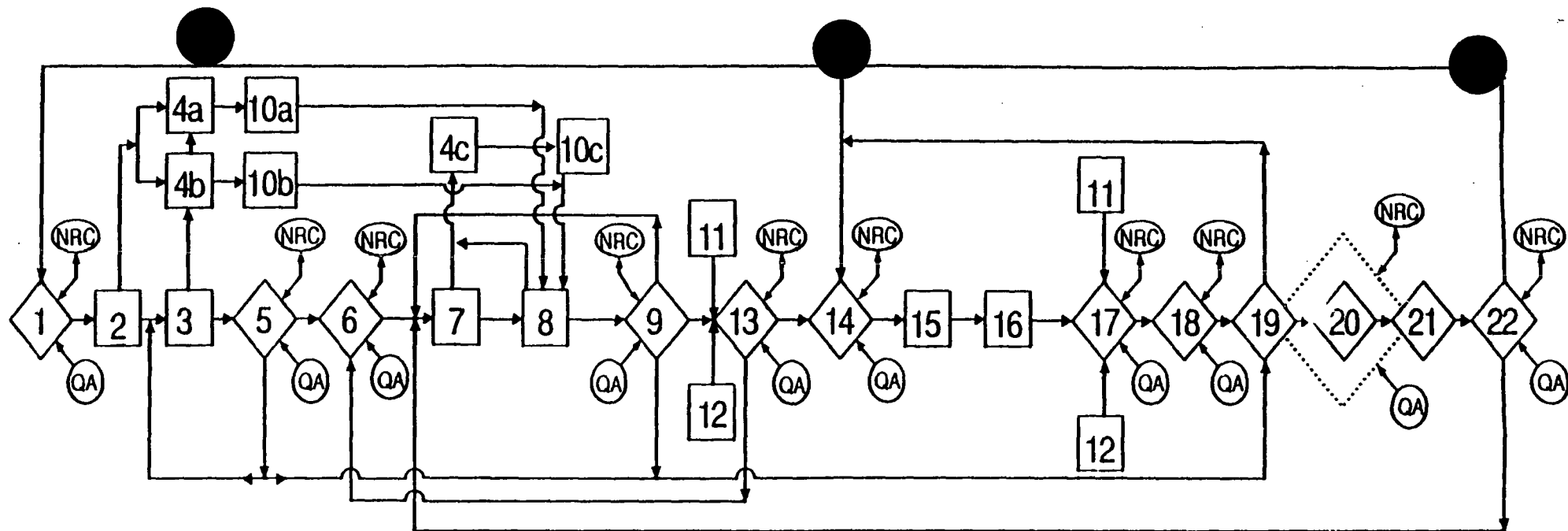
HANDOUTS

CNWRA PRESENT ORGANIZATION



CENTER MANAGEMENT PROCESS FOR DIRECTION AND CONTROL OF WORK





X PHASE OF THE PROCESS REQUIRING WORK AT AND INPUT FROM THE PROGRAM ELEMENTS
 X PHASE OF THE PROCESS REQUIRING INTEGRATION
 NRC REVIEW AND APPROVAL BY NUCLEAR REGULATORY COMMISSION
 QA REVIEW AND APPROVAL BY QUALITY ASSURANCE

1. IDENTIFY POTENTIALLY APPLICABLE REGULATIONS
 2. ANALYZE REGULATORY REQUIREMENTS
 3. IDENTIFY AND LIST ELEMENTS OF PROOF
 4. IDENTIFY AND DESCRIBE INSTITUTIONAL UNCERTAINTIES
 5. IDENTIFY AND DESCRIBE REGULATORY UNCERTAINTIES
 6. IDENTIFY AND DESCRIBE TECHNICAL UNCERTAINTIES
 7. INTEGRATE AND REVIEW REGULATORY REQUIREMENTS; AND INTEGRATE, REVIEW, AND REVISE ELEMENTS OF PROOF
 8. SELECT SUBSET OF REGULATIONS FOR FURTHER ANALYSIS BASED ON TIME-CRITICAL NATURE
 9. IDENTIFY BASIC APPROACH FOR COMPLIANCE DETERMINATION METHODS (REVISE AT SUBSEQUENT ITERATIONS)
 10. INTEGRATE/IDENTIFY INFORMATION REQUIREMENTS
 11. INTEGRATE, REVIEW, AND REVISE COMPLIANCE DETERMINATION METHODS, ELEMENTS OF PROOF, AND INFORMATION REQUIREMENTS

10a. IDENTIFY INSTITUTIONAL UNCERTAINTY QUESTIONS
 10b. IDENTIFY REGULATORY UNCERTAINTY QUESTIONS
 10c. IDENTIFY TECHNICAL UNCERTAINTY QUESTIONS
 11. OBTAIN DOE "ISSUES", INFORMATION NEEDS AND UNCERTAINTIES
 12. OBTAIN STATE, TRIBE, AND OTHER AFFECTED PARTIES "ISSUES", INFORMATION NEEDS AND UNCERTAINTIES
 13. INTEGRATE, CONSOLIDATE, AND RANK UNCERTAINTIES AND UNCERTAINTY QUESTIONS (INCLUDING DOE AND STATE ITEMS)
 14. IF UNCERTAINTY, UNCERTAINTY QUESTION, OR INFORMATION REQUIREMENT IS UNRESOLVED, FLAG AS OPEN ITEM; SELECT ITEMS FOR NRC ACTION; IDENTIFY OTHER ACTION PARTIES

15. IDENTIFY UNCERTAINTY REDUCTION METHODS AND RELATED INFORMATION REQUIREMENTS; SPECIFY ALTERNATE NRC PROGRAMS FOR UNCERTAINTY REDUCTION
 16. DEVELOP COSTS, SCHEDULES, AND LEAD TIMES FOR NRC PROGRAMS
 17. ANALYZE ALTERNATIVES AND NRC PROGRAM TRADEOFFS
 18. RECOMMEND NRC PROGRAM INCLUDING OVERALL RESEARCH PROGRAM PLAN
 19. DEVELOP AND DISPLAY NETWORK AND CRITICAL PATH FOR EACH REGULATORY REQUIREMENT
 20. DEVELOP AND DISPLAY NETWORK FOR TOTAL PROGRAM
 21. CONTROL AND DOCUMENT PROGRAM STRUCTURE AND CHANGES
 22. CONDUCT NRC PROGRAM

PROCESS DIAGRAM FOR DEVELOPING AND MAINTAINING THE PROGRAM ARCHITECTURE

PROGRAM ARCHITECTURE FUNCTIONAL ALLOCATION DIAGRAM

