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NUCLEAR REGULATORY COMMISSION**

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1 UNITED STATES OF AMERICA  
2 NUCLEAR REGULATORY COMMISSION

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4 BRIEFING ON SEQUOYAH RESTART

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6 PUBLIC MEETING

7 \*\*\*

8 Nuclear Regulatory Commission

9 Room 1130

10 1717 H Street, Northwest

11 Washington, D.C.

12  
13 Friday, March 4, 1988

14  
15 The Commission met in open session, pursuant to  
16 notice, at 9:35 o'clock, a.m., the Honorable LANDO W. ZECH,  
17 Chairman of the Commission, presiding.

18 COMMISSIONERS PRESENT:

19 LANDO W. ZECH, Chairman of the Commission

20 THOMAS M. ROBERTS, Member of the Commission

21 FREDERICK M. BERNTHAL, Member of the Commission

22 KENNETH CARR, Member of the Commission

23 KENNETH ROGERS, Member of the Commission

24

25

## 1        STAFF AND PRESENTERS SEATED AT THE COMMISSION TABLE:

2                    M. RUNYON

3                    S. WHITE

4                    T. JENKINS

5                    M. BLACKBURN

6                    N. KAZANAS

7                    J. HOSMER

8                    S. SMITH

9                    J. BYNUM

10                   B. RALEIGH

11                   C. DEAN

12                   W. WATERS

13                   V. STELLO

14                   S. EBNETER

15                   J. AXELRAD

16                   F. McCOY

17                   S. RICHARDSON

18

## 19        AUDIENCE SPEAKERS

20                   A. MARINOS

21                   B. HERRMANN

22                   B. PIERSON

23

24

25

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

2 CHAIRMAN ZECH: Good morning, ladies and gentlemen.

3 Both units at the Sequoyah site were voluntarily shut  
4 down by the Tennessee Valley Authority in August of 1985  
5 because of questions about environmental qualifications of  
6 electrical equipment.

7 Additional questions and numerous concerns were  
8 subsequently raised about the overall adequacy of TVA's nuclear  
9 program. Sequoyah has remained shut down since that time  
10 pending resolution of these questions, and completion of  
11 necessary corrective actions.

12 The purpose of today's meeting is for the Tennessee  
13 Valley Authority and the NRC Staff to brief the Commission  
14 concerning the readiness of the Sequoyah Unit 2 for restart.  
15 This is an information briefing only. There will be no vote  
16 today. The earliest that a public vote will be taken by the  
17 Commission would be some time late next week, and I emphasize  
18 that is the earliest.

19 I understand that copies of slides are available at  
20 the back of the room.

21 Do any of my fellow Commissioners have opening  
22 comments to make before we begin?

23 If not, Mr. Runyon, please begin, sir.

24 MR. RUNYON: Thank you very much. Good morning. I  
25 am pleased to be here today with my colleagues on the TVA

1 Board, and with Admiral Steven White, our Manager of Nuclear  
2 Power.

3 Before Admiral White makes TVA's detailed  
4 presentation regarding the restart of Sequoyah, I'd like to  
5 share my views concerning TVA's nuclear program.

6 One of my first actions as TVA chairman has been to  
7 visit each of TVA's nuclear sites and offices to meet the  
8 people there and hear what they have to say. People know that  
9 you are concerned and involved when they see you walking the  
10 floor.

11 I have been at Sequoyah once a week for the past four  
12 weeks, and I have been there during all three shifts. I was  
13 sworn in just a little over five weeks ago. My fellow board  
14 members visit these facilities regularly, and I know that  
15 members of this Commission have also visited our nuclear  
16 plants.

17 Although I am still studying TVA's nuclear  
18 operations, I am favorably impressed by what I have seen so  
19 far. Unit 2 at Sequoyah looks to be in good shape and the  
20 employees there have a very positive attitude towards safety  
21 and quality.

22 I am new to TVA, but I am not new to the  
23 manufacturing and production plants. I spent 44 rewarding and  
24 successful years in the automotive industry, most of them at  
25 plant sites.

1           You can tell about any plant by walking the floor,  
2           talking to employees, paying attention to housekeeping details,  
3           and examining the plant's maintenance program. The best  
4           facilities are always well maintained, have very positive  
5           preventive and predictive maintenance programs. Proper  
6           housekeeping is an important part of any plant's overall  
7           environment, and it is also indicative of the emphasis that  
8           employees and management place on quality and safety in  
9           operation.

10           High quality plant environments are absolutely  
11           essential in any industry, and particularly in the nuclear  
12           industry, and I have found that kind of plant environment at  
13           Sequoyah Unit 2.

14           There are, of course, differences between automotive  
15           plants and nuclear plants, and we all recognize that, but  
16           certainly procedural and regulatory requirements are more  
17           extensive in a nuclear plant, and should be in order to protect  
18           public safety. Public safety is the most important test a  
19           nuclear plant has to pass.

20           From what I have seen and been told, and from what I  
21           know of the massive efforts put forth by both NRC and TVA, I  
22           believe that Sequoyah Unit 2 is ready to start. I wouldn't be  
23           here today if I thought otherwise.

24           There has been significant progress in the nuclear  
25           program at TVA, and we are proud of our accomplishments. We

1 trust they will earn your blessings.

2 In the future, we want to do more than meet  
3 standards. We want to set standards for quality, safety, and  
4 efficiency in nuclear operations. We know we have got a long  
5 way to go, but we are confident that we can reach that goal.  
6 We have already come a long way. We will be taking a giant  
7 step towards that goal through participative management, which  
8 I believe can lead to improvements throughout TVA. This is a  
9 bottom-up style of management that requires people at the top  
10 to make a greater effort to listen to employees.

11 I understand that many of TVA's past difficulties  
12 were due to management problems, and to a lack of trust and  
13 communication between management and the employees.

14 A participative style of management will help address  
15 these difficulties. This approach recognizes that employees  
16 are the real experts in making the process work. In a  
17 participative system, the manager makes sure the responsibility  
18 for doing the job is clearly defined, and reaches down to the  
19 employee doing the work.

20 The manager also listens to the concerns and  
21 suggestions of employees. These often include how the job can  
22 be done more efficiently or safely; or how other improvements  
23 can be made. I recognize that other factors will go into make  
24 such a system work in the nuclear context. Not the least of  
25 those factors is an attitude of strict compliance with



1 regulatory requirements, including the commitments TVA has made  
2 to NRC.

3 If we are to make long-term improvements in TVA, we  
4 will have to improve the way people and programs are being  
5 managed. Many of the management changes that have been started  
6 by Admiral White, such as the enhanced employee concerns  
7 program, are changes in the right direction. Admiral White has  
8 been in charge of TVA's nuclear program for more than two  
9 years. His skill and diligent efforts have brought us up to  
10 the potential restart of Sequoyah Unit 2.

11 My wish is that Admiral White would stay through the  
12 complete restart effort, including Sequoyah and Browns Ferry.  
13 We are in the process of searching for several key managers for  
14 our nuclear program. Let me assure you that we are committed  
15 to strong leadership and a highly qualified management team for  
16 TVA's nuclear program.

17 Well, let me tell you that we are having trouble  
18 recruiting the talent we need with the pay limitations that we  
19 face, and we are working to remove those barriers. We will  
20 choose a successor who will be acceptable to the board and Mr.  
21 White, and who will be capable of continuing, as well as  
22 strengthening, our nuclear program.

23 In conclusion, let me assure you that as a board, my  
24 colleagues and I are absolutely committed to the improvements  
25 in our nuclear program made by Steve White, and to abiding by

1 the regulations of the NRC.

2 We are also totally committed to maintaining open and  
3 honest communication with the NRC and its Staff.

4 On a personal note, I have made a commitment to TVA  
5 to be a leader and a learner at the same time. In this role, I  
6 have had the opportunity to learn a great deal about nuclear  
7 engineering and management, but there is a lot of learning left  
8 to do. I want to know more about the nuclear power industry.  
9 I plan to participate in INPO's training program for electric  
10 utility CEOs, and I expect to learn a lot from that.

11 I also plan to undertake a study tour of nuclear  
12 plants that you or members of your staff think would be  
13 instructive for me to visit.

14 As a result of all this, I will be a more  
15 knowledgeable member of the board and a more effective leader  
16 in bringing TVA's nuclear power program back into full  
17 operation. TVA has been making tremendous progress in its  
18 nuclear recovery efforts. My colleagues on the board, who  
19 began these efforts, deserve the credit for bringing TVA to  
20 today's meeting. Together, we look forward to a healthy  
21 exchange of views, and hope that you will agree that Sequoyah  
22 is ready to resume safe and reliable operation.

23 Thank you very much. And now I would like to turn  
24 our presentation over to Mr. White, with your permission.

25 CHAIRMAN ZECH: Yes, sir. Thank you very much, and

1 we appreciate that.

2 Mr. White, you may proceed.

3 MR. WHITE: I'm pleased to be here today. It was two  
4 years ago this month that I first came before you to discuss  
5 how we were going to fix our problems at TVA. At that time, I  
6 knew the road would be rough. You know, none of us was aware of  
7 the true dimensions of the problem. Clearly there was no way  
8 that we could have predicted that it would take two years to  
9 get to the point that I could say that we were ready to resume  
10 operations. A lot has happened in those two years, and that's  
11 what I intend to discuss with you today.

12 While our specific case today involves the restart of  
13 Sequoyah Nuclear Plant Unit 2, we all recognize that the issues  
14 are much broader. As you may recall from my comments in March  
15 1986 and again in March 1987, we face the challenge of changing  
16 a culture. TVA's nuclear problems were evidenced in many  
17 elements of the program, which by definition indicate that the  
18 central issue was management.

19 Although TVA's problems in management were manifest  
20 at all levels, they were most prominent at the top. It was  
21 clear that there was a lack of confidence and respect in  
22 management. There was no teamwork to resolve problems. There  
23 was no real sense of direction, and the organization was  
24 diffused, splintered, and layered.

25 These management problems had to be resolved before

1 any real progress could be made in solving the literally  
2 thousands of specific issues. My plan to resolve these basic  
3 problems was embodied in our corporate nuclear performance  
4 plan, which was submitted to you in March 1986. This was and  
5 continues to be my blueprint to change the TVA culture. I feel  
6 confident that we have made substantial progress, and that we  
7 are now in a position to resume operation.

8 After our presentation today, I hope that you will  
9 all agree with me.

10 By no means -- by no means am I saying today that in  
11 all the broad areas of management requiring cultural change, we  
12 have yet reached the level of excellence that I intend to reach  
13 in the longer run. We still have a way to go. What I am  
14 saying is that we have made tremendous progress, and we have  
15 achieved a level sufficient to assure safe operation of our  
16 first plant.

17 We will also provide you today with a presentation  
18 specifically addressing Sequoyah Unit 2 and why we feel that  
19 that plant technically, operationally, and in all other  
20 respects is ready to obtain your authorization to restart.

21 One theme I hope to be able to convey to you today is  
22 that our corrective actions not only have been effective, but  
23 they are permanent. I have purposely avoided applying the so-  
24 called quick fix or Band-Aid approach. Rather I have  
25 maintained the constant goal of institutionalizing our changes.

1           For example, in rewriting our procedures, which, as  
2           you know, were a mess, we have spent over \$12 million at  
3           Sequoyah alone so far, and we are still not through. You will  
4           see many other indications which will further bear out the fact  
5           that we are driving for permanent solutions.

6           In the same context, you have just heard Mr. Runyon  
7           express his conviction that he and his fellow Board members  
8           will insist on the permanence of what we are doing. In the  
9           short time that I have known Mr. Runyon, I feel confident that  
10          he has every intention and the ability to see that his word to  
11          you will be carried out.

12          Finally, before we start the presentation, I would  
13          like to say to you that I am enthusiastic -- I am enthusiastic  
14          over the prospect and the results so far of revitalizing TVA's  
15          nuclear program, and I am still very optimistic that it can be  
16          done.

17          The Board of Directors has provided me with the  
18          authority to do the job. As you know, this authority is  
19          spelled out in detail in the Memorandum of Understanding which  
20          is part of the corporate nuclear performance plan which you have  
21          approved.

22          And I might add that without their full support and  
23          the authority given to me, I could not have achieved our  
24          present level of performance, nor could I assure continued  
25          progress toward the goals I have set.

1           That concludes my introductory remarks, and I would  
2   like to now proceed with the presentation.

3           CHAIRMAN ZECH: All right. Proceed. Thank you.

4           [Slide.]

5           MR. WHITE: Briefly here is what we will cover today.  
6   Let me first reacquaint you very briefly with TVA.

7           We have nine plants consisting of Westinghouse and  
8   B&W PWRs and GE BWRs. They are widely separated in two states  
9   over 100 miles apart, and although, for example, my  
10   headquarters and most of the nuclear corporate organization is  
11   in Chattanooga, the Division of Nuclear Construction and the  
12   Division of Nuclear Engineering is in Knoxville, over 100 miles  
13   away.

14          Slide.

15          [Slide.]

16          I'm just going to let you read this. I think it's  
17   important to review quickly your concerns of 1985 that  
18   eventually resulted in my coming to TVA to set up a management  
19   team. These are the things that you found and which caused the  
20   shutdown of five licensed plants and the inability to license  
21   two others, clearly a problem rooted in weak top management and  
22   organization. In my opinion, the other things on this slide  
23   are merely symptoms of that management organization weakness.

24          As I said earlier, despite this list, no one really  
25   knew the true dimensions of the problems which faced us. No

1 one really understood the enormous magnitude of the problem.

2 Slide.

3 [Slide.]

4 Although we are here to discuss the Sequoyah plant  
5 startup, because of the nature of the problem, the nuclear  
6 corporate fixes are inseparable from the fixes at the plants.  
7 In other words, both had to be fixed. I recognized early on  
8 that the corporate had to be changed before we would be ready  
9 to ask for permission to start up any plant.

10 As you recall, the nuclear performance plan  
11 identifies the corporate nuclear performance plan, identifies  
12 the root causes of the problems in the management of TVA's  
13 nuclear program, and describes TVA's plans for correcting those  
14 problems.

15 TVA has also submitted a specific nuclear performance  
16 plan for Sequoyah. Taken together, these plans provide a  
17 complete account of the actions which TVA is taking to improve  
18 its nuclear program. These plans, which have been approved by  
19 the NRC, resolve all the concerns raised by the 50.54(f) letter  
20 of September 1985.

21 Slide.

22 [Slide.]

23 These are the objectives I established in 1986, early  
24 in 1986, to correct the root cause of TVA's problems. You have  
25 seen these objectives before. They have not changed. And I

1 would like to briefly update you on where we stand.

2 [Slide.]

3 With reference to the organization, we brought all  
4 nuclear management matters under one control. We removed non-  
5 nuclear matters. We provided clear, simple lines of  
6 responsibility and authority, along with consistency across the  
7 entire nuclear program. We also strengthened the weak areas,  
8 such as quality assurance, engineering, licensing, training,  
9 and safety.

10 We also cut out a lot of layering. For example,  
11 today there are only four layers of management between me and  
12 the shift supervisor at the Sequoyah Plant. We've cut out a  
13 great deal of layering.

14 The Policy Organization Manual contains the Office of  
15 Nuclear Power statements on policy. In other words, it  
16 promulgates my philosophy. It gives organizational  
17 descriptions and responsibilities. It provides organizational  
18 charts. And, perhaps most importantly, it provides formal  
19 interface agreements between the various parts of the  
20 organization.

21 The Position Descriptions. We've rewritten about  
22 1,800, all of the management position descriptions, to  
23 establish accountability, to eliminate duplication of  
24 responsibilities, to assign missing functions, to provide  
25 centralized control, to provide a basis for employee



1 evaluation, and, again, perhaps most importantly, those also  
2 define interface responsibilities.

3 [Slide.]

4 Here is the Corporate Organization. With a couple of  
5 very minor changes, it is the same chart that I showed you two  
6 years ago. We have had a stable structure.

7 [Slide.]

8 With reference to the Management Team. Since I've  
9 come to TVA, we've hired as TVA employees, 48 senior managers.  
10 Those 48 managers have a combined total of more than 1,000  
11 years, more than 1,000 years, of nuclear experience. In  
12 addition, in the mid-level managers, those with an average of  
13 10 years of service, we have hired in as TVA employees, 487  
14 additional experienced managers.

15 We'll discuss the second bullet later in the  
16 presentation.

17 [Slide.]

18 Let me just hit a few things on this slide. The  
19 hierarchy of documents refers to a system we have instituted of  
20 policies, directives, standards, procedures, and instructions.  
21 So, it goes from the top to the bottom, a disciplined way of  
22 doing business.

23 With regard to the tracking systems, we have  
24 established a formal tracking system to keep track of  
25 commitments to the NRC and to verify closure. There was

1       literally a countless number of such systems two years ago. I  
2       think well over 50. It was a crazy situation where everyone  
3       almost literally had their own tracking system for commitments.  
4       We now have one system to track our commitments to you.

5               With regard to the conditions adverse to quality, we  
6       formerly had a hodgepodge of over one-half dozen systems,  
7       different systems, to provide problem identification. No one  
8       really knew what there was or what the status was. We put all  
9       of those into one system. We put them all into one basket  
10      where we could look at them, evaluate them, and prioritize them  
11      for completion. Of course, when we did that, we created an  
12      immense backlog, a huge backlog, to work off.

13             Configuration management you are all familiar with,  
14      and we have taken the steps to ensure that plant changes can't  
15      be done without a complete evaluation of the impact.

16             But of equal importance to me is the last bullet,  
17      Central Control of Changes. That, in effect, is configuration  
18      management for policies, position descriptions, and  
19      organizations. No longer can an individual in the system,  
20      uniquely at his site or his organization, change  
21      responsibilities, change position descriptions, or change the  
22      organization without adequate review.

23             [Slide.]

24             With regard to Technical Integrity, TVA's efforts to  
25      ensure technical adequacy of Sequoyah are, I believe,

1       unprecedented and the most comprehensive ever achieved in this  
2       country for an operating plant. The major elements include  
3       design baseline and verification program, environmental  
4       qualification, design calculation review, restart test program.  
5       These programs are the ones that reestablished the Sequoyah  
6       design basis. We have implemented state-of-the-art design  
7       control methods for making design changes at Sequoyah,  
8       utilizing standalone modification packages.

9               Additionally, new design control methods will  
10       maintain the design basis to ensure the continued adequacy of  
11       Sequoyah. When we get Sequoyah on line, and we look to start  
12       the next plant, we are not going to turn our back on Sequoyah.

13              Of course, basic to the thrust of the technical  
14       integrity is that we have given the responsibility for  
15       technical ownership of the plants to the Division of Nuclear  
16       Engineering.

17              [Slide.]

18              If I were to use one word as a key word on this  
19       slide, I would say it would be teamwork. Communications with  
20       Employees. We do that in many fashions, starting with my  
21       weekly staff meetings, the other staff meetings which report to  
22       the lower levels on what occurs in my weekly staff meetings.  
23       We have skip level meetings. I have made it a practice to have  
24       luncheon meetings with craftsmen, engineers, secretaries, and a  
25       broad spectrum of personnel, and I've found those very valuable

1 and many of my managers are now doing the same.

2 We have roundtable discussions as part of our  
3 management training. And we use many written vehicles,  
4 including a monthly Upfront Magazine, which is mailed to the  
5 homes of our people. Nuclear dispatches, which are fast-track  
6 flyers from me to all of our people. Site and division  
7 dispatches and newsletters, as well as poster campaigns to  
8 reinforce my philosophy.

9 But, again, the most important bullet to me on this  
10 slide is the last bullet. It is a basic philosophy of mine. I  
11 found out long ago that if you wanted to know what was going on  
12 you had to walk your ship. If you wanted to know where your  
13 problems were, you went and talked to the sailor repairing the  
14 pump. He could tell you what the problems are and he could  
15 probably tell you how they could be fixed and the best way to  
16 fix them. It is no different at TVA.

17 This, perhaps, has been one of the hardest  
18 philosophies for me to instill at TVA. But we have made  
19 tremendous progress. For example, about six months ago, as a  
20 result of an NRC inspection, your staff was informed by the  
21 operators in the plant in the control room -- and this was  
22 about six months ago -- that they saw more of Mr. White in the  
23 control room than they did of the plant manager. And I can  
24 tell you that's no longer true today. But we still have a ways  
25 to go, and I won't let up on those efforts because they are

1 extremely important.

2 Throughout these five objectives you've heard me use  
3 the words interface, communications, and teamwork. During my  
4 first report to you in March 1986, I told you of the  
5 difficulties I found in coordinating between the corporate  
6 organization and the sites, as well as between corporate  
7 divisions. And I gave you specific examples of those  
8 difficulties.

9 We have taken in these five goals and objectives a  
10 number of actions to solve that problem. For example, from my  
11 staff meetings, management training, roundtable discussions,  
12 the new organization itself, the policy and organization  
13 manual, the new position descriptions, and the new management  
14 talent infusion are only some examples of how we have attacked  
15 this problem of interface, communications, and teamwork.

16 And I am not yet satisfied, but I recognize that this  
17 is the type of problem that is never permanently fixed. A  
18 leader must continue to work at this day in and day out. It is  
19 never permanently solved. And I would say that anyone who has  
20 attended my staff meetings would tell you that I am constantly  
21 after these problems of interfaces, communications, and  
22 teamwork. Slide.

23 [Slide.]

24 Now I would like to have you briefed on the Employee  
25 Concerns Program. This is one of the tools we are using to

1 make our management more effective. Employees are the best  
2 source of information that we can get on technical and safety  
3 problems which might exist.

4 Ms. Jenkins will make the presentation, and let me  
5 tell you a little bit about Ms. Jenkins. She has a bachelor's  
6 degree in physics and another in math, and a master's in  
7 nuclear physics. She's been with TVA for 15 years.

8 Interesting, perhaps, I recruited her from the non-  
9 nuclear part of TVA, and first assigned her a number of duties,  
10 including a central focal point for my efforts to stamp out  
11 harassment and intimidation. When she did a good job there, I  
12 promoted her and assigned her as the head of the Employee  
13 Concerns Program. And, because she had displayed her  
14 management talents, I said to her, you take the new job, but  
15 you take all your old jobs with you. So, she then had two  
16 jobs.

17 Two weeks ago I put her in charge -- and this is a  
18 promotion -- she's now head of Nuclear Personnel. And, as the  
19 pattern I've set in the past, I said, you get the new job and  
20 along with that you get to take the employee concerns, the  
21 harassment and intimidation job, and all your prior jobs. So,  
22 she's now fulfilling all of those functions. Ms. Jenkins.

23 MS. JENKINS: Thank you. In the NRC staff safety  
24 evaluation on the Corporate Nuclear Performance Plan, they  
25 outlined three conditions which must be met prior to approving

1 the restart of Sequoyah. What I am going to cover is how we  
2 demonstrate meeting those three conditions.

3 [Slide.]

4 The first one was that the Employee Concerns Program  
5 was working. That program really entailed two efforts, one to  
6 deal with the employee concerns that had been generated by  
7 required interviews with more than 5,000 employees, which also  
8 generated more than 5,000 employee concerns during the year of  
9 1985. Coincident with the program to deal with the backlog of  
10 concerns, we started an Employee Concerns Program that is  
11 ongoing and is now more than two years old.

12 The program works by mail-ins, walk-ins from  
13 employees, and exit interviews. We know the process itself is  
14 working for more than half a dozen major internal and external  
15 audits, which culminated in the staff safety evaluation stating  
16 that the program itself was acceptable, September 30, 1987.

17 We have continued to have a declining number of  
18 concerns. When the program first started, in its first seven  
19 months, we were averaging more than 40 concerns a month. The  
20 last three months in 1987, we were averaging three concerns a  
21 month.

22 I want to emphasize our goal is not to drive that  
23 number to zero, because that program should now, and always,  
24 remain a safety valve so that employees always have an  
25 alternate path, if needed, to report a problem. And, in fact,

1 in January of 1988 we recorded 44 concerns. It dropped back to  
2 four for February.

3 Line management. The right people to do it are now  
4 handling more concerns than they ever were. Specifically at  
5 Sequoyah, for every one concern that was recorded in the formal  
6 program and investigated there, two employees took their  
7 problems and our recommendation back to their line manager to  
8 get resolution. In 1987, for every one employee who brought us  
9 the concern to formally investigate, nine employees took their  
10 problems back to line management.

11 And I know they are fixed there, because I track  
12 those as well as the formal ones. In the two year period for  
13 Sequoyah 446 problems were taken back to the line to be solved.  
14 There are only 73 of them open today. And I talk directly with  
15 the employee to find out if they are, in fact, satisfied with  
16 the resolution.

17 The program itself is action oriented. It gets  
18 results. In the two years we've had 87 percent of the  
19 recommendations generated by the investigations accepted by the  
20 line and implemented without change.

21 The second condition was that we should demonstrate  
22 that our employees are encouraged to report safety and quality  
23 concerns. We get every employee coming and going. They are  
24 given an orientation session, whether they come in to the  
25 corporate office or through their general employee training at



1 one of the plant sites, and they are acquainted with the  
2 program itself, in addition to the bulletin boards and other  
3 official media.

4 We do exit interviews with every employee who leaves  
5 the Office of Nuclear Power. We also do exit interviews with  
6 any employee transferring between two of our sites. In the two  
7 years we have had more than 11,000 employee contacts. We have  
8 generated only 850 concerns in that two year period.

9 The Condition Adverse to Quality Process you'll hear  
10 more about later and the details of how it works. From my  
11 perspective, what I've seen it do is raise the consciousness  
12 level of our employees, so that they understand their  
13 obligation to report employee concerns in the proper channel.  
14 Its a formal, but very simple, process to use to identify  
15 problems.

16 At Sequoyah, 70 percent of those condition adverse to  
17 quality reports come from non-QA employees. Messages of the  
18 employee's obligation are continuously sent, and Mr. White  
19 covered a number of the media which we use to do that.

20 [Slide.]

21 The last condition was to demonstrate that there is  
22 not a climate of intimidation and harassment. A year ago I  
23 addressed this same subject, and I told you then we had  
24 identified three root causes for why a perception existed that  
25 a climate of intimidation and harassment existed at TVA. Those

1 root causes were an inappropriate management culture -- and, as  
2 you've heard, characterized by little or no communications  
3 between management and employees, insufficient management  
4 skills, and improper disciplinary policies.

5 Specifically, there were automatic penalties for  
6 procedural violations that did not take into account the  
7 employee's willingness to come forward and report the problem.  
8 The policies were punitive, and they were certainly perceived  
9 to not be applied equitably to all crafts, managers, and  
10 engineers.

11 Last year I listed seven or eight specific actions  
12 that we had taken to start chipping away at those root causes.  
13 A year later I can tell you we've taken broad actions to  
14 eliminate the root causes. The first two here, communications  
15 and walking spaces, you'll hear a theme throughout today, to  
16 eliminate the improper management culture that existed before.

17 Disciplinary actions has two facets. One, those  
18 guilty or believed to be guilty of intimidation and harassment  
19 were disciplined, regardless of the age of the case. And we  
20 continue to discipline managers and employees found guilty of  
21 intimidation and harassment in the workplace.

22 But our disciplinary action and our disciplinary  
23 guidelines are corrective in nature, and they do take into  
24 account the employees reporting the problem themselves. It's  
25 structured to encourage them to tell us about violations.

1           Lastly, and most importantly and maybe most far-  
2   reaching, is a comprehensive management training program, which  
3   you'll hear about.

4           In summary, I'm convinced we have met and have  
5   demonstrated those three conditions. Thank you.

6           [Slide.]

7           MR. WHITE: Our next discussion is Management  
8   Training. Let me tell you a little bit about Ms. Blackburn.  
9   She has a bachelor's degree in personnel management, and a  
10   master's degree in organizational psychology. She's been a TVA  
11   employee for nine years.

12           TVA had hired a contractor to do management training.  
13   But I wanted a long-term program. I did not want a bandaid  
14   fix. I recognize that management training is a continuing  
15   program, and TVA should know best now to training TVA. So, I  
16   searched throughout TVA to find someone who was intelligent,  
17   innovative, and willing to work very hard and start off  
18   running. I recruited Ms. Blackburn from a non-nuclear part of  
19   TVA. And I will tell you that this lady has stepped up to bat  
20   and has really met the challenge that I put on her shoulders in  
21   about March of last year. Go ahead.

22           MS. BLACKBURN: Thank you, Mr. White. You've heard  
23   management training and management effectiveness referred to  
24   several times during the presentation. I believe management  
25   training and development is a part of the long-term fix, and I

1 believe it's an area where we've made tremendous progress in  
2 the last year.

3 We outlined in Volume I a Management Training and  
4 Development Plan. We have implemented our management training  
5 plan and we've begun the process of identifying managerial  
6 skills and the individual development planning for the future  
7 in the organization. Next slide, please.

8 [Slide.]

9 There are three factors that I believe have  
10 contributed to what is a successful and, I believe, an  
11 impactful program of management training and development. The  
12 first one, Emphasis and Involvement by Top Management, you've  
13 heard that emphasis today in the presentation. The emphasis  
14 really is on line management, training, and developing  
15 employees as an everyday day-do-day process.

16 There are a couple ways that training is formally  
17 taking place outside of the classroom. Developmental  
18 assignments, coaching and counseling, and then also seeing that  
19 the training in the classroom is transferred back to the job.

20 In terms of management involvement, it's very visible  
21 as a part of the training programs in the classroom itself. We  
22 have video tapes and written messages from Mr. White outlining  
23 expectations, roles for supervision. The five objectives that  
24 he spoke about earlier in his presentation are integrated into  
25 the content of the training.

1           In addition, Mr. White referred to the roundtables.  
2       This is an opportunity for a senior manager, up to and  
3       including Mr. White, to sit down at the end of a training  
4       session and discuss questions, problems, concerns, and  
5       philosophies.

6           Systematic and Required, the second factor, I  
7       believe, has moved us into an impactful program. It used to be  
8       piecemeal and a deluded effort. We now have a core required  
9       for each level of manager. We schedule on a 90 day schedule,  
10      where a line manager actually integrates the training into the  
11      work schedule for that 90 days. We then track that at the very  
12      senior level to make sure that we're meeting our commitments  
13      within each division or site for their training. This is  
14      another way we send the message of the emphasis of line  
15      management on continuous learning and training on the job.

16           Second is Quality and Quantity. There is no doubt  
17      that we have a lot of work to do in the area of management  
18      training, but we were committed to quality, rather than just  
19      manufacturing training. We took in post-training system design  
20      guidelines, and we applied them to the training wherever it was  
21      possible. That means we established our needs, we certified  
22      our instructors, our objectives, our performance base.

23           In addition, we adopted a philosophy of continuous  
24      evaluation. We have evaluated in several different ways.  
25      There were three goals that we evaluated against.

1 Professionalism of instructors, relevance of the training to  
2 the participants, and then actual change back on the job.

3 We did our first follow-up evaluation in December,  
4 and I can say that we're meeting all three of those objectives,  
5 including beginning to see increased competence on the job as a  
6 result of training.

7 MR. WHITE: Let me interrupt for one second to say  
8 that I don't want to leave the Commission with the impression  
9 that everyone in the organization now understands the  
10 importance of management training. You know, I face the  
11 problems that you would expect, where there are many pressures  
12 on managers to do many things.

13 We do keep very close track and I have to issue  
14 periodic orders to the people that they must go to class,  
15 because other things come up, other priorities compete. Ms.  
16 Blackburn tells me that when one of the organizations is  
17 starting to slack off a little bit, and then I take care of  
18 that problem. But we can see that it's a problem that will be  
19 never-ending, like many others.

20 MS. BLACKBURN: It's a balancing act for managers.

21 [Slide.]

22 The next slide shows you the quantity of training  
23 that we have done since the shutdown of the plant. The core  
24 curriculum, listed at the top of that slide, we began in May of  
25 1987. That training represents over 65 managers a week, on the

1 average, in training, or over 8,300 person days of training  
2 since May when we began delivering the training. That's a  
3 tremendous effort towards management training.

4 The second part of the slide shows that we have  
5 identified, even beyond the core, some additional training  
6 needs and some individual development needs for managers. The  
7 first two bullets under Additional Training are courses we have  
8 delivered since May. The other electives represent OMP  
9 participation in TVA-offered corporate courses since January of  
10 1986.

11 In summary, there's been a tremendous effort and  
12 emphasis put on management training. We outlined a  
13 comprehensive management training and development plan in  
14 Volume I. While there are still improvements and follow-ups to  
15 be made, we have implemented a major portion of what was  
16 outlined in Volume I.

17 As we reach our target for the core curriculum, we  
18 will keep expanding into follow-up training, and we will be  
19 bringing up additional programmatic efforts to increase  
20 managerial effectiveness. Thank you.

21 MR. WHITE: Let me just make one comment on this  
22 slide. These courses, the core courses, are three to six days  
23 each. So, there is a lot of training. But it is the  
24 beginning. You are how far through these courses?

25 MS. BLACKBURN: The first two courses are about half

1 way there.

2 MR. WHITE: Since last May. But the point is that  
3 there will be many managers who will have to repeat those  
4 courses. So we intend, before we go through the whole thing  
5 the first time, we will have a good feeling for what increases  
6 we need to have in terms of increased management training.  
7 From our feedback system we will determine what parts of the  
8 course need to be reemphasized or improved. And, as I say, it  
9 is a continuing program. Thank you.

10 Let's talk about quality assurance. Mr. Kazanas has  
11 a bachelor's degree in metallurgical engineering, and an MBA.  
12 He has 21 years of nuclear experience, including 15 years of QA  
13 experience. He is not a TVA employee. He is a contract  
14 manager on loan from GPU. At GPU he most recently, for about  
15 seven years, served as the corporate QA director responsible  
16 for TMI-One, TMI-Two, and Oyster Creek.

17 MR. KAZANAS: Thank you, Mr. White. Good morning. I  
18 am the Director of Nuclear Quality Assurance. I would like to  
19 summarize for you the improvements that we have made in quality  
20 assurance at TVA over the last two years. Next slide.

21 [Slide.]

22 TVA's nuclear commitments are contained in that plan  
23 and in the top of the QA plan. TVA's QA program is fully  
24 satisfied. And, in fact, we have exceeded our commitments.

25 Many changes have been made in QA at TVA. Foremost



1 among these changes are, number one, the QA organization has  
2 been totally restructured. Next slide.

3 [Slide.]

4 All QA activities have been centralized. Instead  
5 of having five independent programs, with five separate  
6 approaches, we now have an integrated QA program. In addition,  
7 the Director of Nuclear Quality Assurance now reports to the  
8 Manager of Nuclear Power. This organizational change in  
9 itself, along with others, has significantly increased the QA  
10 visibility.

11 MR. WHITE: What Mr. Kazanas is saying is that when  
12 the boss is interested, everyone's interested. And that's the  
13 way we've made QA.

14 MR. KAZANAS: Number two, TVA has added 25 new QA  
15 managers to the organization who bring in over 400 man years of  
16 QA experience. Many of them come from the outside and bring an  
17 added valuable industry perspective and added professionalism.

18 Number three, a new subgroup within QA, Engineering  
19 Assurance, has been created to provide the QA oversight of  
20 engineering activities. Engineering Assurance reports  
21 administratively to Engineering, but functionally and  
22 technically it reports to QA. Engineering Assurance  
23 extensively monitors TVA's engineering and technical  
24 activities. Next slide.

25 [Slide.]

1           Number four, TVA has implemented substantial QA  
2           training for its inspectors, monitors, and auditors. We are  
3           very proud of our QA training program. Some utilities have  
4           utilized our training modules as models for their own training  
5           programs. I would also like to add that our management review  
6           guides have been adopted by the Operations QA Subcommittee of  
7           the Energy Division of the American Society for Quality Control  
8           as models in our industry.

9           MR. WHITE: Those two things that he just mentioned  
10          tell you we've come a long way in two years, with other  
11          utilities who want to copy what we are doing. That in itself,  
12          I think, is significant.

13          MR. KAZANAS: We have conducted substantial QA  
14          training for many of our employees, both within and outside the  
15          QA organization. Some 89,000 QA training hours alone in 1987.  
16          And 22,000 training hours already in '88.

17          Number five. QA has increased its emphasis on  
18          performance-based quality verifications with the addition of QA  
19          technical experts and increased site presence. QA is looking  
20          at the how-tos now, in addition to compliance.

21          Number six. TVA has broadened its scope of its  
22          overview of a variety of plant activities that affect safety.

23          Number seven. A number of new QA programs and  
24          management initiatives have further strengthened our program.  
25          These include our level three oversight program, our upgraded

1 inspection planning program, the QA monitoring program, and our  
2 new corrective action program. I would like you to focus your  
3 attention particularly on our corrective action program. Next  
4 slide.

5 [Slide.]

6 TVA's corrective action program was initiated 11  
7 months ago. It incorporates earlier unresolved QA  
8 deficiencies. In this program TVA ensures that all conditions  
9 that are considered to be adverse to quality, called CAQs, are  
10 prioritized, monitored, dispositioned, and verified.

11 We have employed an extremely low threshold for  
12 classifying any condition as a CAQ. We rely not only on our QA  
13 organization to initiate CAQs, but also identification from the  
14 entire organization. This is reflected by the statistic that  
15 approximately 69 percent of the CAQs come from the line  
16 organization.

17 The CAQ process involves the immediate prioritization  
18 of an identified condition adverse to quality so that  
19 operability issues, including issues of generic concern from  
20 one of the other plants to another, are reviewed in a timely  
21 manner. In the event a CAQ is of less significance, it is  
22 prioritized accordingly. CAQs are tracked in our monthly  
23 reports that are issued to Mr. White and the TVA line managers.

24 In the event a CAQ is not corrected within the  
25 timeframe specified in the CAQ program, a mandatory escalation

1 procedure is triggered. In a few instances, for example, this  
2 procedure has escalated a CAQ all the way up to Mr. White for  
3 his resolution.

4 We have issued over 2,000 CAQs related to Sequoyah  
5 since the initiation of this program. A large, but not  
6 surprising, number given our low threshold for initiation.

7 Today only a few CAQs remain that require resolution  
8 prior to Sequoyah Unit Two restart. And of the 1,100 CAQs that  
9 exist today, approximately one-third concern only Sequoyah Unit  
10 One. One-third are minor discrepancies. TVA is not satisfied  
11 with the existence of the remaining 400 or so CAQs. But we are  
12 continuing to systematically reduce this number.

13 In summary, TVA today has a well organized and  
14 thorough QA program.

15 MR. WHITE: We now want to shift gears to talk  
16 specifically --

17 CHAIRMAN ZECH: Let us interrupt just for a moment.

18 COMMISSIONER ROBERTS: Is Mr. Kazanas -- I hope I  
19 pronounced that properly -- is his successor on board?

20 MR. WHITE: His deputy is a TVA individual, and I  
21 like competition for positions. We are presently looking at  
22 hiring, as a TVA employee, an additional person. So, the two  
23 individuals compete to take over when Mr. Kazanas leaves.

24 COMMISSIONER ROBERTS: Okay. Thank you.

25 CHAIRMAN ZECH: All right. Let's proceed.

1           MR. WHITE: We're going to shift gears now and get  
2           into discussing Sequoyah. Let me just kind of set the stage by  
3           saying that we have gone through three phases at Sequoyah.

4           The first phase, in 1986, you will recall I  
5           established task forces. The task force at Sequoyah was  
6           primarily people from outside of TVA with extensive experience  
7           working to fix problem plants. The function of the task force  
8           was to dig out the problems, determine corrective actions  
9           needed, and to recommend courses of corrective action.

10          The second phase at Sequoyah started in January 1987.  
11         This was the phase of accomplishing corrective actions. During  
12         that phase we did a number of things, like move engineers to  
13         the site, putting program managers in charge of critical path  
14         programs, and so forth. Both we and your staff have briefed  
15         you before on the many, many programs and corrective actions  
16         we've completed to date in these first two phases.

17          We are here today to discuss the third phase.  
18         Understand that the second phase, that of corrective action,  
19         does have some overlap with the third phase. The third phase  
20         started about August of 1987. This phase was a phase to change  
21         the mentality from what I call the overhaul or the outage  
22         mentality to an operational mentality.

23          My experience -- and, believe me, I've had a lot in  
24         this area -- says that at the appropriate time you must take a  
25         distinct, definite, conscious step to change that mentality.

1 It involves a number of things. In our case, it involved  
2 change-out of certain line managers, including the plant  
3 manager. It involves a lot of training and teaching.

4 And let me emphasize the teaching part, because it's  
5 not only teaching to build an operational team. It's more than  
6 that. You know that when you convert from the overhaul to the  
7 operational mentality there will be mistakes made. One of the  
8 traps that people sometimes fall into is that the mistakes are  
9 usually small ones and they are sometimes disregarded. And I  
10 consider those small mistakes as danger flags. Because, if you  
11 don't pay attention to them, the big mistake will get you.

12 Therefore, what we've done as we've moved into this  
13 phase is taken every opportunity of any mistake, any error, no  
14 matter how small, of stopping what we're doing, getting our  
15 people together and talking about it, discussing the errors,  
16 getting other sections to understand what the errors were, and  
17 using it as a teaching mechanism. The plant manager has done  
18 this, and I have done it myself in large groups of people.

19 So, mistakes will be made, and we've made some, and  
20 we've used them as a learning experience. Now, in the ideal  
21 world you would hope that, if one part of the organization, one  
22 watch section, made a mistake, then all the other watch  
23 sections would immediately learn from it. Unfortunately, in  
24 the real world that isn't true. In the real world the other  
25 sections think to themselves, no matter what the manager says,

1       they think to themselves, that's the other section, we wouldn't  
2       make a dumb mistake like that.

3               So, sometimes you have to let each section make the  
4       mistake in order to train so that they recognize that they,  
5       too, are susceptible.

6               So, we are now in that third phase. As part of that,  
7       the operators must understand it is their plant. It is their  
8       plant. They own that plant. The support organizations must  
9       understand the change in their role. They still have technical  
10      ownership of the plant, in the case of engineering, and they  
11      must be responsive to the operators. Those, of course, are  
12      only a few of the things of this change in mentality, of which  
13      I speak.

14              Now, first, let's talk about that technical support.  
15      Mr. Hosmer will talk to that. Let me just tell you very  
16      briefly something about Mr. Hosmer. He has a master's degree  
17      in chemical engineering. This man already has 18 years of  
18      nuclear experience under his belt. I hired him last year.  
19      I recruited him from an architect-engineer firm where he  
20      had had 14 years experience and a proven track record of  
21      accomplishments at San Onofre One, Two, and Three, Palo Verde  
22      One, Two, and Three, South Texas, and Rancho Seco.

23              MR. HOSMER: Thank you, Mr. White. I'd like to spend  
24      the next few minutes discussing the technical support  
25      organization's readiness to support Sequoyah. Next slide,

1 please.

2 [Slide.]

3 I'd like to talk about three things. The major  
4 transition we have made as an organization in the last two to  
5 three years. The technical support team, what it looks like  
6 today. And, lastly, what we are currently doing to support  
7 plant operations. Next slide, please.

8 [Slide.]

9 With respect to the major transition we have made,  
10 there were three issues of concern brought up in the past.  
11 There were concerns about timeliness, accountability, and  
12 concerns of maintaining the design basis and concerns about  
13 design control.

14 With respect to timeliness, in the past we were an  
15 off-site available organization. Today we are an on-site, real  
16 time organization.

17 In the past, there were concerns about  
18 accountability. We were in Knoxville. We were an on-call  
19 service. Today we are on-site. We are a support team. And we  
20 have technical ownership of the plant. And let me define what  
21 I mean by that.

22 That means that any design disclosure documentation I  
23 issue is my responsibility to ensure it is in accordance with  
24 NRC regulations. In addition, it means that, if there are  
25 problems in the plant, the resolution of those problems should



1 be done in accordance with our commitments. That is my  
2 responsibility.

3 Concerning the design basis, there were concerns  
4 about it being weakly maintained since the operating license  
5 phase. It has been reestablished. Mr. White mentioned some of  
6 those programs. It has been reestablished today.

7 With respect to design control, in the past we were a  
8 staff-type organization that issued the design by individual  
9 drawings. Today we use the industry standard design change  
10 packages as our mechanism for issuing designs. Those packages  
11 include all the drawings, mechanical, civil, et cetera, needed  
12 for the design. And they are interface reviewed in my  
13 organization for Appendix R, et cetera. Next slide, please.

14 [Slide.]

15 Let me give you a glimpse of what we look like today.  
16 I have approximately 1,400 people who work for me. I have  
17 three responsibilities today. Daily support of Units One and  
18 Two. Unit One restart engineering. And modifications  
19 engineering.

20 With respect to daily support, approximately 400 of  
21 those 1,400 people are involved in daily support of Units One  
22 and Two. Approximately 700 people are involved in the Unit One  
23 restart engineering. And the balance of the people are working  
24 on modifications engineering. That is, engineering needed for  
25 the next refueling cycles and any NRC commitments that we have

1       made.

2               In the future, with both units running, we will be an  
3       on-site team that does daily support and modifications  
4       engineering.

5               Let me briefly tell you about my team. Not only am I  
6       part of the construction, operations, engineering team, I have  
7       a two-part team. I have TVA people on-site and a few TVA  
8       people in Knoxville that work for me, and I have access to two  
9       architect-engineers. Of that 1,400 member team, approximately  
10      1,000 of them are either on-site or within a 10 minute driving  
11      distance. Next slide, please.

12              [Slide.]

13              To show you the daily plant support, the plant  
14      manager conducts a daily plant meeting, seven days a week and  
15      addresses what happens in the plant, what happened in the plant  
16      in the last 24 hours. I have five engineers that attend that  
17      meeting. I have an assistant senior project engineer that  
18      represents me in that meeting. He is also the same man that is  
19      on 24 hour call for a seven day period as well as the other  
20      site senior managers.

21              The plant manager forms the systems engineering group  
22      in his plant. I have provided ten design engineers as part of  
23      a joint maintenance engineering, systems engineering, design  
24      engineering team. They work for Mr. Smith but I have provided  
25      ten people to him, and they are my first point of contact for

1 problem solving in the field.

2 The plant operations review committee, I am currently  
3 an advisor to that committee. I currently pre-screen my people  
4 so they can make proper presentations to that committee. We  
5 have proposed a tech spec change to the Commission that will  
6 make me a full time permanent voting member.

7 I think attitudes are very important in my team and  
8 the rest of the teams. We are working hard to work on team.  
9 We are part of a team. We are in a support role yet we have  
10 the responsibility of retaining technical ownership.

11 In addition, in the nuclear ethics role, we work very  
12 hard. We work on not accepting the unacceptable, understanding  
13 root cause and trying to get better as an organization.

14 I have been with TVA nine months and I have seen two  
15 very positive trends that I would like to share with you. The  
16 first one is in the corrective action area. We have been able  
17 to characterize over 400 corrective actions needed for restart  
18 of Unit 2 and closed basically all of them today to be able to  
19 allow Unit 2 to restart.

20 In the design change area, I've seen two very  
21 important changes. One is timeliness. One is quality. In the  
22 timeliness area, we have cut the time needed to issue a design  
23 change by approximately 50 percent. I think we have done three  
24 things in the quality area that have enhanced the quality of  
25 the product that I issue to the field.

1           One, we package the product and pre-review it in an  
2   interdisciplinary way before it leaves my organization.  
3   Secondly, before it is issued as Rev. 0, there is a  
4   constructability walk down so it can be built efficiently and  
5   get the plant restored to its normal operating configuration in  
6   a quick manner.

7           Last but not least, when that package is finished, I  
8   am responsible to ensure that the control room drawings are as  
9   built.

10           [Slide.]

11           In summary, the design basis in Sequoyah has been re-  
12   established. Those processes needed to maintain it are in  
13   place. In my organization, the technical support people have  
14   accepted their role as technical owners of a plant and they are  
15   currently supporting plant operations.

16           Thank you.

17           COMMISSIONER ROBERTS: Mr. Hosmer, you are a TVA  
18   employee?

19           MR. HOSMER: Yes, sir.

20           COMMISSIONER ROBERTS: Thank you.

21           MR. WHITE: The next speaker is Steve Smith. I hired  
22   Steve Smith last July as a TVA employee. He has 22 years of  
23   Navy and commercial experience. Most recently as the assistant  
24   plant manager during the recovery program at Davis-Besse. He  
25   had the responsibility there for the maintenance program which

1 got very high marks from the NRC. He played a key role in the  
2 restart program. In fact, I believe you met Mr. Smith when he  
3 briefed you on the maintenance program at Davis-Besse. He is  
4 my new plant manager at Sequoyah.

5 Steve?

6 MR. SMITH: Thank you, Mr. White. Chairman Zech,  
7 Commissioners, good morning. My name is Steve Smith. I am the  
8 plant manager at Sequoyah nuclear plant. My topic today will  
9 be discussion of the overall readiness of the plant for  
10 restart.

11 [Slide.]

12 When the Sequoyah units shut down in August of 1985,  
13 a variety of problems had already been identified by the NRC,  
14 INPO organization and other organizations which interfaced at  
15 the site to conduct inspections and observations.

16 Those issues as well as issues that were further  
17 discovered at the site, were taken into account in programs  
18 established to approve the overall performance.

19 When I came to the site in late fall in 1987, it was  
20 with the objectives to ensure that full implementation of those  
21 programs had been accomplished and that we brought the  
22 communications and organization to a state where they could  
23 support the operational readiness and restart of Unit 2.

24 [Slide.]

25 In the area of management involvement, we have

1 reorganized the site organization to assure they are directly  
2 aligned to support the operation of the plant. We have created  
3 a system engineering organization which I will discuss in  
4 detail further. We have reduced the levels of management at  
5 the site to assure direct communications between craft and to  
6 my level at the site.

7 We created a management roster which includes  
8 representatives from all organizations at the site which must  
9 interface to support the correction of operational problems and  
10 we have fixed shift support.

11 [Slide.]

12 This assures that when a problem is identified during  
13 the night or on the back shift, that problem gets immediate  
14 corrective attention and corrective action. This back shift  
15 and weekend organization is 24 hours a day, seven days per  
16 week, and is approximately 45 people in the various disciplines  
17 and organizations to assure prompt action in the case of a  
18 problem.

19 [Slide.]

20 We have proceduralized the accountabilities and  
21 responsibilities of these organizations and individuals in a  
22 set of procedures called conduct of operations, although they  
23 are not fully complete at this time, the most important ones,  
24 those which are for operations or maintenance, are implemented.  
25 Those procedures describe the duties, responsibilities and

1 interfaces of each level of supervision and craft in those two  
2 areas and their interfaces to the other organizations. They  
3 have been trained on those procedures and we re-emphasize the  
4 contents and the requirements of those procedures in periodic  
5 meetings.

6 [Slide.]

7 In the area of housekeeping, material condition,  
8 although it has been judged as adequate for restart by a  
9 variety of inspections on the part of the NRC and INPO, we felt  
10 that housekeeping and material conditions at the site should be  
11 used as an example of the excellence we intend to achieve in  
12 all areas of our operations at the site.

13 We therefore implemented a very detailed upgrade  
14 program which involves not only housekeeping but painting,  
15 insulating, fixing small material problems such as packing  
16 leaks. That program currently employs about 200 people. It is  
17 intended to conclude in December of this year.

18 MR. WHITE: Let me interrupt you one second. The way  
19 we did this was to select the worse spaces that we could find  
20 in the plant and then I told the plant people, get the space  
21 ready for inspection. After several tries, that single space  
22 passed the inspection. We said, that's the standard, that's  
23 the yardstick, take that and do it everywhere in the plant. We  
24 have done this both at Sequoyah and at Browns Ferry. It has  
25 been an effective way to do it.

1           MR. SMITH: As I said, it is a visual example of the  
2 excellence we intend to achieve in all areas.

3           [Slide.]

4           The maintenance program has been upgraded both at  
5 Sequoyah and on a corporate level. The corporate program, as a  
6 matter of fact, I was hired at Sequoyah to help establish that  
7 program, and I've had direct interface with that program since  
8 going to Sequoyah as plant manager, there is a good working  
9 relationship there and the directives and standards used to  
10 establish the maintenance program through TVA nuclear are being  
11 generated by that organization.

12           Two of the most important facets in the maintenance  
13 program at the site are the procedures upgrade program, which  
14 has been in process for about a year, and the corporate  
15 writer's guide for maintenance instructions and the validation  
16 program have been selected by INPO and recommended to other  
17 utilities to be used in their programs of upgrade.

18           Also the preventive maintenance program at the site--

19           MR. WHITE: I might also make a statement with regard  
20 to one change in maintenance that INPO is asking is some of our  
21 things to use for guides, dramatic change in a period of a  
22 couple of years.

23           MR. SMITH: The preventive maintenance program at the  
24 site now includes a review of those pieces of equipment that  
25 are important to power production and operation of the balance



1 of plant portion of the plant. Preventive maintenance  
2 activities, once identified, are reviewed and concurred with by  
3 the nuclear engineering organization and also recommendations  
4 come from that organization for both predictive and preventive  
5 maintenance activities at the site.

6 We have a new work prioritization system which  
7 assures that the right priorities are assigned to work at the  
8 site and that the plant's needs are addressed first.

9 The post-maintenance testing program involves two  
10 phases, the first phase is a cookbook approach to those routine  
11 and repetitive tasks to assure that the proper testing is  
12 performed and to assure the operability of the equipment that  
13 is repaired.

14 The second portion of that program is the criteria to  
15 be used by engineers to develop post-maintenance testing for  
16 critical and complex maintenance activities to assure the  
17 operability and serviceability of the equipment that is  
18 repaired.

19 [Slide.]

20 As I said, we have created a systems engineering  
21 organization and that organization has system sponsorship for  
22 all the systems in the plant. They coordinate between the  
23 various organizations such as engineering, maintenance and  
24 operations to assure that the proper action is taken when a  
25 problem is identified.

1           One of the most important functions of that  
2           organization is to assure that the proper implementation of  
3           system modifications have been performed. They are involved  
4           with the modification from its conceptual stages through the  
5           walk down in the plant, the actual implementation of the  
6           modification, the development and conducting of the post-  
7           modification testing, to assure that we have gotten the correct  
8           modification installed and the system performed by the design  
9           basis.

10                   [Slide.]

11           Another area of improvement that was a concern by  
12           both the NRC and INPO in a variety of inspections is the area  
13           of root cause determination. We have provided training on root  
14           cause determination. The root cause determination program has  
15           been established in a procedure at the site. That procedure  
16           also includes the formation of an incident investigation team.  
17           Any time a problem occurs at the plant that involves equipment  
18           or personnel performance, the incident investigation team is  
19           called into action. Their arrival on site is within hours of  
20           the incident.

21           The program involves not only the quarantine of  
22           equipment once it is put in a safe condition but on-site at  
23           time interviews of the personnel involved with the incident.  
24           This helps to assure the correctness of the information that is  
25           gathered and management involvement directly at the site, at

1 the time of the incident, is assured. Also the program  
2 includes generic reviews for both equipment at the site and at  
3 the other three nuclear sites within TVA.

4 [Slide.]

5 In the material area of plant readiness for restart,  
6 we have several programs in place, several things have been  
7 conducted.

8 [Slide.]

9 Plant modifications that were identified as part of  
10 the design basis verification program and other activities at  
11 the site during the recovery period for the Sequoyah unit are  
12 now nearly complete. They were originally approximately 370  
13 modifications to be performed and as of this morning, there  
14 were four modifications with remaining field work to do.

15 [Slide.]

16 In the area of the restart test program, more than  
17 125 restart tests were identified in the review of the original  
18 start up testing program, and of the technical specification  
19 review at the site. Those 125, as of this morning, there were  
20 four tests remaining to be performed with one in progress.

21 [Slide.]

22 Since the shut down in 1985, through the years of  
23 1986 and 1987, over 40,000 work requests have been completed at  
24 Sequoyah. To date at Sequoyah from the first of the year, over  
25 2,700 work orders have been generated and 2,400 of those work

1 orders have been completed.

2 [Slide.]

3 In the area of maintenance backlog, currently we have  
4 approximately 1,286 work orders and as you can see from the  
5 chart, from mid-year, that is a significant work down.

6 [Slide.]

7 Of that approximately 1,300 work orders are currently  
8 in existence; 500 of those work orders have to do with the  
9 paint, fix up, clean up program, which are material conditions  
10 type work orders and 750 are actual corrective maintenance  
11 activities in the plant. Of those 750, 90 of those work orders  
12 are currently in line to be performed prior to the restart of  
13 Unit 2.

14 If you base that number against the industry and  
15 against our past two years' performance rate, that is about a  
16 two to two and a half month backlog of work, which is very much  
17 in line with top performers in the country right now. They  
18 generally carry about a three month backlog of work activities.

19 [Slide.]

20 COMMISSIONER BERNTHAL: This is top performers as  
21 opposed to average performers?

22 MR. SMITH: As opposed to average performers; yes,  
23 sir.

24 In the area of communications, we have made a number  
25 of significant improvements. We do have a daily plant status

1 sheet. It is issued each morning at 7:30 and it lists the  
2 status of both Units 1 and 2. It lists any problems which are  
3 identified over the previous 24 hours, conditions adverse to  
4 quality, work requests, et cetera. It also identifies any  
5 limiting conditions for operation which the plant may have  
6 entered during the last 24 hour period.

7 Limited conditions for operation against a plant are  
8 required to have 24 hour, seven days a week support until the  
9 condition is corrected.

10 We have structured periodic meetings with all the  
11 plant personnel. I meet with my direct supervisors three times  
12 weekly. In those meetings, we discuss plant problems, which  
13 may be programmatical, administrative, personnel. We meet  
14 monthly with all the supervisors in the plant. In that  
15 meeting, we discuss what the plant has done during the past  
16 month, what our goals and objectives are for the next month and  
17 for the remainder of the year. In those meetings we discuss  
18 any problems which may be identified by the supervisors.

19 Quarterly, we meet with all plant personnel. When I  
20 say "we," the superintendents who report directly to me, and I  
21 meet with those people. It is a very extensive meeting. It  
22 usually requires five days to conduct that meeting because  
23 there are over 1,200 personnel who report at the site.

24 Again, we discuss ongoing activities, where we have  
25 come from over the past quarter and where we intend to go to

1 during the next quarter.

2 COMMISSIONER BERNTHAL: Will you explain the  
3 distinction between a maintenance request and a work request?  
4 Is there a step between the two?

5 MR. SMITH: All activities at the site are identified  
6 on a work request. Those corrective maintenance activities  
7 which involve safety related equipment, a maintenance request  
8 is developed at that point in time. The maintenance request is  
9 a much more detailed document. It embodies things such as ASME  
10 code requirements, EQ requirements, fire protection  
11 requirements, and it gets a more detailed review by a variety  
12 of organizations over and above the work request.

13 Currently, we are modifying that program. The work  
14 request itself gets too many reviews and we are reducing it to  
15 one level review and putting it on what we call a service  
16 request, those things that say paint a wall, move a desk, those  
17 activities.

18 We do have a required mandatory management attendance  
19 and training sessions in our daily shift turnover meetings.  
20 The shift turnover meetings are a very important phase of our  
21 operation. I might add that each of the members of the board,  
22 and Mr. Runyon himself, have attended our shift turnover  
23 meetings at the site.

24 [Slide.]

25 The area of nuclear ethics has been discussed on many

1 occasions. We spend a lot of time thinking about what the  
2 nuclear ethics is and what it means to us at Sequoyah. We feel  
3 those items listed are the essentials of a strong nuclear ethic  
4 and we feel that improved communications and the trust between  
5 employees and management give us the ability to convey those  
6 ethics to the lowest levels of craft and operations at the  
7 site.

8 [Slide.]

9 With those things that I have discussed, the ongoing  
10 programs, the improvements in the programs that existed, I feel  
11 that in all areas, Sequoyah Unit 2 is now ready for operation.

12 Thank you.

13 MR. WHITE: Next I would like to have a discussion on  
14 operational readiness by Joe Bynum. Let me tell you a little  
15 bit about Mr. Bynum. He has a degree in electrical  
16 engineering, a Bachelor's degree and a Master's degree in  
17 nuclear engineering. He has 15 years of commercial experience.  
18 A very interesting background. He was at TVA from 1972 to  
19 1982, where he held many key operating positions including  
20 assistant plant manager at both Browns Ferry and Sequoyah.

21 He left TVA in 1982 and from 1982 to 1987, he was the  
22 plant manager for all three units at Palo Verde. During that  
23 period of time, all three units at Palo Verde were licensed by  
24 the NRC. I think TVA is fortunate to have convinced Mr. Bynum  
25 to return home, like Mr. Smith and Mr. Hosmer, that you heard

1 earlier, Mr. Bynum has a proven track record.

2 MR. BYNUM: Thank you, Mr. White.

3 I'd like to include that even though I am listed on  
4 the corporate organization, I am assigned full time at Sequoyah  
5 and have been full time there since October, since returning to  
6 TVA, specifically looking at readiness for restart.

7 Mr. Smith has talked about overall plant readiness  
8 and now I would like to take the next few minutes to focus on  
9 the activities in the main control room and interfacing  
10 directly with the main control room.

11 [Slide.]

12 We have many inputs on operational readiness. We  
13 have already talked about the management team and unlike TVA of  
14 old, we now have a lot of commercial experience from outside  
15 TVA. You have heard from a few of those individuals today.

16 In addition to the TVA management, and of course NRC,  
17 we have addressed all the lessons learned in NUREG-1275. We  
18 have compared that against the nuclear performance plan. You  
19 see from the presentations that we have a strong emphasis on  
20 operating mentality, shifting to operating mentality.

21 As a result of looking at NUREG-1275, we have added  
22 evolutions into the start up training and I am going to discuss  
23 this three day start up training in a few minutes. We have  
24 added evolutions, as a result of looking at NUREG-1275. At the  
25 staff's request, we did provide our actions in each of the



1 lessons learned areas to the staff.

2 INPO did a plant evaluation in late 1986 and two  
3 assist visits in November of 1987. Those two assist visits  
4 were particularly important because during those visits, they  
5 evaluated each individual operating crew on the Sequoyah  
6 simulator.

7 The nuclear managers review group is a permanent  
8 staff of approximately 25 people reporting directly to Mr.  
9 White.

10 In the specific area of operational readiness review,  
11 we have had two operational readiness reviews done at Sequoyah.  
12 The first was in early 1987, and after Mr. White reviewed this  
13 report, he decided it was not tough enough. He sanctioned a  
14 second operational readiness review which began in August of  
15 1987. This review continued to February, 1988, consisted of  
16 eight experienced senior management level individuals with  
17 experience in the military, commercial and NSSS vendors.

18 An interim report was issued in October of 1987 when  
19 I came to TVA.

20 MR. WHITE: Let me interrupt you for one second. I  
21 think it might be interesting for the Commissioners to  
22 understand the direction I gave that second operational  
23 readiness review team. I made it clear to them that I did not  
24 want to apply industry standards to TVA. I wanted to apply  
25 absolute standards and the highest standards. I challenged

1       them to be extremely critical in everything we did and  
2       extremely thorough. That is what they did.

3               The second ORR was much improvement in terms of  
4       toughness over the first one.

5               MR. BYNUM: We just issued a final response to that  
6       report in March.

7               [Slide.]

8               I'd like to really focus in on three specific areas  
9       of operational readiness. Management involvement;  
10      administrative controls and standards of performance.

11              [Slide.]

12              We have already had several discussions on emphasis  
13      on walking the space philosophy. I won't go into that in any  
14      further detail. Observation and critique of training. We have  
15      established a schedule for operations management to observe and  
16      critique training, both start up training, the three day  
17      training and ongoing requalification training. Again, Mr.  
18      Smith has discussed periodic meetings with all personnel.

19              As far as the plant operations review committee  
20      responsibility goes, we revised Section 6 of the technical  
21      specifications to go from the traditional procedure review and  
22      approval process to responsibilities for an overall interface  
23      and safety assessment. This was discussed with the American  
24      Nuclear Insurers when they were at the site earlier this year  
25      and was a topic in one of their reports. We have responded to

1       that report with all the actions that we have underway.

2               [Slide.]

3               In the area of administrative controls, Mr. Smith  
4       again has already discussed the establishment of the work  
5       control group and the administrative procedure changes, I chose  
6       these four areas because these are specific areas which have  
7       historically been problems in other nuclear plants. I'd like  
8       to discuss two of those in detail. One is the conduct of  
9       operations.

10              We have completely revised our conduct of shift  
11       operations procedure. In this provision, we have clearly  
12       spelled out our standards of operation. By "standards," I mean  
13       standards for sites communication, standards for procedure  
14       adherence, standards for a deliberate questioning approach.

15              In the area of control and temporary modifications,  
16       we have completely revised our program for temporary  
17       modifications. This revision has emphasized reducing the  
18       number of temporary mods and in addition to carefully  
19       controlling temporary modifications when they are in fact  
20       necessary and assuring that proper safety evaluations are done  
21       when temporary modifications are made.

22              [Slide.]

23              In the standards of performance area, we train our  
24       operating crews as crews on the simulator, with all of those  
25       associated personnel assigned to the control room participating

1 in that training. Specifically, we held a conduct of  
2 operations training based on the new conduct of operations  
3 procedure. In doing this, we held an one day seminar off-site.  
4 At this seminar, we had an upper management level introduction,  
5 we had a professional attention to detail presentation done by  
6 an outside contractor, and then we had the conduct of shift  
7 operations procedure training performed by the shift supervisor  
8 for each of their respective crews.

9 In the area of start up training, as I have  
10 indicated, we developed a special three day start up training  
11 course which each of the crews assigned to Sequoyah Unit 2 have  
12 completed. This emphasizes start up procedures such as heat  
13 up, initial criticality, initial turbine generator  
14 synchronization, and power ascension.

15 CHAIRMAN ZECH: Was that done on the simulator?

16 MR. BYNUM: Yes, it was. It was a three day, 12 hour  
17 days, and we did both classroom and simulator but the bulk of  
18 the training was performed on the simulator.

19 CHAIRMAN ZECH: Each shift did that?

20 MR. BYNUM: That is correct. Each shift spent three  
21 days.

22 CHAIRMAN ZECH: Thank you.

23 MR. BYNUM: The heat up will allow us to re-  
24 familiarize the operators with a hot plant. We have developed  
25 specific evolutions as I indicated in reviewing NUREG-1275. We

1 put specific evolutions for each operating crew to go through  
2 during that heat up phase. Those evolutions are things such as  
3 placing the main feed pump in service, placing the auxiliary  
4 feedwater pump in service, establishing steam generator blow  
5 down and other evolutions.

6 We completely evaluated our non-licensed operator  
7 program. One of the problems we found is we had too many watch  
8 stations of which auxiliary operators, what we call our non-  
9 licensed operators, were required to be proficient on. We  
10 reduced that number by separating our stations into two  
11 distinct groups. One, water and waste processing and the  
12 other, the traditional power block duties of auxiliary  
13 building, control building, and turbine building. By doing  
14 this now, auxiliary unit operators are only required to be  
15 proficient on six stations. In addition to that, once we  
16 assign the specific non-licensed operators to those stations,  
17 we have evaluated their proficiency on each station they are  
18 assigned to.

19 We have integrated the shift technical advisors into  
20 the shift complement. We have gone away from the traditional  
21 firemen, 24 hour watch, within ten minutes of the control room,  
22 to placing a shift technical advisor on each operating shift  
23 and actually assigning them to the shift crew, so we now have  
24 six STAs associated with the six operating crews.

25 We have completely evaluated our chemistry shift

1 complement and our radiation control technicians shift  
2 complement. We have assessed the experience and we now have  
3 two ANSI qualified chem techs on each shift and four ANSI  
4 qualified rad con techs on each shift. In addition to that, we  
5 put a supervisor level individual on each shift for better  
6 interface and communications with the control room and better  
7 accountability in each of these areas.

8 CHAIRMAN ZECH: Do you have a college degree program  
9 in place?

10 MR. BYNUM: Yes, we do.

11 CHAIRMAN ZECH: Encourage your operators and others  
12 to take it?

13 MR. BYNUM: Yes, we do.

14 CHAIRMAN ZECH: Is it well subscribed?

15 MR. BYNUM: Very well. In fact, we generally --

16 CHAIRMAN ZECH: When did you do that?

17 MR. BYNUM: I don't know the exact date when it was  
18 begun.

19 MR. SMITH: Excuse me. The program has been in place  
20 for about two years and we have had six individuals graduate  
21 from the program and one individual that is magna cum laude.  
22 There will be two more individuals entering the program in May  
23 of this year.

24 CHAIRMAN ZECH: Are these operators?

25 MR. SMITH: Yes, sir.

1           CHAIRMAN ZECH: What happened to the fellow who  
2 graduated? Is he still a shift operator?

3           MR. SMITH: Three of them are back on shift; one is a  
4 shift supervisor; two are working in our work control  
5 organization and one is in training.

6           CHAIRMAN ZECH: What do you intend to do with them in  
7 the future?

8           MR. SMITH: They will be escalated into the  
9 management program and help us to establish --

10          MR. WHITE: Let me answer that by saying I can use  
11 those people in a lot of places, Mr. Chairman, and I will.

12          CHAIRMAN ZECH: I agree. It is a commendable  
13 program. I think that is an important step.

14               [Slide.]

15          MR. BYNUM: We divided the operational readiness  
16 review and the INPO reports into both restart items and non-  
17 restart items. With regard to the operational readiness review  
18 report, all restart items are complete and all non-restart  
19 items have action plans. Likewise for the INPO restart items,  
20 all of those items are complete.

21          MR. WHITE: Although all those items are complete,  
22 there are a couple of areas which definitely need more  
23 attention and are given more attention. One is rad con and the  
24 second is critical self assessment. I'm not at all happy that  
25 we yet have the degree that I want to have on a longer term.

1           MR. BYNUM: How have we verified that our  
2 implementation is --

3           CHAIRMAN ZECH: Before you get off that, are you  
4 telling us that as far as you are concerned today, you are  
5 completely satisfied that all restart items are complete, you  
6 don't have any problems at all?

7           MR. WHITE: When you say "problems," obviously there  
8 are evolutions and testing that we still have going on today.  
9 Mr. Bynum mentioned the fact that from the NUREG-1275, we  
10 intend to do some other evolutions.

11          COMMISSIONER CARR: I read that as only for the  
12 operational readiness part of the thing.

13          MR. WHITE: We have done all the corrective actions  
14 in terms of the ORR that we need to to start up.

15          COMMISSIONER CARR: Personnel and training, that kind  
16 of thing, not material?

17          MR. BYNUM: Some of them are but basically they are  
18 procedures, training, things like that.

19          CHAIRMAN ZECH: You have no remaining material and  
20 technical issues?

21          MR. WHITE: For example, we have seven modifications  
22 to complete and so forth. If you were to grant us permission  
23 to start up today, I wouldn't start up tomorrow. Obviously we  
24 have work to complete. We have documentation to complete.

25          CHAIRMAN ZECH: Could you tell me briefly what some



1 of those items are that you are still working on as far as  
2 technical issues are concerned?

3 MR. WHITE: We are still discussing with the NRC the  
4 diesel generator issue. I think that is almost resolved. We  
5 are discussing Appendix R issues, and I think that one is  
6 almost resolved. I believe your staff -- you would have to ask  
7 them but I believe the IDI issues are all resolved.

8 As a result of something we received about three  
9 weeks ago on Westinghouse breakers, we are going to take a look  
10 at some breakers that have been an industry problem. It is  
11 that kind of odds and ends clean-up.

12 We are very, very close.

13 CHAIRMAN ZECH: Well, I know we're going to hear from  
14 the Staff as far as their concerns, too, but I would hope that  
15 you would agree with the Staff as to what you have remaining,  
16 and perhaps you would be taking the initiative in telling us  
17 what you have remaining as far as the technical side is going,  
18 too.

19 MR. WHITE: Well, I would hope that you will --  
20 communications with the Staff have been very close, and I would  
21 hope that you will hear the same report from them as  
22 essentially what I've just said.

23 CHAIRMAN ZECH: All right. Proceed, please.

24 MR. BYNUM: With specific regard to the  
25 implementation and verification of the ORR and INPO items,

1 during heat-up, of course, we've had intense management  
2 involvement, walking the spaces to ensure that any problems  
3 we've encountered, that we stop. We evaluate the problem, and  
4 we communicate the lessons learned.

5 The shift operator advisor program is a special  
6 program we put in place. It's a joint program between the  
7 Operations Department and the Quality Assurance Department. In  
8 this program, we place four previously licensed SROs on shift  
9 24 hours a day on all shifts. They were previously licensed  
10 from facilities other than Sequoyah, to observe activities,  
11 activities such as shift turnover and surveillance testing and  
12 equipment operation and tagging, and specifically looking for  
13 procedural adherence, knowledge of plant conditions, and a  
14 cautious questioning approach.

15 In addition to that, the Nuclear Managers Review  
16 Group did an independent follow-up on the ORR/INPO action  
17 plans, the procedures, the training, and they viewed the  
18 performance of all operating crews.

19 Post-restart, of course, we have a continuing  
20 verification program of operational professionalism and  
21 readiness. Management involvement again is the key to this.

22 In the quality assurance area, as I indicated, the  
23 SOA program was a joint program between QA and Operations, and  
24 QA has taken particularly the performance-based elements out of  
25 the shift operating advisory program and placed that in their

1 ongoing quality assurance monitoring program.

2 Next slide, please.

3 [Slide.]

4 What are the results of our verification? The shift  
5 operating advisory program and the quality assurance review  
6 indicate that all areas of shift conduct are acceptable for  
7 restart. Again, these are areas such as communications,  
8 adherence to procedures, shift turnover, control of temporary  
9 mods, and other things that we've discussed this morning.

10 In addition to looking at each area, each crew was  
11 evaluated in each area, and all shift crews are acceptable for  
12 restart. Again, this is not to imply that we are where we want  
13 to be. We still have work to do. We still have improvements  
14 to make, but we are very rapidly making those improvements.

15 The Nuclear Managers Review Group, as I indicated,  
16 independently looked at the INPO and the ORR report restart  
17 items, and they acknowledged that they had been adequately  
18 addressed, and in addition, that the corrective action  
19 implementation was satisfactory.

20 INPO did a follow-up visit. They reviewed the  
21 corrective action plan for their items that they considered  
22 important for restart, and they concluded that all corrective  
23 actions were acceptable.

24 In the non-licensed operator proficiency evaluation,  
25 we have certified each auxiliary unit operator as being

1 proficient for the watch stations to which they are assigned.

2 Next slide, please.

3 [Slide.]

4 In conclusion, all areas of operational readiness  
5 have been assessed from line management, from independent  
6 outside observers, from the broad programmatic and attitudinal  
7 aspects all the way to specific standards, detailed procedures,  
8 and specific knowledge areas. We have the program in place to  
9 ensure continuing improvement and continuing self-assessment.  
10 Here the emphasis is on management involvement.

11 I have directly participated onsite in the initial  
12 start-up of seven units, all of those units over 1000  
13 megawatts, three in the last three and half years as the Plant  
14 Manager. I recognize when a plant and its operating staff are  
15 ready. In my experience, I have never seen a unit as  
16 systematically or as thoroughly looked at as Sequoyah Unit 2.

17 Therefore, it is with the highest degree of  
18 confidence that I personally conclude that Sequoyah Unit 2 is  
19 ready for restart.

20 MR. WHITE: This completes our presentation on the  
21 results of our recovery effort. You have already heard today  
22 of such things as 40,000 work requests accomplished, 350  
23 modifications completed, and so forth.

24 Believe me, these things are only the tip of the  
25 iceberg. I could spend much time discussing specific numbers

1 of things done to illustrate the enormity of our 7 million plus  
2 man-hours of effort -- over 7 million man-hours of effort -- to  
3 get Sequoyah Unit 2 ready.

4 But additionally there are many other actions which  
5 are not as easily quantifiable with numbers, but they are there  
6 nevertheless, and they are very important. I speak of such  
7 things as attitudes of the people, their commitment to reach  
8 for the highest standards, their willingness to learn from  
9 their mistakes and the mistakes of others, their support for a  
10 new operational code of conduct, their spirit and their morale.  
11 And believe me, there's much more.

12 It is the totality of these things, both quantifiable  
13 and non-quantifiable, that gives me the assurance that we truly  
14 are ready to restart the TVA nuclear program. In that restart,  
15 as I have always done in a restart, we will be cautious. We  
16 will be conservative, and we will be deliberate. And I and my  
17 key people will be watching closely.

18 And I think, Mr. Chairman, kind of in regard to what  
19 you said, I expect things may break and have to be fixed. I  
20 expect there may be some errors, and if there are, we will  
21 stop. We will use the lessons learned before we proceed.

22 What I hope we've been able to demonstrate to you  
23 today is that TVA has put in place a recovery program, making  
24 the necessary corporate level improvements, as well as  
25 accomplishing the specific work which would permit you to

1 authorize the restart of Sequoyah Unit 2. In addition, we feel  
2 that we have put in place the programs and the resources to  
3 allow us to proceed toward the future start-up of other TVA  
4 units.

5 I will continue to pursue excellence to make the TVA  
6 nuclear program a showcase. I want TVA to be an example of how  
7 things should be done, and I am confident that we are ready to  
8 restart Sequoyah Unit 2, and that it will be operated in the  
9 best interests of the TVA, its ratepayers, and the public  
10 health and safety.

11 And that concludes our presentation.

12 CHAIRMAN ZECH: All right. Thank you very much.

13 Before we call the Staff, I would ask for questions,  
14 comments perhaps, from my fellow Commissioners.

15 Commissioner Roberts?

16 COMMISSIONER ROBERTS: In your opening remarks, if I  
17 heard you properly, you mentioned the pay cap problem. And did  
18 I understand you to say you were trying to do something about  
19 it, and would you feel comfortable in elaborating on that, or  
20 would you rather not?

21 MR. RUNYON: It's a very real problem in that we're  
22 not competitive with the industry. As a matter of fact, we're  
23 far from competitive. I have with me a study that -- a recent  
24 study that TVA has had made by the Hay Company, who are very  
25 well-known in establishing salaries, and we are working with

1 people in Washington, the Congressional representatives and --

2 COMMISSIONER ROBERTS: Will it take legislation?

3 MR. RUNYON: It could take legislation. We're also  
4 looking at some other ways that the Board might do something to  
5 help alleviate the problem through some other types of  
6 incentives, that the Board might have authority to do, and  
7 we're looking at that.

8 It's a very real problem, and if we can't solve it  
9 any other way, we'll have to solve it the way we solved Steve  
10 White's situation. He's here. And we certainly know that's  
11 open.

12 We would like to have, rather than consultants  
13 working at TVA, we would like to have TVA employees working at  
14 TVA, because it's very important that we have people that say,  
15 "I want to work for TVA for the rest of my life, and I'd like  
16 to have that job," because they'll come in, and they'll do a  
17 good job, and they'll want to see it improved because that's  
18 going to be their home. That's what they're responsible for.

19 Now I'm not putting down consultants. Don't  
20 misunderstand me, because they're absolutely necessary. And if  
21 we didn't have them, we'd be in pretty bad shape right now.  
22 I'm talking to Steve about the fact that, hey, you can't leave,  
23 fellow, until everything's done. And everything's not done.

24 [Laughter.]

25 So, you know, we're talking to him about that, but in

1 the meantime we are working very hard with the people that we  
2 know to work with, and that's the people in the Congress and  
3 the Senate that right now control that, and we're working  
4 within TVA to see what we can do internally to help the  
5 situation.

6 MR. DEAN: And any support you can give us,  
7 Commissioner, we'd appreciate.

8 [Laughter.]

9 CHAIRMAN ZECH: Anything else?

10 COMMISSIONER ROBERTS: That's all I have.

11 CHAIRMAN ZECH: Commissioner Bernthal?

12 COMMISSIONER BERNTHAL: Well, we've got too little  
13 time and too much to cover. I think I'll try and pick out one  
14 or two things here that I'd like you to comment on.

15 Incidentally, I am fully sympathetic with this pay  
16 cap situation. We've been talking about that now for the  
17 better part of ten years, and the problem still hasn't been  
18 solved. The Commission was aware of it some years ago and  
19 indicated its concern, I think before all of this even started.

20 I want to focus for a moment on a couple of the key  
21 technical issues that have been raised, and I'll expect the  
22 Staff to comment on these as well. But let's get to the point  
23 here on one or two.

24 First of all, on the diesel generator issue, I asked  
25 a question about that the last time the Staff briefed us here.



1 Our Staff, I believe, most recently has offered some assurances  
2 that they feel that the question of voltage droops under full  
3 load, which I understand to be the principle problem that has  
4 been resolved, and I'll ask them about that, but I'd like you  
5 to explain to me why you're confident now that these diesels  
6 will perform as expected under full load.

7 And just for the sake of information for the public  
8 here, station blackout is very often -- I don't recall for this  
9 particular plant, but is very often one of the highest risk  
10 factors. When you lose all power in a plant, you're in a  
11 serious situation, as you know, so it's essential that these  
12 things be able to perform should you lose offsite power.

13 So have at it. Explain to us why we should have  
14 confidence.

15 MR. WHITE: Well, in my terms as the manager, I have  
16 the confidence because it's not only been a review by -- Mr.  
17 Raleigh, you might come up -- Mr. Raleigh and the TVA people,  
18 but we've hired the best experts that we could find in the  
19 country to look over our shoulder, and I spoke to one of them  
20 as recently as this morning, and he is completely objective,  
21 and it is his opinion that there is not a problem involving  
22 restart.

23 That's not to say that we don't want to make  
24 improvements. There are very few areas that I don't want to  
25 make them.

1 COMMISSIONER BERNTHAL: Sure.

2 MR. WHITE: But mine is based on both our review, as  
3 well as the outside technical people we brought in.

4 MR. RALEIGH: Just the corrective action program for  
5 the diesel --

6 CHAIRMAN ZECH: Excuse me. What's your name again?

7 MR. RALEIGH: Bill Raleigh.

8 MR. WHITE: Bill Raleigh. He's Chief Electrical  
9 Engineer, and he is a new hire to TVA. I brought him in first  
10 as a Contract Manager and then convinced him, I guess, to stay  
11 on as a TVA employee. He's now a TVA employee.

12 CHAIRMAN ZECH: Thank you. You may proceed.

13 MR. RALEIGH: The corrective action program started  
14 in May of 1986, and it involved testing and analysis. That  
15 testing and analysis then resulted in modifications, changes to  
16 the surveillance instructions, and changes to the technical  
17 specifications.

18 We have submitted that test and analysis to the NRC  
19 along with our conclusion that the system is safe to perform  
20 its safety-related functions.

21 In addition to that, we're pursuing long-term  
22 improvements we can make in the system to further increase the  
23 performance or enhance the performance of the system. But our  
24 confidence is based on the test that we did. It wasn't just a  
25 paper exercise. We actually did tests.

1 COMMISSIONER BERNTHAL: Okay. Now you've not  
2 performed a test under full load, right?

3 MR. RALEIGH: That's correct.

4 COMMISSIONER BERNTHAL: I understand that you're not  
5 -- at least my understanding is, and Staff can explain, you're  
6 not required to do that strictly under our regulations.

7 The revision, most recent revision to our  
8 regulations, would have required you to do that. Can you  
9 explain to me why that is not practical or feasible and why you  
10 have confidence in the ability of the diesels to perform,  
11 having not been tested under full load?

12 MR. RALEIGH: It is not practical because the pump  
13 systems do not have a full flow bypass capability and as a  
14 result you have to recirculate a portion of the fluid, and of  
15 course, it doesn't have the full flow capability. It is a  
16 relatively simple analytical method to compensate for that  
17 difference.

18 In addition, we have tested the diesel up to its  
19 capacity rating so we are sure it will carry that. We have  
20 also in our analysis that we have submitted to the NRC,  
21 identified margins that no one else has identified that exist  
22 in the system. We are sure this system will perform its  
23 function.

24 COMMISSIONER BERNTHAL: Thank you. I appreciate  
25 that. I will ask the staff to give their view on that as well.

1           One issue that is cited, I guess it is still a  
2 preliminary safety evaluation report that Mr. Ebnetter recently  
3 submitted to the Commission, as having remained unresolved at  
4 this point or at least at the time you submitted it, concerned  
5 temporary changes to drawings and your control of temporary  
6 changes to drawings.

7           I gather there has been a question of implementation  
8 of a single system here, so you have one focal point for all  
9 such changes, obviously a good idea.

10           Has this issue been resolved yet?

11           MR. WHITE: As far as I know, it has been. Isn't  
12 that right, Mr. Hosmer? Are there any lingering issues?

13           MR. HOSMER: I think the issue you are addressing is  
14 more focused on the control line red line drawing issue. We do  
15 have a single drawing program. We have agreed to a system  
16 about three days ago where we will stop red lining drawings, we  
17 will issue a cad drawing to the control room and to multiple  
18 places in our system, such as outside emergency response  
19 facility. That has been resolved. Our procedures have been  
20 changed. I think we have resolved that.

21           MR. RUNYON: Commissioner Bernthal, if I might make a  
22 comment. In my visits to the control room, the operators made  
23 a point of showing me their drawings and telling me it had been  
24 resolved in their opinion.

25           COMMISSIONER BERNTHAL: Good. Thank you.

1                   One other question, and then I'll give someone else a  
2 chance.

3                   I understand the American Nuclear Insurers, the  
4 insurance group, conducted an inspection of the plant and  
5 especially looked at some of the structural, organizational  
6 aspects at the plant and were somewhat critical, I think it is  
7 fair to say, in certain areas, certain committees, plant  
8 operation review committee was cited, for example. They had  
9 several recommendations for making improvements.

10                  What have you done about that? Could you address  
11 that briefly?

12                  MR. WHITE: Yes. First, let me say we knew -- I knew  
13 that the PORC was not operating to standards that I wanted it  
14 to.

15                  COMMISSIONER BERNTHAL: That is a bad word in this  
16 town, but go ahead.

17                  [Laughter.]

18                  MR. WHITE: The plant operational review committee  
19 wasn't operating to the standards I wanted. We have a number,  
20 as you would expect, of other systems to make sure of the fact  
21 that they were weaker than I wanted but wouldn't let something  
22 fall through the crack. When the new plant manager took over,  
23 Mr. Smith, one of this first challenges that I gave him was to  
24 fix that darn thing. I'm tired of it not being to standard.

25                  When the ANI people came in, they came in, I believe

1       -- was that the first meeting?

2               MR. SMITH:   Second.

3               MR. WHITE:   What they observed was, as you would  
4       expect, a training and teaching session, the new plant manager  
5       was laying down the rules.  They observed this and they said,  
6       gee, the plant manager sure knows what is going on but we are  
7       not sure about the other people, and they formed certain  
8       impressions.

9               Since that time, we have taken a lot of their  
10       suggestions, there were some good suggestions.  We put those  
11       into the plan.  As of the first of March, the ANI people have  
12       written me a letter signed by Mr. Santacore, the Vice President  
13       for Nuclear Engineering, in which he says that our response was  
14       prompt, we have identified their recommendations, we have taken  
15       actions.  I think the particular issue that was involved was  
16       the safety review process, whether as a result of this,  
17       anything had been missed in the past.

18              It is interesting, this one sentence, which I will  
19       quote to you, "The safety review process in our judgment has  
20       adequately addressed nuclear safety issues."  Very important.  
21       He continues to say they need to gain a better appreciation for  
22       the manner in which insurance issues have been resolved.  There  
23       are no nuclear safety issues involved.

24              I talked to him the other day.  He is going to come  
25       down and we are going to meet and see if they have suggestions,

1       they want to learn more about our process in terms of what he  
2       refers to as insurance issues. I see no lingering of any  
3       problem at all.

4               COMMISSIONER BERNTHAL: Thank you very much. I would  
5       hope that somebody here will ask you about Appendix R, but I  
6       will let someone else. Before you get away, I will, if there  
7       isn't a question.

8               CHAIRMAN ZECH: Commissioner Carr?

9               COMMISSIONER CARR: I won't ask him about that.

10              My question is more for Mr. Runyon. Obviously, Mr.  
11       White has earned his support and when you bring in those  
12       consultants, you have to listen to them. What I am concerned  
13       about is when he uses all those recruiting powers and recruits  
14       his replacement for a Government salary, whether or not those  
15       institutionalized changes and the authority to do the work that  
16       he has been doing carries on with that replacement manager. It  
17       takes a lot of corporate support, money, authority and so  
18       forth. I wondered if you would give us a few words on that  
19       item?

20              MR. RUNYON: Yes, sir. I'd be glad to do that. It  
21       is my intention that what you have heard today is what I am  
22       committed to do. In reviewing this meeting saw the nuclear  
23       ethic and said, that is a business ethic that everybody should  
24       do and the only difference is the public safety is much, much  
25       higher in the case of nuclear than it is in another type of

1 operation.

2 The nuclear ethic is one that I totally support and  
3 what it takes to do that, I'm committed to do it.

4 COMMISSIONER CARR: No doubt he has earned his  
5 support. From what he says, and I'm sure you are all giving  
6 him that kind of support, we as the Commission are interested  
7 if that support is continuing even after Mr. short timer here  
8 finishes his work and moves on.

9 MR. RUNYON: It will continue.

10 MR. WATERS: If I may respond, Commissioner. This  
11 has been too hard to earn, too long in getting. We have all  
12 worked too hard. We are not going to let it slip. We are  
13 going to use our very best efforts, we are going to stay right  
14 on top of it, because we worked very, very hard to get to this  
15 point and we recognize the need to continue to give it that  
16 kind of attention.

17 COMMISSIONER CARR: I have one more question. How  
18 many non-TVA employees are there in the management and senior  
19 operational level at Sequoyah?

20 MR. WHITE: We have some contractors at the lower  
21 levels, very low levels, maintenance and the work coordination  
22 and planning, but they are all TVA.

23 CHAIRMAN ZECH: Commissioner Rogers?

24 COMMISSIONER ROGERS: It looks like my question has  
25 been defined for me.



1 [Laughter.]

2 COMMISSIONER ROGERS: I will just ask you, if you  
3 would comment on the 26 questions that were sent to you from  
4 NRC concerning Appendix R.

5 MR. WHITE: Yes. We took a look at all those. As in  
6 the case of diesel generator, I brought in some outside people  
7 and by the way, one of them was the individual who formerly  
8 worked for the NRC and wrote Appendix R, to look over our  
9 shoulder. We have provided to the staff written response to  
10 each of those issues.

11 Mr. Hosmer, do you know of any lingering issues after  
12 providing the information?

13 MR. HOSMER: I'm aware we owe one written response  
14 based on a phone call yesterday. That is in the process of  
15 being prepared.

16 COMMISSIONER ROGERS: There is one yet to come?

17 MR. HOSMER: Yes. The response was previously  
18 provided. More information has been asked for to amend that  
19 response. This will be a revision to the response.

20 COMMISSIONER ROGERS: Just a matter of detail but it  
21 is of interest to me. In your systems engineers, how many  
22 systems engineers do you have and how many systems does each of  
23 those people look after?

24 MR. WHITE: I will let Mr. Smith speak to it but I  
25 think it is 30 and the end goal is 60 for both units.

1                   MR. SMITH: There are currently 30. Let me modify  
2                   that. We have a maintenance engineering organization that is  
3                   about 65 people. Those individuals have been and continue to  
4                   do some system engineering work themselves. We are in the  
5                   process of combining those two organizations and should have  
6                   that done by the end of March. That will put the 60 to 65  
7                   engineers in place. Each of those engineers will have  
8                   approximately three systems.

9                   COMMISSIONER ROGERS: Very good. That's all, Mr.  
10                  Chairman.

11                  COMMISSIONER BERNTHAL: If I may, getting back to the  
12                  Appendix R issue, on one detail at least, I understand there  
13                  was one issue and maybe others, and perhaps the staff can tell  
14                  us, that is going to require some corrective action, something  
15                  about interaction between cables, but you expected that only to  
16                  take a few days? Am I not connecting?

17                  MR. HOSMER: I think you are referring to the latest  
18                  discussion I'm aware of dealt with concerns about the  
19                  documentation, looking at high to low pressure interfaces, RHR  
20                  valve interface, had we appropriately implemented a Commission  
21                  generic letter. What we are providing in writing today is the  
22                  basis for the fact that we believe we had implemented that  
23                  properly in the past. I know of no physical changes or any  
24                  procedural change required to meet the submittal we are  
25                  providing today.

1                   COMMISSIONER BERNTHAL: There was something about a  
2 wire to wire short. I know what it means generally but not  
3 specifically, between different cables.

4                   MR. HOSMER: We are talking about the same issue.

5                   CHAIRMAN ZECH: Let me just make a few comments.

6                   First of all, it is obvious you have put a lot of  
7 attention into corporate management initiatives and  
8 organizational initiatives and certainly what you have told us  
9 today, I think, would give me the confidence that you have  
10 attacked aggressively the problems at TVA. There is no  
11 question about that. I think it certainly shows they needed  
12 attention. It would appear you have given it that attention.

13                   Now what you have to do is execute. Now what you  
14 have to do is see results. Now what you have to do is as you  
15 point out, a cautious, careful, deliberate, slow approach to  
16 the forthcoming potential start up events.

17                   I appreciate what you have said about training, all  
18 shifts, but there is nothing like the proof, as we all know. I  
19 know the staff has a plan to follow your careful, cautious,  
20 conservative approach also.

21                   I appreciate what you have said about quality  
22 assurance and I think you said you had 68 percent of your  
23 conditions adverse to quality determined by the line. I'd like  
24 to emphasize that. In my judgment, quality assurance ought to  
25 be a line function. Certainly you need a quality assurance

1 organization to assist and oversee and ensure that it takes  
2 place and it looks like you have done an aggressive job in that  
3 regard.

4           You can't really inspect in quality. You have to  
5 design it in, build it in, operate it in. Your quality people  
6 are a check on your line, but your line has to accept that  
7 responsibility. I want to emphasize that point, at least in my  
8 view. I've seen it happen too many times where perhaps they  
9 decide to turn over responsibilities for quality assurance to  
10 the quality assurance people and that's a mistake in my  
11 judgment. The responsibility is the line, across the board.

12           I appreciate also what you said about small mistakes.  
13 That's exactly right, small mistakes lead to big mistakes. You  
14 better find out what that small mistake amounted to before you  
15 proceed.

16           I also appreciate your emphasis on ownership and team  
17 work, because there is where you get people involved and that  
18 really is, if there is any secret to success in this business,  
19 as far as I'm concerned, it is management involvement and  
20 everybody involved. That's team work and ownership.

21           Your emphasis on the material condition upgrade I  
22 think is very important. We didn't talk about it very much.  
23 Your emphasis on maintenance upgrade is very important. We  
24 didn't talk about that very much either. Those are programs  
25 that require follow through in measuring success and results

1 and following through again.

2 I guess I feel that you have done a commendable job  
3 as far as placing management initiatives at the TVA, at  
4 Sequoyah. Obviously, you have made what looks to be at least  
5 big improvements that were necessary.

6 I guess the only concern I have with what you have  
7 told us this morning perhaps -- or what you haven't emphasized  
8 is what you have not told us. We just mentioned a couple of  
9 issues. The diesel generator, as far as I'm concerned, maybe  
10 you think it is solved, I don't know that it is solved yet.  
11 Fire protection, you may be satisfied but I am not. We will  
12 hear from our staff, too. The cable issue I know has been an  
13 ongoing issue. It was a serious issue and apparently it is  
14 resolved but again, I think it would have been helpful to  
15 emphasize some of the issues that you didn't talk about.

16 I am just mentioning this because I know we will hear  
17 from the staff. It would have been helpful to me at least and  
18 I think to my fellow Commissioners to have the confidence that  
19 you have attacked some of these issues that as far as we know  
20 are perhaps still outstanding or if they are resolved, they  
21 have only been resolved very recently.

22 I mention that because I want to hear from the staff  
23 on those regards. Having said that, let me just say that I  
24 think the technical issues are the ones that at least concern  
25 me that are remaining. I know they concern you, too. I would

1       like the staff to emphasize those technical issues when they  
2       come up.

3               Are there any other comments from my fellow  
4       Commissioners before we call on the staff?

5               [No response.]

6               CHAIRMAN ZECH: Thank you very much. We appreciate  
7       it.

8               Mr. Stello, you may begin.

9               MR. STELLO: Thank you, Mr. Chairman

10              Let me introduce Steve Ebnetter, the Director of the  
11       Office of Special Projects, and then I'll have him introduce  
12       the rest of the people, and I will turn the briefing over to  
13       him.

14              We don't have slides to pass out, and that was  
15       intentional. We wanted to be sure that we could listen  
16       carefully to the briefing and add or emphasize those areas that  
17       we didn't think were covered during the briefing that the  
18       Commission ought to be aware of. We've already pointed out  
19       some of those areas which we will, in fact, begin to relate to  
20       the cable issue and the diesel generator and Appendix R issues.

21              We will give you a summary of our assessment of the  
22       overall readiness of the plant.

23              I think to cut through to where we stand today, we  
24       are watching very carefully. We have 24-hour coverage of the  
25       plant. We believe that we are at the point that we can

1 recommend to the Commission that when the Commission is ready  
2 to authorize the Staff to permit restart of Sequoyah. Of  
3 course, there are certain conditions, as you already are aware  
4 from the briefing you've heard thus far. There are still  
5 evolutions of the plant that have not been completed, that we  
6 want to see completed, further assessment of the readiness of  
7 the plant. We will be talking about that today.

8 We're not unhappy with what we have seen, but we want  
9 to see more, as was indicated in the original plan, and that  
10 would take us at least through next week and possibly  
11 thereafter.

12 There is, of course, the issue related to fire  
13 protection, and as you have heard, there is documentation to be  
14 provided. There is a meeting next week. And pending the  
15 outcome of that, which we believe will be satisfactory, we will  
16 have no technical issues standing in our way, except the  
17 completion of the things that are now on the plate.

18 I will ask Mr. Ebnetter to take you through the  
19 briefing, paying careful attention to those things that you've  
20 asked us to emphasize, and we will do that this morning.

21 CHAIRMAN ZECH: All right. You may proceed, Mr.  
22 Ebnetter.

23 MR. EBNETER: Good morning, Mr. Chairman and  
24 Commissioners.

25 Our last briefing was January 20, 1988. I'll cover a

1        few items that you requested us to -- in fact, all of the items  
2        that you requested us to address. Our objective is to really  
3        address operational readiness. We will talk about some  
4        technical issues. Three of those issues -- the diesel  
5        generators that Commissioner Bernthal mentioned and the  
6        Appendix R and the silicon rubber cables.

7                Excuse me. Mr. Stello reminded me to introduce the  
8        Staff.

9                Steve Richardson is my TVA Project Director. Jane  
10       Axelrad is my deputy. To the left of Mr. Stello and at the far  
11       end is Frank McCoy, who is my Startup Manager at the site and  
12       is playing a very key role in this evolution of getting to  
13       startup.

14               To get on with it, the technical issues, and then  
15       we'll discuss the status of the 50.54(f) letter. Much of that  
16       will be redundant to what TVA presented, so I'll sort of back  
17       off some of the comments, and lastly we'll discuss the  
18       operational readiness.

19               The technical issues first. Let me address the fire  
20       protection issue. I do have the principal technical Staff  
21       members here who have done the evaluations, and if you need  
22       further information, we can have them address specific  
23       technical concerns.

24               The fire protection issue, let me first address the  
25       IDI. Mr. White mentioned IDI.



1                   CHAIRMAN ZECH: Tell everybody what that is.

2                   MR. EBNETER: That is the integrated design  
3 inspection.

4                   CHAIRMAN ZECH: And tell them why you did that a  
5 little bit. I think it would be important.

6                   MR. EBNETER: We, the NRC, decided that there should  
7 be an integrated look at the total design aspects of the  
8 Sequoyah plant. The efforts that TVA had done were somewhat  
9 fragmented and did not address interfaces, so the Commission  
10 decided to do the integrated design inspection, so that we  
11 could get a complete look at one system in a vertical slice  
12 approach and assure that all different interfaces had been  
13 addressed.

14                   That was an extensive effort. It was completed last  
15 September.

16                   CHAIRMAN ZECH: In order to verify the design and  
17 also walkdown the system and verify that the plant was built in  
18 accordance with the design. Is that what the purpose is?

19                   MR. EBNETER: Yes, sir.

20                   CHAIRMAN ZECH: All right.

21                   MR. EBNETER: We have conducted follow-up inspections  
22 to that, and TVA has submitted responses to 64 findings of  
23 ours. Those issues, we have essentially reviewed and have no  
24 more concerns on. So the IDI issues, as Mr. White commented,  
25 have been resolved.

1           The fire protection issue was a late-filed allegation  
2       which came in in late January by a previous employee of TVA,  
3       who had worked in the Fire Protection Group and therefore had  
4       knowledge of TVA's Appendix R analysis. We took the  
5       allegation. We had two interviews with this gentleman. They  
6       have been transcribed. We reviewed those, boiled out the  
7       issues, and that resulted in the letter to TVA with the 26  
8       questions, and that was a request for additional information.

9           TVA responded to that. We have those in hand. The  
10      Staff has reviewed them. There is a major issue with the Staff  
11      with regard to cable-to-cable shorts, and this is the issue  
12      that Commissioner Bernthal mentioned.

13           The submission that TVA made was not adequate for us  
14      to perform the evaluation. Now there are some complications  
15      with the data that TVA sends us, because Sequoyah was what we  
16      call a window plant. It was one of those plants that was an  
17      NTOL at the time the Appendix R issues came out, so they were  
18      caught between some old requirements and the new rule.

19           So some of the data that is missing, TVA has stated  
20      is available. Now it may be in different forms that was not  
21      considered as an Appendix R issue, but things such as  
22      separations analysis, the design condition of the plant,  
23      isolation devices for interfacing non-safety systems. Those  
24      types of analyses could help the Staff significantly.

25           Now TVA, as Mr. John Hosmer has stated, owes us a

1 submission which should be here today. We cannot resolve that,  
2 obviously, today. We will review it, make our determination,  
3 and we do plan to have a public meeting next Wednesday on this  
4 issue.

5 Is there anything else in that particular area?  
6 Commissioner Bernthal?

7 COMMISSIONER ROBERTS: Well, no, except the other 25,  
8 then, I take it, you are reasonably satisfied with the response  
9 or --

10 MR. EBNETER: We are still reviewing some of those.  
11 Preliminary analysis, we don't see any problem with those. Now  
12 that doesn't preclude something coming up.

13 COMMISSIONER BERNTHAL: Okay.

14 MR. EBNETER: I might add, in those cases, some of  
15 them -- some of the issues that we brought out came out of the  
16 direct transcripts. Some of those issues have been analyzed in  
17 Chapter 15 events and things, such as pressurizer bubble, but  
18 they came out of the transcripts, so we included them in the  
19 total investigation that we're doing.

20 COMMISSIONER BERNTHAL: Okay.

21 CHAIRMAN ZECH: Fine. Proceed, please.

22 MR. EBNETER: The second issues that I wanted to talk  
23 about that Commissioner Bernthal and Commissioner Roberts  
24 mentioned was the emergency diesel generators.

25 The emergency diesel generator issue has been around

1 for a long time, as Mr. Hosmer again and Mr. Raleigh mentioned.  
2 It came out of some employee concerns, some allegations from a  
3 gentleman, Dallas Hicks, and it also -- the existence of a  
4 problem or potential problem was verified when TVA did a  
5 reduced load test as part of their tech spec requirement. The  
6 test results analysis did not quite meet nameplate ratings, and  
7 that caused the Staff some concern and prompted additional  
8 investigations and analysis.

9 The issues were the dynamic characteristics of the  
10 machine, as someone mentioned, the ability of the machine to  
11 load, recover from the load, and not exceed overshoots and stay  
12 within the minimum undershoots required.

13 TVA has told you that they did an analysis. They  
14 hired one of the best machine analysts in the country. Dr.  
15 Concordia, as their consultant, and they also had another  
16 consultant, at least one other that I'm aware of, from Sargent  
17 & Lundy.

18 The Staff in their analysis -- our Staff did the  
19 review, and to provide additional feedback, we hired a well-  
20 renowned consultant from MIT, Dr. Koskos. He did our analysis.  
21 We have reached agreement with TVA staff and consultants that  
22 the machines, the EDGs, do meet requirements.

23 Now there was one area of the Reg Guide that wasn't  
24 quite met; however, the analysis shows that we have at least 5  
25 percent margin on contractor pickups in all cases, and the

1 Staff has deemed that to be acceptable for startup and  
2 operation.

3 TVA's consultant, Dr. Concordia, made three  
4 suggestions to improve the operation of those EDGs. It is our  
5 contention, and we plan to fully impose these on TVA, that they  
6 should implement those three suggestions, and one of them is in  
7 relation to the regulator. We will give TVA additional time to  
8 make those upgrades, since the machines are acceptable for  
9 startup and operation. One of the problems is we don't want  
10 TVA to rush out and get regulators that are not qualified or  
11 have not been proven and install them in the diesel and really  
12 give us some sort of a degraded condition.

13 That's the present stat us of the EDGs. Is there any  
14 further questions on those?

15 COMMISSIONER BERNTHAL: Well, yeah, the very last  
16 part you mentioned about replacement of the regulators. Are  
17 these not fairly standard items? In other words, one might  
18 have thought that you or they would have run out and bought  
19 some a long time ago and have replaced them.

20 MR. EBNETER: Your question is good. They did buy  
21 some, and they're sitting in the warehouse. But these devices  
22 will have to be qualified and fully tested, and they've been  
23 on the shelf for some period of time, and TVA is reluctant --  
24 and we agree with them; we're not sure of the status of those.

25 COMMISSIONER BERNTHAL: But it's not a question of

1       them having, under normal circumstances, of those devices being  
2       qualified devices. It's because they've been sitting there so  
3       long, or is that the point?

4               MR. EBNETER: That's part of it, and I'm not sure. I  
5       could have Mr. Marinos comment from my staff, but I'm not sure  
6       what all procurement controls were placed on those.

7               Angelo, are you available? Would you comment on  
8       that, please?

9               MR. MARINOS: My name is Angelo Marinos. I'm the  
10      Chief of Reactor Operations Branch, and I did review the diesel  
11      generator issue.

12              The exciters that they have or regulators --

13              CHAIRMAN ZECH: Would you speak a little to the  
14      microphone, please? I don't think the reporter can hear you.

15              MR. MARINOS: They need to be --

16              CHAIRMAN ZECH: And identify yourself again, please.

17              MR. MARINOS: Yes. My name is Angelo Marinos. I'm  
18      the Chief of Reactor Operations Branch, the TVA Projects  
19      Division, and my responsibility was to evaluate the adequacy of  
20      the diesel generators for Sequoyah.

21              And in response to your question, Commissioner, about  
22      the regulators that they have in the warehouse, it is not  
23      necessarily compatible -- they do not automatically become  
24      compatible with the machine. They need to be investigated and  
25      analyzed before they're placed in service with the machines.

1           The machines, when they're built, they're built with  
2           their appropriate excitation system and the regulator that is  
3           accompanying it. So therefore this is an external device, not  
4           initially designed for that, and it has to be carefully  
5           evaluated.

6           COMMISSIONER BERNTHAL: I see. And while you're  
7           here, you and our expert consultant from MIT are both confident  
8           in the tests and calculations, simulations, whatever they may  
9           be, that have been carried out, that those would confidently  
10          predict adequate performance under full load?

11          MR. MARINOS: Yes, Commissioner.

12          COMMISSIONER BERNTHAL: And that it's not necessary  
13          to carry out the actual test for 24 hours under full load.

14          MR. MARINOS: No, it's not necessary to carry out the  
15          full test. That's correct.

16          COMMISSIONER BERNTHAL: Okay. Thank you very much.

17          CHAIRMAN ZECH: All right. Thank you very much. You  
18          may proceed.

19          MR. EBNETER: The third technical issue I'd like to  
20          discuss with you briefly is the silicon rubber cable issue, and  
21          I'd like to just give you an overview of how we approached that  
22          to assure you, the Commissioners, that there is a consensus of  
23          opinion and that we have approached this problem from a generic  
24          NRC concern.

25          The cable issue, there were many issues with it, and

1 I want to address primarily the test program in the resolution  
2 of silicon rubber. The test program was done primarily to  
3 verify or confirm the adequacy of cable installation practices,  
4 which had been called into question in the employee concerns  
5 program at Watts Bar.

6 The generic -- it was determined to be generic to  
7 Sequoyah, and that's how Sequoyah got involved with it.

8 When OSP was formed in February and March of 1987,  
9 this issue had been under investigation by the senior  
10 management team, and the senior management team had been using  
11 a matrix approach to solve TVA problems by using various  
12 portions of the NRC organization, such as IE and the Region and  
13 NRR.

14 When we took that over, the consultants on the cable  
15 had already been involved and had issued their TER. They had  
16 proposed certain test programs. We used the consultants, and  
17 we worked with TVA and NRR as a joint effort to establish a  
18 test program that would be viable.

19 The test program was viable. My staff, the Region  
20 inspection staff, and our consultants all were involved in  
21 witnessing the test program at Sequoyah, so that was a joint  
22 effort on our part. We made several trips there, and Mr.  
23 Marinos, who commented on the diesels, was also involved with  
24 that.

25 The program was successful in demonstrating that



1       general cable pulling practices were adequate. However, it  
2       also demonstrated that there was a sensitivity to these silicon  
3       rubber insulation cables that was more severe than the normal  
4       cable installation. Therefore, we embarked on the silicon  
5       rubber cable insulation test program.

6               That was a joint program between the NRC offices.  
7       TVA submitted a Part 21 to the Commission, stating that there  
8       was a potential generic problem with silicon rubber insulation.  
9       The OSP staff reviewed that. The OSP coordinated that with the  
10      other NRC offices, AEOD, NRR, and at least three different  
11      offices in NRR, the generic communications branch, the  
12      technical reviewers, and the project branches. So, we had full  
13      coordination on that.

14             We briefed NRR on their weekly events operations  
15      briefings. We coordinated with NRR on issuing an information  
16      notice to the industry that there was a potential problem with  
17      silicon rubber insulation. And, subsequent to that, we have  
18      worked very closely with NRR staff in developing the final  
19      generic position which will be submitted to the Commission  
20      shortly.

21             So, I want to try to convince you that this has been  
22      a very joint effort among the entire NRC staff. In conjunction  
23      with that, the information notice and the generic issue  
24      resolution, we're working to try to get a consensus of opinion  
25      -- and we have reached that consensus of opinion -- of what is

1 acceptable.

2 The problem of silicon rubber was a very complex  
3 issue. And, as with all complex issues, we had a variety of  
4 opinions on what test voltages were acceptable and how to  
5 handle the final resolution. But, there was a consensus of  
6 opinion reached. That consensus will be demonstrated when you  
7 receive the final paper on the generic issue of silicon rubber.

8 The status at TVA. TVA has removed all the AIW  
9 silicon rubber cable and some of the other cables manufactured  
10 by Anaconda and Rockbestos. The other cables that remain in  
11 there have been demonstrated to be able to function in a LOCA  
12 through the Wyle Laboratories test, and we have accepted that.

13 The remaining issue on silicon rubber cable is that  
14 the Wyle test program only demonstrated the life of that cable  
15 at reduced insulation levels for 10 years. We have required  
16 TVA to demonstrate full 40 year life of that cable before  
17 coming out of the first refueling outage of Sequoyah Two.

18 That's our present position of this. Any questions  
19 on silicon rubber?

20 COMMISSIONER BERNTHAL: Well, just a brief one. This  
21 is an indirect question. As I think you are aware, there was  
22 some concern raised about the adequacy of your -- not you  
23 personally -- but of the staff's oversight on some of this  
24 testing and verification process. In other words, our own QA,  
25 if you will, and, more importantly, our own QA documentation

1 for reaching the conclusions that you have expressed here. Can  
2 you comment on that a little bit, or is that all prior to your  
3 time, Stu? Maybe you can.

4 MR. EBNETER: Well, I'll give you some idea of some  
5 of the overviews that were performed. I was actively involved  
6 in it myself and Mr. Richardson. Since Mr. Marinos is a branch  
7 chief and he was in charge of the technical review and  
8 evaluations, I participated in some of the tests at the site  
9 along with Mr. Marinos.

10 We reviewed all of the material that was provided.  
11 We participated in the public briefings for the staff  
12 positions. I was involved with those, and Ms. Axelrad and  
13 Steve were involved with them.

14 As a final overview of the entire issue, we held high  
15 level management meetings. One of them involved Mr. Stello,  
16 Dr. Murley, and other high level managers, Mr. Sniezek in NRR,  
17 to discuss the approach and resolution of this issue.

18 All of the contractor reports. We made a change in  
19 utilizing contractors after we took over the project. The  
20 contractors reported directly to us. They did not write  
21 individual TERs, but worked with the staff and formulated their  
22 conclusions and inspection findings, and those are incorporated  
23 directly in the SER and inspection reports.

24 So, we had direct control of all of the writings and  
25 findings of our contractors at that point. Is there anything

1 more?

2 CHAIRMAN ZECH: So, what you're saying, as far as  
3 you're concerned, is that the cable issue has been resolved.

4 MR. EBNETER: Yes.

5 CHAIRMAN ZECH: All right.

6 COMMISSIONER BERNTHAL: And that you are confident  
7 that the questions of oversight over contractors and whatnot  
8 and documentation of results --

9 MR. EBNETER: And consensus of opinion.

10 COMMISSIONER BERNTHAL: -- whether or not with  
11 respect to Watts Bar or with respect to Sequoyah, that those  
12 questions, in your mind, are resolved with respect to Sequoyah.

13 MR. EBNETER: For Sequoyah only, sir.

14 COMMISSIONER BERNTHAL: Okay. Thank you very much.

15 MR. STELLO: I would like to add that I would like  
16 further opportunity to comment at a later time after we have  
17 had a chance to look into this adequately, because I think it's  
18 something that deserves fairly careful study, and we will  
19 respond to you.

20 CHAIRMAN ZECH: Well, if there's any doubt about it,  
21 you have got to respond before you make your recommendation for  
22 restart.

23 MR. STELLO: There is absolutely no reservation  
24 whatsoever that the cables at Sequoyah are okay. It's whether  
25 our internal process ought to be improved as we look to the

1 future and, if so, how. It is only in that context in which I  
2 reserved.

3 COMMISSIONER ZECH: Fine.

4 COMMISSIONER BERNTHAL: Yes. I fully agree. The  
5 question here is not one of physical readiness. The question  
6 is over our own processes.

7 MR. STELLO: That is correct.

8 CHAIRMAN ZECH: But you're satisfied that our  
9 process, in this regard, did give an adequate review.

10 MR. STELLO: No question.

11 CHAIRMAN ZECH: But you had to modify our process in  
12 order for it to do that, is that what you're kind of telling  
13 us? You had to make some modifications to make sure?

14 MR. STELLO: Well, I'll reserve whether the  
15 observations are correct or not. Was there really any problem.

16 CHAIRMAN ZECH: But the review we gave to this  
17 situation you're satisfied with, itself.

18 MR. STELLO: Completely, yes.

19 CHAIRMAN ZECH: And the issue itself?

20 MR. STELLO: And the cables themselves are okay.

21 CHAIRMAN ZECH: Fine. Thank you. You may proceed.

22 COMMISSIONER BERNTHAL: Didn't leave much wiggle room  
23 there, but go ahead.

24 [Laughter.]

25 MR. EBNETER: Thank you. The next topic I would like

1 to discuss briefly is related to operational readiness. When  
2 Sequoyah shut down voluntarily in September of 1985, the  
3 Commission under EDO sent a 5054(f) letter to TVA directing  
4 them that they could not restart the plant until they had NRC  
5 approval.

6 The two major issues in the 5054(f) letter were  
7 management controls and quality assurance. You've heard a  
8 great deal from TVA on that. I'd like to address briefly what  
9 we've done in that area.

10 Enclosure 2 to the letter involved questions to TVA  
11 on corporate issues, and that was the Board of Directors'  
12 actions, management changes to strengthen TVA, corporate  
13 tracking system, and the QA process. Item C of that enclosure  
14 was related to the Sequoyah Plant itself, and I'll discuss  
15 those under that.

16 TVA, in response to the 5054(f) letter, issued Volume  
17 I, the corporate nuclear plan. We have reviewed that and  
18 issued NUREG-1232, Part 1, which addresses our satisfaction  
19 with the proposed plans to strengthen the corporate structure.

20 Some things that we did look at and evaluate, and  
21 changes that have been made, I'll just quickly run over. The  
22 Board of Directors. There is now a full complement of Board of  
23 Directors. Mr. Runyon is on board. He is the new Chairman of  
24 the Board.

25 We do see a new change in direction by the committees

1 and task forces that he has established. Ms. Axelrad and I met  
2 with Mr. Runyon, and we're very satisfied and impressed with  
3 his comments with regard to support of the nuclear program.

4 TVA did establish an inspector general program, which  
5 has been very significant in reducing I&H and controlling  
6 internal management problems.

7 There is a new corporate structure. I'm not going to  
8 talk about it. Mr. White discussed that extensively.

9 There is an extensive matrix management that provides  
10 dedicated support to each site. I think that is one of the key  
11 items that is now existing. Mr. Hosmer mentioned to you, for  
12 example, engineering. He has 1,400 engineers supporting the  
13 Sequoyah Unit alone. And those are dedicated engineering staff  
14 for just Sequoyah. That does provide the necessary resources  
15 to solve their problems.

16 The QA program. Mr. Kazanas mentioned that they did  
17 revise it. They took five independent QA programs and  
18 integrated them into one. We have approved that as a topical  
19 report. That has been implemented, and we do see significant  
20 gains in the QA program. Very significant improvements.

21 The evaluation we put into NUREG-1232, I would like  
22 to comment briefly on. The ACRS has been interested in this.  
23 Their most recent letter -- of February 19th, I believe it  
24 was -- was generally complimentary of the changes that have  
25 been made at TVA in the management area.

1           Some questions we have, concerns, and you heard Mr.  
2       Runyon echo this same one, that is succession planning. I  
3       clearly don't know what Mr. White's plans are, but clearly he  
4       is a driving force in the recovery of TVA. I know his contract  
5       runs until next January. It is not too early for TVA to be  
6       aggressively pursuing a replacement for Mr. White or some  
7       enticement for him to stay, whatever their choice. But they  
8       have to do something in this area, clearly.

9           One other area I think they're lagging behind, and it  
10      does not impact restart but I want to mention it, is that  
11      corporate procedures and directives are significantly behind  
12      schedule. They have fallen behind the pace of the normal  
13      recovery. I think TVA needs to direct attention to that.

14           ACRS had a concern about span of control.

15           COMMISSIONER BERNTHAL: I'm sorry. That was fairly  
16      generic terminology there.

17           MR. EBNETER: Yes.

18           COMMISSIONER BERNTHAL: Do you want to tell me what  
19      that means?

20           MR. EBNETER: In the new corporate structure, the  
21      plan is for TVA corporate to provide the procedures and  
22      directives that apply to all of the TVA plants, Browns Ferry,  
23      Watts Bar, and Sequoyah. Those are the oversight procedures  
24      that provide the directions and implement goals.

25           Most of those are not completed. They are in



1 process. There are some good reasons for that. They are not a  
2 start-up issue, however. But I just wanted to mention they are  
3 behind.

4 The span of control issue that we had originally with  
5 the large number of people reporting to Mr. White, the ACRS  
6 reiterated their concern with that. That also could be a  
7 problem if Mr. White leaves and someone else has a different  
8 style of management. That span of control could be  
9 significant.

10 That's all I have on the corporate area. We're  
11 generally satisfied with what TVA has done in that area. We  
12 think it's been very effective.

13 Are there any questions of the staff in that area?

14 CHAIRMAN ZECH: You can proceed.

15 MR. EBNETER: All right. The Sequoyah site, the  
16 5054(f) letter, we identified TVA in that area to address  
17 several areas. One of those was EQ. You've heard about EQ  
18 several times, and I'm not going to belabor it.

19 They have corrected that problem for Sequoyah, and  
20 the staff now feels -- we have done a number of inspections  
21 there -- the staff feels that is one of the better programs in  
22 the United States on EQ. And we have documented that in our  
23 SE.

24 The upgraded management staff at Sequoyah. You heard  
25 a great deal about that from Mr. Smith. I'm not going to

1 comment too much on that. We do think it is effective.

2 There is a new deputy site manager who came from  
3 outside of TVA. Mr. Smith was outside of TVA. The new  
4 maintenance manager you didn't hear much about. He came from  
5 outside of TVA. Which gives you a diverse and extensive  
6 experience in these key areas. So, we're very happy with that  
7 upgrading.

8 The focus on teamwork, we agree that is significant.  
9 The war room is a classic example. And I think Mr. Bernthal  
10 observed that when he was down there.

11 Some areas they have improved. Plant procedures.  
12 They have a new design baseline. I'm not going to cover those.  
13 TVA did.

14 The systems organization we think is a significant  
15 addition to the TVA staff. That was an area that was  
16 consistently identified as lacking in TVA. That is in place,  
17 and we think that is an excellent program.

18 There is a new configuration management program in at  
19 TVA. They didn't comment much on it but I think that is one of  
20 the most significant preventive measures they have in place.  
21 If that is implemented fully, it should prevent degradation of  
22 the plant physical conditions and we are looking at that area  
23 closely.

24 For evaluation of that area, by the way, Marilyn  
25 Blackburn commented on the training. I did talk and interview

1 Ms. Blackburn. She provided me with some data. Out at the TVA  
2 Sequoyah site, over 190 supervisors on the Sequoyah staff have  
3 taken those management development courses, some of them as  
4 many as three or four different core courses. We think that is  
5 a significant improvement in management development at the  
6 site.

7 We have issued the SE for that. There are a few  
8 areas they have completed and they are being revised and  
9 incorporated in the SE. It is in the public document room and  
10 will be printed within the next few weeks, but it is available  
11 to the public now.

12 Any questions on the Sequoyah overview?

13 CHAIRMAN ZECH: You may proceed.

14 MR. EBNETER: I would like to talk a little bit about  
15 operational readiness. Again, I'm going to be brief. TVA has  
16 done extensive work. INPO conducted two evaluations. TVA did  
17 two, the major one extending from August, 1987 to January,  
18 1988. NRC, we have done our own overview of this and the ANI's  
19 review, which you heard briefly about. INPO had four key start  
20 up items. Those have been completed or will be completed  
21 before start up. The TVA overview identified 13 items that had  
22 to be completed. They specified that TVA develop a plan to  
23 address all start up issues. TVA has done that. We have seen  
24 that and there is an official submittal coming in today on the  
25 docket for that corrective action plan.

1           Our review, we did an attributes review. We are  
2           generally satisfied with training of the plant and staff  
3           operations, procedure upgrades. Our major concern last  
4           December and January was the nuclear ethic. We said it needed  
5           significant improvement. We have seen improvements in that  
6           area.

7           The ANI issue, we agree with TVA's resolution. ANI,  
8           the American Nuclear Insurers, came back and did do another  
9           inspection. There is a new report out that was dated March 1,  
10          which has just been submitted. We are reviewing that. That is  
11          more extensive than what we had on the docket before.

12          COMMISSIONER BERNTHAL: Can you give us a five word  
13          summary on what is the general tone?

14          MR. EBNETER: The general tone is that their re-  
15          inspection, they have confirmed the TVA corrective actions are  
16          adequate to correct the problems and particularly in the PORC  
17          area. That was the major issue.

18          There was one I might comment on. They did find a  
19          temporary alteration control form, a TACF, that was over three  
20          years old at the plant. TVA has done some work in that area.  
21          The last word I had on that, they didn't comment, but the TACFs  
22          had been reduced to 16 on the plant. That is a figure that TVA  
23          gave me. I have not verified that. They have made significant  
24          progress in controlling TACFs.

25          Anything else in that area?

1 CHAIRMAN ZECH: Go ahead.

2 MR. EBNETER: I would just comment on the operating  
3 staff, some features that perhaps didn't come through clearly  
4 by TVA. They do have six shift crew operations, it is an  
5 integrated crew. It consists of people around the clock  
6 coverage. Each crew has HP, chemistry, maintenance and  
7 engineering support on it. There is an STA on each shift that  
8 is part of that shift and trains with that shift. They  
9 commented on some of that integrated crew training and we do  
10 think that is very effective.

11 Some comments and evaluations have been made. The  
12 INPO evaluations said that the crews are very good, they are  
13 well above average. Our staff generally feels that the crews  
14 are above average and we feel those observations are  
15 significant.

16 COMMISSIONER BERNTHAL: Could you very briefly  
17 comment on an issue, which as you know, was raised the first  
18 time I was down there, and that was the level of experience.  
19 There was some concern expressed at that time and I recall your  
20 having promised to follow up on it, about the level of  
21 experience. For all practical purposes here, we are looking at  
22 starting a new plant. The attitude has to be much the same.

23 You are confident in the SROs and in particular in  
24 the ROs, the level of experience is more than adequate?

25 MR. EBNETER: Yes, we think so. Frank McCoy, who is

1 down at the site full time running the start up program, Frank,  
2 would you comment briefly on that experience, on the hot plant?

3 MR. McCOY: Yes, sir. We did a review of their  
4 operational capabilities, past operational experience that the  
5 various people on shift have had. What we have determined is  
6 of the 12 SROs that are either assistant shift engineers or  
7 shift engineer capacity, two of them have not had shift  
8 management experience as an SRO but have had extensive reactor  
9 operator experience. Of the reactor operators, about 7 of the  
10 12 reactor operators have not had any substantial operating  
11 experience in the past. They are relatively new. We think  
12 that is a product of the extended shut down and is positive.

13 We have confidence that if they do in fact proceed in  
14 a methodical and deliberate manner, and our experience to date  
15 in observing the shut down indicates that is the attitude and  
16 approach they are taking, but that the problems that can be  
17 encountered by those sorts of weaknesses should become self  
18 correcting as they go through this.

19 COMMISSIONER BERNTHAL: Thank you.

20 COMMISSIONER CARR: Can I ask you where they sent  
21 their people for hot plant training?

22 MR. McCOY: I couldn't answer that, sir.

23 CHAIRMAN ZECH: Does TVA want to answer that  
24 question?

25 MR. BYNUM: The hot plant training, what Mr. McCoy

1 was talking about was those operators have greater than six  
2 months experience at Sequoyah in Mode 1.

3 COMMISSIONER CARR: But Sequoyah has been shut down a  
4 couple of years. Have they been anywhere else for training?

5 MR. BYNUM: No. We have not sent anyone off site for  
6 training. We trained on the Sequoyah simulator and they do  
7 have Mode 1 experience on Sequoyah.

8 COMMISSIONER CARR: Two years old?

9 MR. BYNUM: That's correct.

10 CHAIRMAN ZECH: You may proceed.

11 MR. EBNETER: Two comments that I view as weaknesses  
12 in this operational staffing structure. In the last  
13 presentation that TVA made to us, the Sequoyah staff has a  
14 complement of approximately 250 supervisors. There is at least  
15 30 vacancies in those supervisory areas which we think they  
16 should spend some time on trying to staff.

17 We did an inspection on some other organizational  
18 areas, in the rad waste and chemistry rad control area, and the  
19 staffing level we found authorized 66 positions, 11 of those  
20 were vacant. We think they need to spend some attention on  
21 meeting authorized staffing levels at the station.

22 The nuclear ethic again, we have seen good progress.  
23 We would like to see more. I wanted to comment on nuclear  
24 ethic in regard to the engineering staff. We have applied this  
25 nuclear ethic primarily to the operating staff. In the recent

1       few weeks, we have seen some very poor submittals from the  
2       engineering side of the house that need attention. It is not a  
3       start up issue but I just wanted to get it on the table,  
4       attention to details is extremely important from the  
5       engineering side as well as it is from the operating side.

6               COMMISSIONER BERNTHAL: Is this the on-site  
7       engineering staff or off site?

8               MR. EBNETER: On-site, sir. Small things like not  
9       observing commitments made to the NRC, not following --

10              CHAIRMAN ZECH: That's not a small thing.

11              MR. EBNETER: Small in the isolated cases.

12              CHAIRMAN ZECH: As far as I'm concerned, that's about  
13       as big a thing you can have.

14              MR. EBNETER: We agree and that is why I want to  
15       bring it out. We have had some discussions with TVA and I  
16       wanted to get a little more emphasis on it.

17              CHAIRMAN ZECH: I trust TVA will accept that  
18       challenge right now. Go ahead.

19              MR. EBNETER: Just some quick comments on our  
20       observations of what it looks like. In the summer of 1987, we  
21       were experiencing quite a few procedural adherence problems.  
22       TVA took prompt action on that. That has tapered off and we  
23       have seen good progress in that area. Just prior to going into  
24       the heat up, they had significant problems in the ice condenser  
25       area, cleanliness of the plant, cleaning up and just following



1 good housekeeping procedures, doing things in accordance with  
2 procedures. Again, they took good prompt corrective action and  
3 they got those resolved.

4 We authorized them to go into Mode 4 on February 4th.  
5 They went into Mode 4 on February 6th. We have about 28 days  
6 or so experience in Mode 4. We have experienced 10 different  
7 events. I call them events. Some of them were notifications -  
8 - two of them were notifications of unusual event, several were  
9 failure to follow procedure, a few of them were related to  
10 failure to get authorization to perform maintenance.

11 Each time -- that's a significant number we think,  
12 ten. We tried to get a baseline against other plants. We  
13 weren't too successful in that because for example, TMI, TMI  
14 did not have the standard tech spec. They had a customized  
15 tech spec and it was difficult to relate some of these. They  
16 didn't have all the tech specs --

17 CHAIRMAN ZECH: TMI-1 when they restarted?

18 MR. EBNETER: Yes. We did look at two others. Jane,  
19 did you have any comments on those?

20 MS. AXELRAD: We looked at Davis-Besse and Fermi only  
21 had four days before it got to load two, and it didn't have any  
22 events. It isn't really comparable. Davis-Besse had a 19 day  
23 heat up period and they had one event during that time. That  
24 was all we could find.

25 CHAIRMAN ZECH: All right.

1           MR. EBNETER: I would say that the operators and the  
2 staff did recover very well from these problems. They  
3 identified themselves, recovered adequately and TVA has been  
4 very conservative as Mr. White mentioned. They have case  
5 studies. They get the staff together. Mr. White has talked to  
6 them. Steve Smith has talked with them, to try to instill this  
7 nuclear ethic in the staff. It is paying dividends.

8           In one case they did stop work for six days and in  
9 another case they moved some of the work authority mechanisms  
10 outside of the control room. In speaking about the control  
11 room, I'd like to address briefly your comment on the drawings.  
12 We are requiring TVA to have all those drawings that are  
13 essential for operations to be updated in the control room and  
14 in all the emergency response facilities, tech support center  
15 and off site facilities such that we have a complete set of  
16 currently configured drawings for operations and emergencies.

17           That is the status of that.

18           That is generally our observation on the start up.  
19 It is going slow but we think it has to go slow. There has  
20 been more events than we think should be there, but the  
21 recovery has been good.

22           Let me summarize quickly and then if you have any  
23 questions, I would be glad to answer them or have the staff  
24 answer them.

25           In summary, we have one technical issue in the

1 Appendix R issue that we do have to address. The Volume 1 and  
2 Volume 2 SERs that bound the 50.54(f) letter, which is  
3 necessary for restart are essentially finished. The  
4 operational readiness reviews that we have performed and that  
5 TVA has performed generally support a start up decision.

6 We mentioned some concerns, the nuclear ethic, the  
7 long term replacement and succession planning for Mr. White,  
8 and full staffing at the plant. That's essentially a summary  
9 of mine.

10 I would like to make one last comment. The staff has  
11 done an outstanding job, both at headquarters and on the site.  
12 We have done more inspection at this plant than any that I know  
13 of, under pre-heat up for the plant, there is no plant that I  
14 know of that has been in 24 hour shift coverage by the NRC for  
15 the length of time this plant has. At TMI, on their restart,  
16 that went into effect the day they went critical. We are  
17 getting a very good view and opportunity to observe the plant  
18 heat up in a much greater detail than any other plant we know  
19 of.

20 That's all I have.

21 MR. STELLO: I think, Mr. Chairman, that concludes  
22 our presentation. I would again reiterate, I do not believe  
23 based on what I understand, that TVA will in fact be ready to  
24 go critical next week. It will probably be the following week.

25 We would recommend that the Commission, when they

1 feel they are satisfied, to authorize the staff to permit TVA  
2 to go critical, when we resolve the issues you have heard about  
3 today.

4 CHAIRMAN ZECH: We need to hear from you when they  
5 are resolved.

6 MR. STELLO: We intend to provide the Commission a  
7 report and tell you that is in fact the case.

8 One last comment in the way of a challenge. It is  
9 our view that TVA has had indeed a very long and difficult  
10 road. I think they have managed to travel that difficult path  
11 successfully. I think they have to now set their sights on  
12 truly achieving excellence and hope they will continue the  
13 programs they have so that the Sequoyah plant will in fact be  
14 one of the best operating plants in our country. I think they  
15 can do that. They seem to have that commitment. We are going  
16 to try to help them achieve that goal.

17 CHAIRMAN ZECH: Thank you very much. Questions from  
18 my fellow Commissioners? Commissioner Rogers?

19 COMMISSIONER ROGERS: No.

20 CHAIRMAN ZECH: Commissioner Bernthal?

21 COMMISSIONER BERNTHAL: Let me roll three items here  
22 into one, from the preliminary safety evaluation that you  
23 provided us. There were two or three things that the staff  
24 stated that needed to be resolved before restart. Let me just  
25 name them. I understand -- everyone understands there were a

1 lot of problems with calculations of various types two and a  
2 half years ago and before that. There was one area that I am  
3 told from your report, the area of civil calculations, certain  
4 electrical calculations especially, that the staff states will  
5 need to be resolved before restart.

6 Another area was small bore piping, that TVA needed  
7 to complete some corrective action there. A third area was  
8 certification that all the field work was done on environmental  
9 qualification before restart.

10 Have they satisfied all three of those items in your  
11 judgment?

12 MR. EBNETER: The staff has assured me of that. Mr.  
13 Herrmann, would you address that particularly on the calcs and  
14 the small bore pipe area?

15 MR. HERRMANN: I am Bob Herrmann, Chief of the  
16 Engineering Branch. The issues on the calculation program as  
17 well as the IDI issues and the other small bore pipe issues  
18 have been resolved on the plan for restart. There will be some  
19 follow up actions for the long haul but we are done for the  
20 restart.

21 CHAIRMAN ZECH: Thank you.

22 MR. EBNETER: The certification issue, Mr. Pierson?

23 MR. PIERSON: My name is Bob Pierson. I am the Plant  
24 Systems Branch Chief. We have received a letter certifying  
25 equipment qualification has been completed.

1 COMMISSIONER BERNTHAL: Thank you very much.

2 Finally, just a word. The first time I was there, I  
3 had a chance to meet with I guess 12 or 14 of our staff people  
4 in a circle and whatever occasionally may or may not be said  
5 about the NRC, I was greatly impressed with the quality of the  
6 people and the attention they were giving to their work and  
7 it's a tribute to your effort, Stu, and to Mr. Keppler's before  
8 you, I think. The candidness and openness, nobody pulled any  
9 punches. I very much appreciated that.

10 Let me mention one item and see whether in your  
11 judgment in the three to four weeks, whatever it has been since  
12 that point that it has been resolved, there was a concern  
13 expressed by two or three of the people doing the work over the  
14 rapidity of response to some of the -- how does it go,  
15 conditions adverse to quality, reports that were submitted.  
16 There was a concern about how quickly the follow up occurred  
17 within the organization. I think based on my most recent visit  
18 that has improved, but maybe you would like to comment.

19 MR. EBNETER: The CAQR has been an issue that we have  
20 been looking at for a year now. The CAQR process came into  
21 existence last February. It's very complex and it has taken  
22 some time for TVA to get it fully implemented. We conducted an  
23 inspection three weeks ago, I believe, a team inspection, and  
24 the staff still had some difficulties with the full  
25 implementation. There were three areas that were of concern.

1 The staff informed me this morning, we discussed it again, that  
2 TVA is taking the corrective action to correct those.

3 Timeliness has been one of our primary concerns, such  
4 that any safety issues that are identified get through the  
5 system in a reasonable period and that corrective actions and  
6 evaluations are done quickly. We think the system essentially  
7 is pretty good right now.

8 COMMISSIONER BERNTHAL: Thank you very much.

9 CHAIRMAN ZECH: Commissioner Carr?

10 COMMISSIONER CARR: Yes, I have one question I'd like  
11 to ask TVA. I know you have a comprehensive fitness for duty  
12 program. Do you have any statistics on recent results for  
13 fitness for duty?

14 MR. WHITE: Our fitness for duty program, I think, is  
15 one of the best in the country. It's a two-pronged approach.  
16 One is education of our people. We have an education program  
17 for both TVA and contractors, for the non-supervisory  
18 personnel. It's about a two-hour course; supervisory  
19 management, it's about a four and a half hour course. As I  
20 recall, we have trained in the neighborhood of ten or eleven  
21 thousand. We're almost through the first training cycle.  
22 That's the education part.

23 The preventive part consists of both dogs -- we now  
24 have three dogs who are visually present at the sites and at  
25 the office locations. And our random drug-testing program.

1           Now our drug-testing program has in itself several  
2       facets. One is for cause; another is for unescorted access to  
3       the plant. But the most important and the one that I have seen  
4       work in the Navy has been the random process, and to date, our  
5       screening of 2876 random screens, there have been 22 positive,  
6       and that's .8 percent.

7           CHAIRMAN ZECH: Were any of those operators?

8           MR. WHITE: I don't recall. Were any of them --

9           SPEAKER: No licensed operators.

10          CHAIRMAN ZECH: No licensed operators. All right.

11       Thank you.

12          MR. WHITE: In terms of the for cause, there have  
13       been 20 for cause, and as you'd expect, they're higher there;  
14       two of those 20 for cause were positive.

15          Pre-employment, 20 out of 1209 were positive, and  
16       that's 1.7 percent.

17          Those numbers are frankly much better than I had  
18       expected when we instituted the program.

19          MR. EBNETER: Commissioner Carr, we did do an  
20       inspection of that, a team inspection, last fall to verify the  
21       effectiveness of the program, and we found that it was  
22       acceptable.

23          COMMISSIONER CARR: All right. The only other thing  
24       I'd say is, I'd compliment you personally, Mr. Ebnetter, on  
25       jumping into a vacancy at short notice and running an effective



1 program, and my congratulations to you and your staff. Thank  
2 you.

3 MR. EBNETER: Well, thank you, sir, but the staff did  
4 the work, not me.

5 CHAIRMAN ZECH: Commissioner Rogers?

6 COMMISSIONER CARR: So did Mr. White's staff, right?

7 [Laughter.]

8 COMMISSIONER ROGERS: Would you comment on the work  
9 request backlog of about two, two and a half months that we  
10 heard in the TVA presentation a little earlier as to whether  
11 you think that is a stable number, it might go up, might go  
12 down, and whether you're comfortable with it?

13 MR. EBNETER: Well, we would obviously like to see it  
14 go down. I had the same question in the public meeting that  
15 the Commissioners had here, and I got the same answer. I don't  
16 have any personal experience of what would be an acceptable  
17 level, but I would like to see it get lower than 700. But I  
18 don't have any real basis for that.

19 COMMISSIONER ROGERS: Well, I, you know, I couldn't  
20 get a feeling from the presentation this morning whether TVA  
21 thought that was going to be where they leveled off, or whether  
22 they were really going to try to drive that down from that  
23 point. Could somebody comment?

24 MR. WHITE: Well, of course, we're going to try and  
25 drive it down. The first thing we have to do is separate out

1 the nonsense items from our system.

2 For example, we have a lot of trailers, temporary  
3 trailers. Literally, if one of those trailers has a flat tire,  
4 it ends up being in the statistics. So we've got to cleanse  
5 our system, and then I'm going to drive it down as far as we  
6 can. And I may put too much pressure and overshoot, but I'd  
7 like to see our backlog be the lowest in the country.

8 At the same time, I want to make clear that it's a  
9 healthy thing to have your people out looking, so that you have  
10 a backlog.

11 COMMISSIONER ROGERS: Well, just also I'd like to  
12 join my other Commissioners in complimenting the Staff on the  
13 very assiduous attention that's been paid here. It really  
14 shows.

15 MR. EBNETER: Thank you, sir.

16 CHAIRMAN ZECH: All right. Well, let me join my  
17 colleagues, too, to the Staff, especially you, Mr. Ebnetter, for  
18 your leadership in taking on a very, very important mission for  
19 this agency.

20 Ms. Axelrad has been with you all along, I know. I  
21 compliment you, too, and all the members of your team.

22 I know we're not done yet, and you're still driving,  
23 so we expect you to keep going and give us the best  
24 recommendations that you can and do it right.

25 Let me just say, too, I'd like to commend Mr. Runyon

1 for his willingness to step into this very important  
2 responsibility at TVA. You do bring a lot of experience, not  
3 necessarily nuclear experience, but you're getting help in that  
4 regard, it looks like, but you are bringing a lot of management  
5 experience into it, and it would at least appear to me  
6 dedication to the TVA organization, which I think is  
7 commendable.

8 To the other members of the Board of Directors, it's  
9 been a long, hard row for both of you, but I think you made a  
10 courageous decision some time ago to recognize what did appear  
11 to be real shortcomings at TVA. As painful as that was, I do  
12 think you showed the moral courage to do what's right, and  
13 we're not done yet, but I do think you deserve at least the  
14 credit for painfully facing up to what does appear to have been  
15 a necessary task.

16 I would say a last word to the Board. I hope you  
17 will continue your support for Steve White. He needs that  
18 support. The whole organization needs the support of the  
19 Board. It's been painful, but perhaps healthy. I like to  
20 think it's healthy, what you've done, but the support needs to  
21 stay there. It needs to continue. And as you form a more  
22 permanent organization somewhere along the corporate level, I  
23 commend you for what you've done in getting permanent TVA  
24 people in there, but that is awfully important, I think, for  
25 continuity and strength over the long haul.

1           You've obviously made some significant and positive  
2 management changes at TVA. I think there are some technical  
3 issues, at least, that we want to be confident are fully  
4 resolved. We've mentioned several of them here today. It  
5 looks to me like you do have an experienced group of people at  
6 TVA, and I commend you for your ability to recruit under  
7 difficult pay scale circumstances, and I think that's been an  
8 effort that needs recognition.

9           It looks like you've got almost a new team in many  
10 ways. I know you've got some of the same people. But when you  
11 have a new team, and if startup is authorized, I think you've  
12 got to look at it in a sense like first-time startup and  
13 recognize that caution and deliberate carefulness and slowness  
14 step-by-step is the only way to go, as we mentioned earlier.

15           Let me just say, too, that speaking for myself -- and  
16 I feel confident that I'm speaking for my fellow Commissioners  
17 -- that this Commission will only authorize the Staff to allow  
18 the restart of the Sequoyah plant if and when we're satisfied  
19 that there are no issues that we're aware of for the purpose of  
20 restart that are standing in the way of a finding that there is  
21 reasonable assurance that the plant can be operated safely  
22 without undue risk to the public health and safety.

23           That's our mandate. We intend to carry it out. And  
24 as we pointed out earlier, although we've scheduled a tentative  
25 session for a possible Commission vote for the 10th of March

1 next week, as Mr. Stello points out, it could well be the  
2 following week or even later. We're not going to authorize  
3 restart until we're satisfied.

4 With that, I thank the Staff. I thank TVA for an  
5 excellent presentation, and unless there are any other  
6 comments, we will stand adjourned.

7 [Whereupon, at 12:35 o'clock, p.m., the Commission  
8 meeting was adjourned.]

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1  
2 REPORTER'S CERTIFICATE  
3

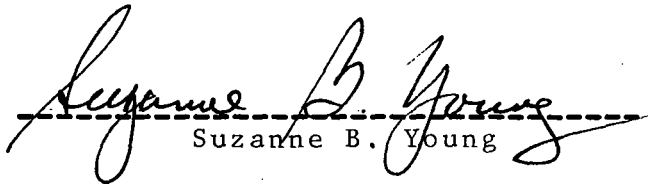
4 This is to certify that the attached events of a  
5 meeting of the U.S. Nuclear Regulatory Commission entitled:  
6

7 TITLE OF MEETING: Briefing on Sequoyah Restart

8 PLACE OF MEETING: Washington, D.C.

9 DATE OF MEETING: Friday, March 4, 1988  
10

11 were held as herein appears, and that this is the original  
12 transcript thereof for the file of the Commission taken  
13 stenographically by me, thereafter reduced to typewriting by  
14 me or under the direction of the court reporting company, and  
15 that the transcript is a true and accurate record of the  
16 foregoing events.  
17

18   
Suzanne B. Young  
19  
20  
21

22 Ann Riley & Associates, Ltd.  
23  
24  
25

3/4/88

SCHEDULING NOTES

TITLE: BRIEFING ON SEQUOYAH RESTART

SCHEDULED: 9:30 A.M., FRIDAY, MARCH 4, 1988 (OPEN)

DURATION: APPROX 2 HRS

PARTICIPANTS: TVA (LICENSEE)

BOARD OF DIRECTORS

5 MINS

- M.J. RUNYON, CHAIRMAN
- C. DEAN
- W. WATERS

MANAGER OF NUCLEAR POWER

70 MINS

- S.A. WHITE

TVA STAFF

- T. JENKINS, EMPLOYEE CONCERNS PROGRAM
- M. BLACKBURN, MANAGEMENT DEVELOPMENT
- N. KAZANAS, QUALITY ASSURANCE
- J. HOSMER, TECHNICAL SUPPORT
- S. SMITH, PLANT PERFORMANCE
- J. BYNUM, PLANT OPERATIONAL READINESS

NRC

45 MINS

- V. STELLO, EDO
- S. EBNETER, DIRECTOR  
OFFICE OF SPECIAL PROJECTS
- J. AXELRAD (OSP)
- S. RICHARDSON (OSP)
- B.D. LIAW (OSP)
- E. MARINOS (OSP)

**TENNESSEE VALLEY AUTHORITY  
OFFICE OF NUCLEAR POWER**

**SEQUOYAH NUCLEAR PLANT  
UNIT 2  
NRC COMMISSION MEETING  
MARCH 4, 1988**



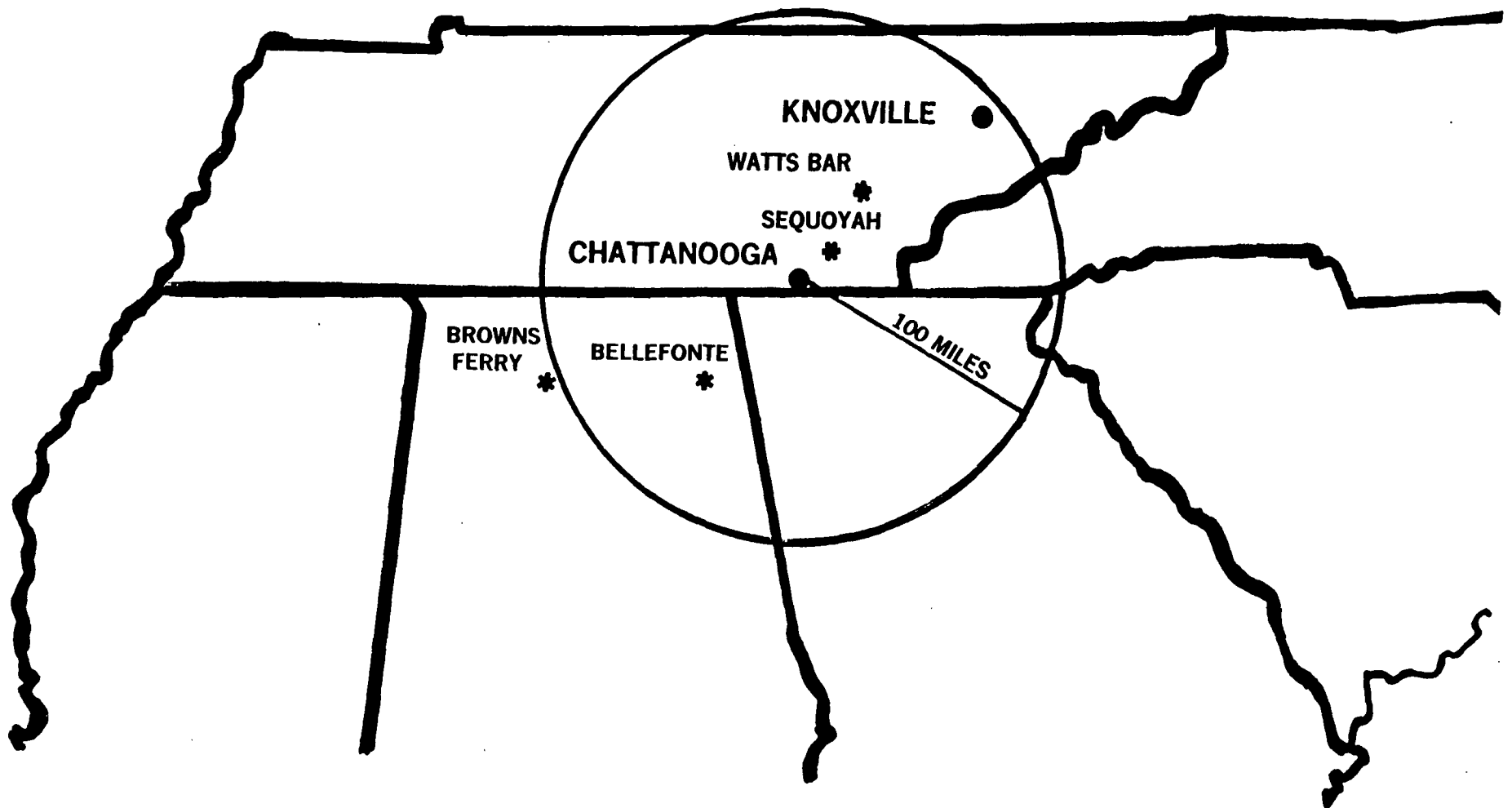
# **AGENDA**

**➔ OVERVIEW**

**CORPORATE PERFORMANCE**

**SEQUOYAH OPERATIONAL READINESS**

# NUCLEAR FACILITIES



# **HISTORY AND BACKGROUND**

## **NRC CONCERNS**

- **CORPORATE CONTROLS WEAK, LACK OF TOP MANAGEMENT INVOLVEMENT**
- **LACK OF NUCLEAR AND OPERATING EXPERIENCE IN PLANT ORGANIZATION**
- **TECHNICAL SUPPORT NOT MANAGED**
- **DECENTRALIZATION (OWNER/OPERATOR CONCEPT) NOT IMPROVING PLANT PERFORMANCE**
- **ALLEGATIONS**
- **POOR REGULATORY PERFORMANCE**
- **LACK OF INTEGRATED TRACKING SYSTEM**
- **LACK OF SITE-TO-SITE SHARED OPERATING EXPERIENCE**
- **UNTIMELY AND INEFFECTIVE CORRECTIVE ACTION**

# **AGENDA**

## **OVERVIEW**

**→ CORPORATE PERFORMANCE**

**SEQUOYAH OPERATIONAL READINESS**

# **NUCLEAR OBJECTIVES**

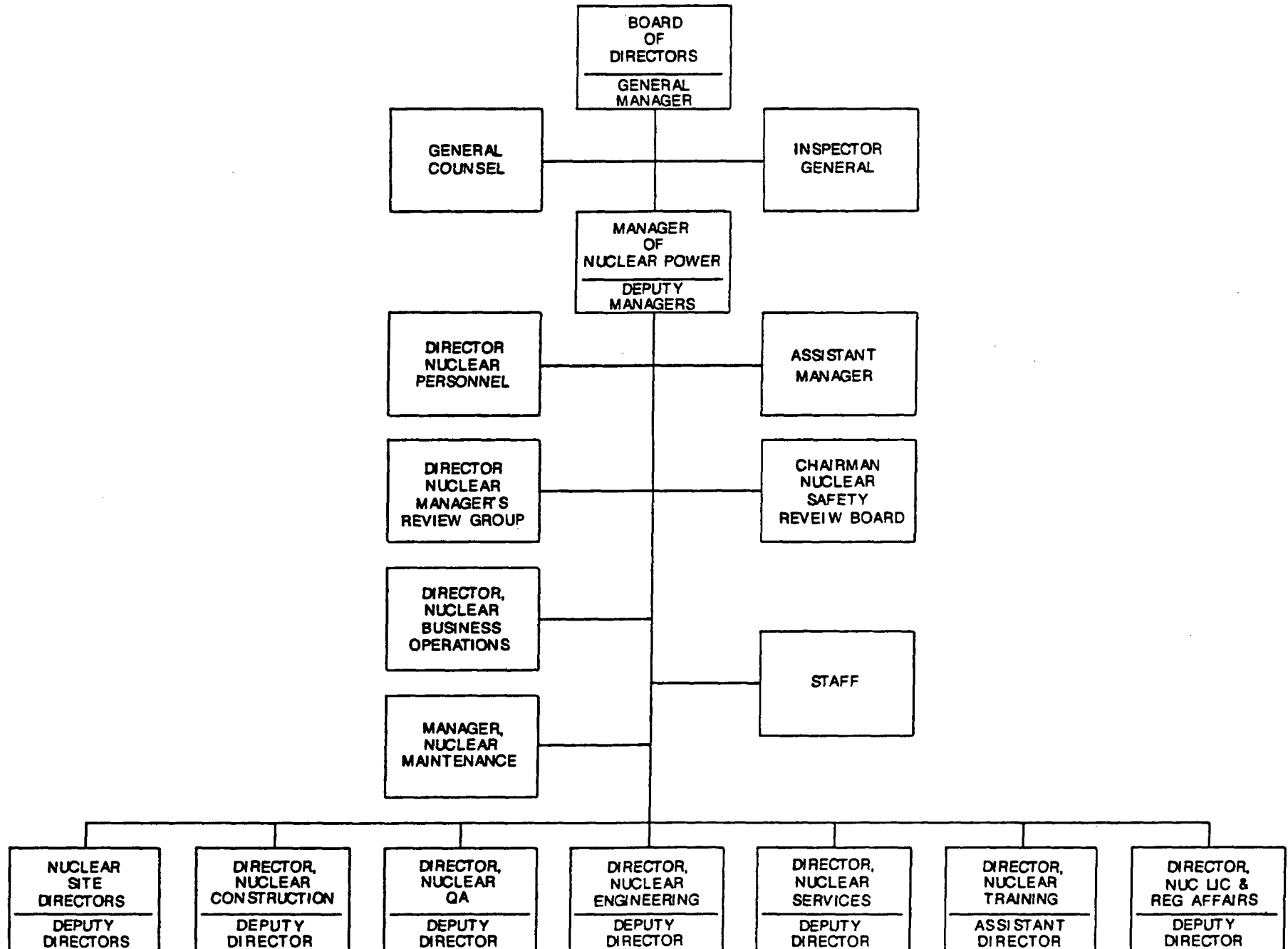
## **TVA OFFICE OF NUCLEAR POWER OBJECTIVES TO ASSURE SAFE PLANT OPERATION**

- 1. ESTABLISH A STABLE ORGANIZATION**
- 2. PUT A STRONG MANAGEMENT TEAM IN PLACE**
- 3. ESTABLISH PROCEDURALIZED AND DISCIPLINED WAY OF DOING BUSINESS**
- 4. ENSURE THE TECHNICAL INTEGRITY OF THE PLANTS**
- 5. REESTABLISH TRUST AND CONFIDENCE IN MANAGEMENT**

## **OBJECTIVE 1: ESTABLISH A STABLE ORGANIZATION**

- **NEW ORGANIZATION IN PLACE**
- **POLICY AND ORGANIZATION MANUAL ISSUED**
- **POSITION DESCRIPTIONS WRITTEN**

# ORGANIZATION



## **OBJECTIVE 2: PUT A STRONG MANAGEMENT TEAM IN PLACE**

- **INFUSION OF SENIOR MANAGEMENT TALENT**
- **MANAGEMENT TRAINING AND DEVELOPMENT**



## **OBJECTIVE 3: ESTABLISH DISCIPLINED WAY OF DOING BUSINESS**

### **EXAMPLES:**

- **POLICY FOR EACH MAJOR PROGRAM**
- **HIERARCHY OF DOCUMENTS**
- **COMPREHENSIVE TRACKING SYSTEMS**
- **SINGLE PROGRAM FOR CONDITIONS ADVERSE TO QUALITY**
- **REVISED AND UNIFIED QUALITY ASSURANCE TOPICAL REPORT**
- **A CONFIGURATION MANAGEMENT SYSTEM**
- **TRAINING**
- **CENTRAL CONTROL OF CHANGES**

## **OBJECTIVE 4: ENSURE THE TECHNICAL INTEGRITY OF THE PLANTS**

- **RE-ESTABLISHED DESIGN BASIS**
- **CONFIRMED COMPLIANCE WITH COMMITMENTS**
- **ESTABLISHED DESIGN CONTROL PROCESS**
- **ORGANIZATIONAL CHANGES TO IMPROVE TECHNICAL  
OVERSIGHT**

## **OBJECTIVE 5: REESTABLISHING TRUST AND CONFIDENCE BETWEEN MANAGEMENT AND EMPLOYEES**

- **IMPROVED COMMUNICATIONS WITH EMPLOYEES**
- **EMPLOYEE CONCERNS PROGRAM**
- **INTIMIDATION AND HARASSMENT PROGRAM**
- **MANAGEMENT TRAINING PROGRAM**
- **WALKING SPACES**

# **EMPLOYEE CONCERNS PROGRAM**

**T. B. JENKINS**

## **EMPLOYEE CONCERNS PROGRAM IS WORKING:**

- **EVALUATED AND RESOLVED PAST CONCERNS**
- **INTERNAL AND EXTERNAL AUDITS**
- **DECLINING NUMBER OF CONCERNS**
- **LINE MANAGEMENT NOW HANDLING CONCERNS**
- **ACTION ORIENTED - GETS RESULTS**

## **EMPLOYEES ENCOURAGED TO REPORT SAFETY AND QUALITY CONCERNS**

- **EMPLOYEE CONCERN PROGRAM ORIENTATION/EXIT INTERVIEWS**
- **CONDITION ADVERSE TO QUALITY PROCESS**
- **MESSAGES OF OBLIGATION OF ALL TO REPORT PROBLEMS**
- **EMPLOYEES USING LINE MANAGEMENT TO ADDRESS CONCERNS**

# **THERE IS NOT A CLIMATE OF INTIMIDATION AND HARASSMENT**

## **ROOT CAUSES**

- **MANAGEMENT CULTURE**
- **MANAGEMENT SKILLS**
- **DISCIPLINARY POLICIES**

## **ACTIONS**

- **COMMUNICATIONS**
- **WALKING SPACES**
- **DISCIPLINARY ACTIONS**
- **MANAGEMENT TRAINING**

# **MANAGEMENT TRAINING AND DEVELOPMENT**

**M. S. BLACKBURN**



## **MANAGEMENT TRAINING**

- **EMPHASIS AND INVOLVEMENT BY TOP MANAGEMENT**
- **SYSTEMATIC AND REQUIRED**
- **QUALITY AND QUANTITY**

# MANAGEMENT TRAINING PROGRESS

<u>COURSES</u>	<u>#TRAINED</u>
<u>CORE CURRICULUM</u>	
- ORIENTATION TO NUCLEAR SUPERVISION	1149
- SUPERVISOR DEVELOPMENT COURSE	1117
- MANAGING FOR EXCELLENCE COURSE	136
- SKILLS ASSESSMENT	255
<u>ADDITIONAL TRAINING</u>	
- PROBLEM SOLVING/DECISION MAKING (PILOT)	99
- TIME MANAGEMENT	529
- OTHER ELECTIVES	2335

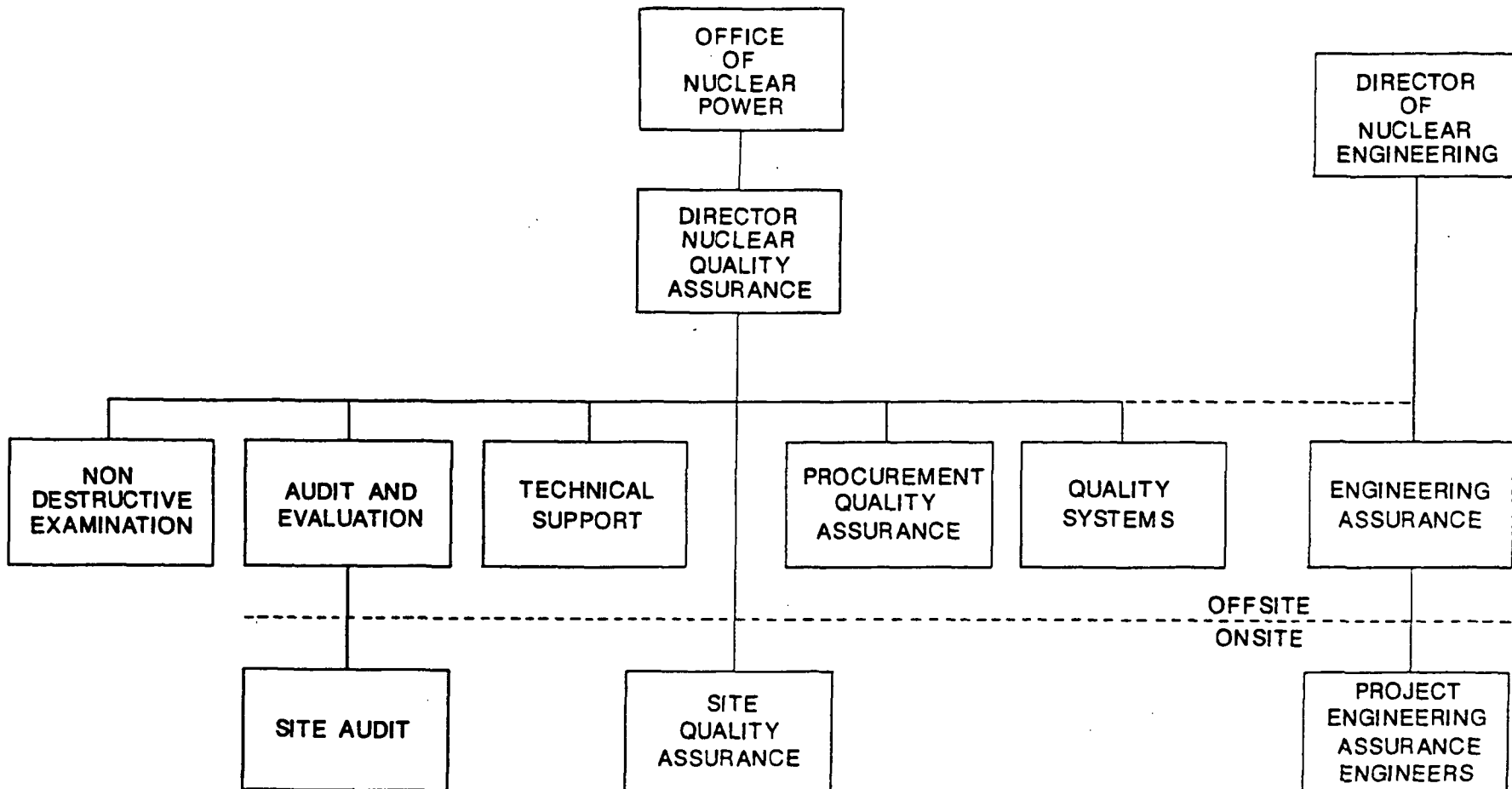
# **QUALITY ASSURANCE**

**N. C. KAZANAS**

## **QUALITY ASSURANCE**

- **ORGANIZATION RESTRUCTURED**
- **EXPERIENCED SENIOR MANAGEMENT TEAM**
- **ENGINEERING ASSURANCE WORKING**
- **EMPHASIS ON TRAINING**
- **INCREASED EMPHASIS ON PERFORMANCE-BASED QUALITY VERIFICATIONS**
- **BROADENED SCOPE OF COVERAGE**
- **NEW PROGRAMS AND MANAGEMENT INITIATIVES**

# QUALITY ASSURANCE



# **QUALITY ASSURANCE**

- **ORGANIZATION RESTRUCTURED**
- **EXPERIENCED SENIOR MANAGEMENT TEAM**
- **ENGINEERING ASSURANCE WORKING**
- **EMPHASIS ON TRAINING**
- **INCREASED EMPHASIS ON PERFORMANCE-BASED QUALITY VERIFICATIONS**
- **BROADENED SCOPE OF COVERAGE**
- **NEW PROGRAMS AND MANAGEMENT INITIATIVES**

## **CORRECTIVE ACTION PROGRAM (CONDITIONS ADVERSE TO QUALITY)**

- **11 MONTHS OLD**
- **LOW THRESHOLD**
- **HIGHLY PARTICIPATORY**
- **PRIORITIZATION**
- **TRACKING**
  - **STATUS REPORTS**
  - **MANDATORY ESCALATION**

# **AGENDA**

**OVERVIEW**

**CORPORATE PERFORMANCE**

**→ SEQUOYAH OPERATIONAL READINESS**



# **TECHNICAL SUPPORT READINESS**

**J. B. HOSMER**

# **TECHNICAL SUPPORT READINESS**

- **TRANSITION**
- **TECHNICAL SUPPORT TODAY**
- **PLANT SUPPORT**

## TECHNICAL SUPPORT TRANSITION

ISSUE	PAST	TODAY
TIMELINESS	OFFSITE AVAILABLE	ONSITE REAL TIME
ACCOUNTABILITY	"ON CALL" SERVICE	"OWNERSHIP" SUPPORT
DESIGN BASIS	WEAK	REESTABLISHED
DESIGN CONTROL	DRAWINGS	PACKAGES

# TECHNICAL SUPPORT TODAY

## PROJECT TEAM ON SITE

- RESPONSIBILITIES:

### TODAY

- DAILY SUPPORT
- UNIT 1 RESTART ENGINEERING
- MODIFICATIONS ENGINEERING

### FUTURE

- DAILY SUPPORT
- MODIFICATIONS ENGINEERING

- TEAM:

- TVA ON SITE AND TVA KNOXVILLE
- ARCHITECT ENGINEERS ON SITE

## **DAILY PLANT SUPPORT**

- **PLAN OF THE DAY**
- **SYSTEMS ENGINEERING**
- **PLANT OPERATIONS REVIEW COMMITTEE**
- **ATTITUDES**
  - **TEAM**
  - **SUPPORT**
  - **OWNERSHIP**
  - **ETHIC**
- **POSITIVE TRENDS**
  - **CORRECTIVE ACTIONS**
  - **DESIGN CHANGES**

# **TECHNICAL SUPPORT READINESS SUMMARY**

- **DESIGN BASIS REESTABLISHED**
- **TECHNICAL SUPPORT PROCESS IN PLACE**
- **TECHNICAL SUPPORT PEOPLE HAVE ACCEPTED  
TECHNICAL OWNERSHIP AND ARE SUPPORTING  
PLANT OPERATION**

# **PLANT READINESS**

**S. J. SMITH**

# **PAST PLANT PERFORMANCE**

## **AREAS OF WEAKNESS**

- **MANAGEMENT INVOLVEMENT AT OPERATION AND CRAFT LEVELS**
- **ACCOUNTABILITY AND DEFINED RESPONSIBILITIES**
- **HOUSEKEEPING AND MATERIAL CONDITIONS**
- **MAINTENANCE PROGRAM**
- **SYSTEM SPONSORSHIP**
- **ROOT CAUSE DETERMINATION**
- **COMMUNICATIONS**
- **NUCLEAR ETHIC**

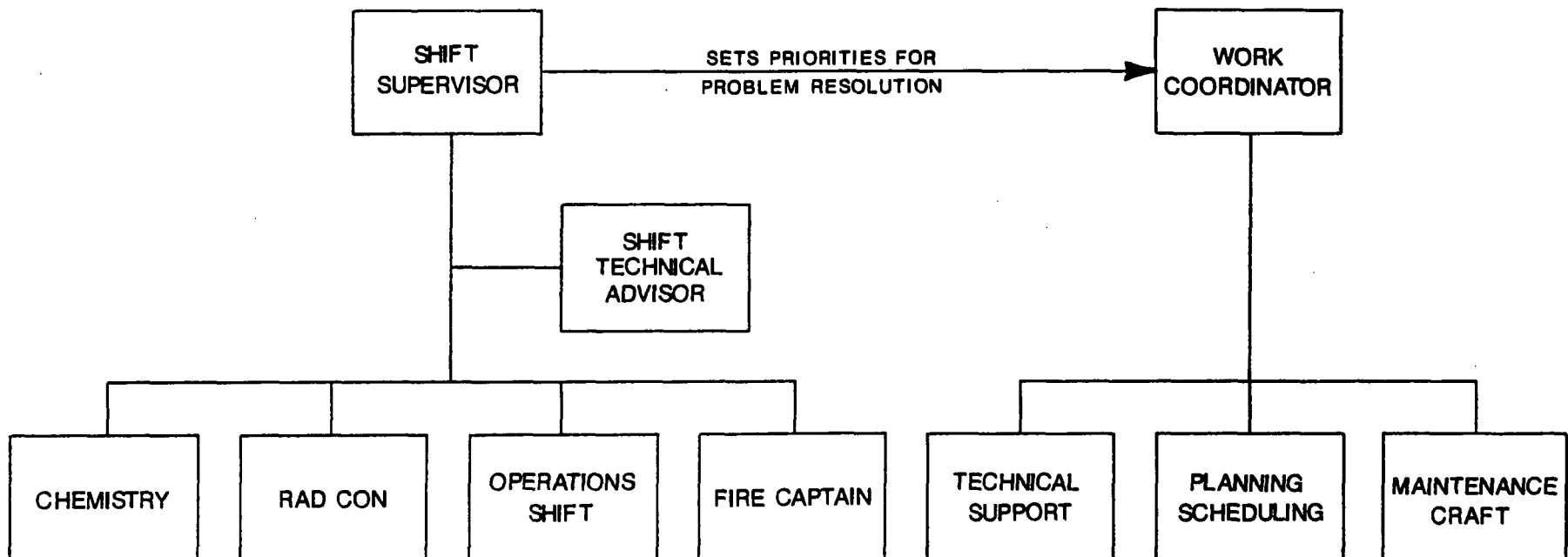


## **MANAGEMENT INVOLVEMENT**

- **ORGANIZATION TO DIRECTLY ALIGN RESPONSIBILITIES TO CRITICAL AREAS**
- **REDUCTION IN LEVELS OF MANAGEMENT BETWEEN PLANT MANAGER AND STAFF**
- **MANAGEMENT DUTY ROSTER**
- **WALK YOUR SPACES POLICY**
- **PLAN OF THE DAY MEETINGS**
- **FIXED SHIFT SUPPORT TO OPERATIONS**

# SHIFT ORGANIZATION

APPROXIMATELY 45 PERSONNEL



## **ACCOUNTABILITY AND DEFINED RESPONSIBILITIES**

- **RESPONSIBILITIES DEFINED IN SITE ADMINISTRATIVE PROCEDURES**
- **PERSONNEL TRAINED AND HELD ACCOUNTABLE**
- **RESPONSIBILITIES REEMPHASIZED DURING PERIODIC MEETINGS**
- **CORPORATE AND SITE GOALS AND OBJECTIVES DEFINED  
AND PROGRESS TRACKED**

## **HOUSEKEEPING AND MATERIAL CONDITION**

- **ESTABLISHED DETAILED HOUSEKEEPING AND MATERIAL CONDITION UPGRADE PROGRAM**
- **COVERS 100 PERCENT OF POWER PLANT AND SHOP FACILITIES**
- **PROGRAM WILL COMPLETE IN DECEMBER 1988**
- **WILL BE FOLLOWED BY RECURRING MAINTENANCE PROGRAM WHICH WILL KEEP PLANT CLEANLINESS AND MATERIAL CONDITIONS AT HIGH LEVEL**
- **INCLUDES EXPANDED PREVENTIVE MAINTENANCE PROGRAM**

## **MAINTENANCE PROGRAM UPGRADE**

- **CORPORATE MAINTENANCE PROGRAM**
- **PROCEDURE UPGRADE**
- **PREVENTIVE MAINTENANCE**
- **RESTRUCTURING OF MAINTENANCE ORGANIZATION**
- **PRIORITIZATION OF WORK ACTIVITIES**
- **POST MAINTENANCE TESTING**

# **SYSTEMS ENGINEERING ORGANIZATION**

- **SYSTEM SPONSORSHIP**
- **OBSERVES SYSTEM PERFORMANCE**
  - **TRENDS**
  - **PREDICTIVE MAINTENANCE**
- **COORDINATES PROBLEM RESOLUTIONS**
- **RECOMMENDS PERFORMANCE IMPROVEMENTS**
- **REVIEWS TEST RESULTS**
- **VERIFIES PROPER INSTALLATION OF MODIFICATIONS**

## **ROOT CAUSE DETERMINATION**

- **PROCEDURALIZED**
- **ROOT CAUSE TRAINING**
- **INCIDENT INVESTIGATION TEAM**
- **IMMEDIATE MANAGEMENT INVOLVEMENT**
- **GENERIC REVIEWS**

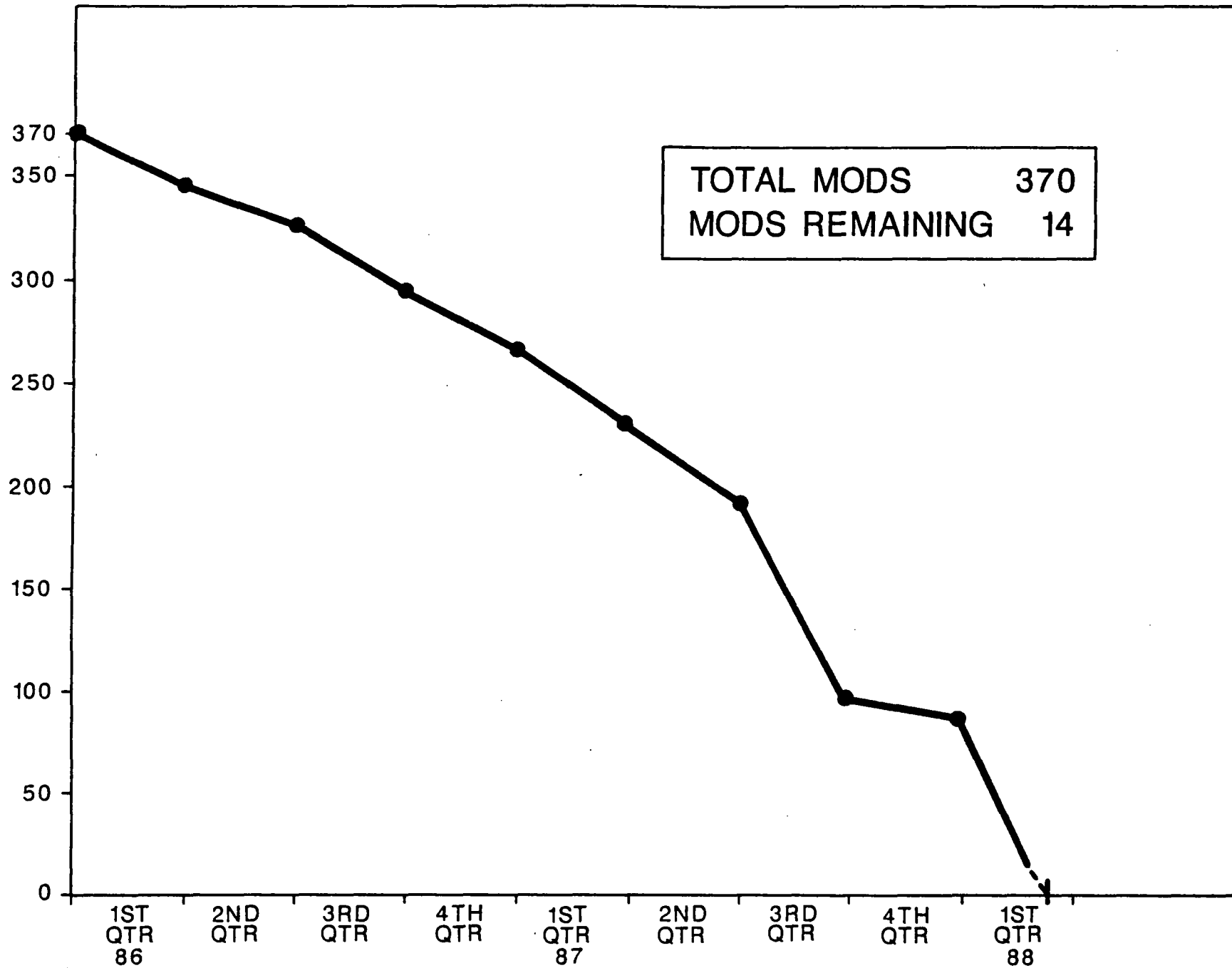
# **PLANT READINESS**

## **MATERIAL CONDITION**

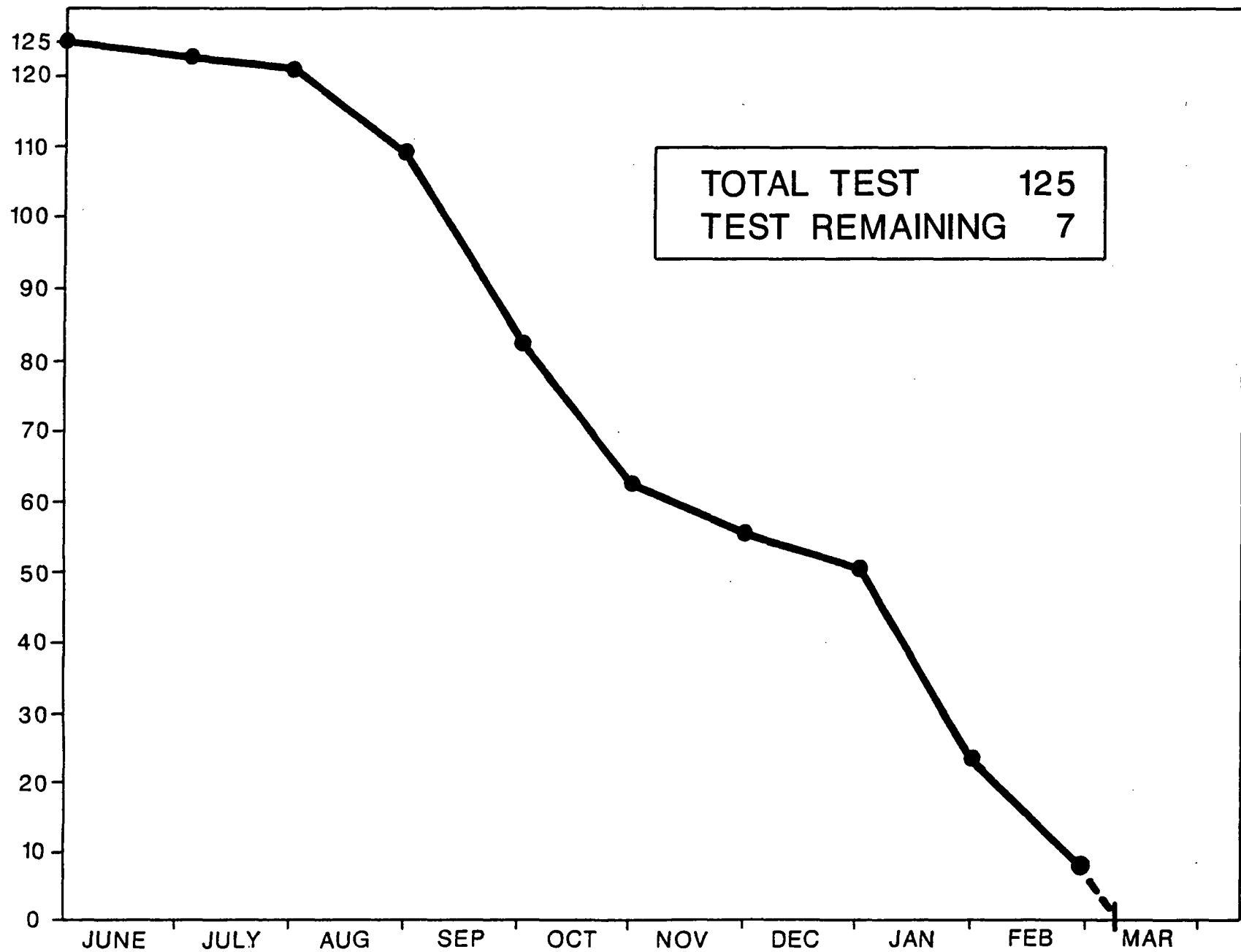
- **COMPLETED MODIFICATIONS TO IMPROVE PLANT SAFETY**
- **RESTART TEST PROGRAM**
- **MAINTENANCE BACKLOG**



# MODIFICATIONS PERFORMED FOR RESTART



# RESTART TEST PERFORMANCE



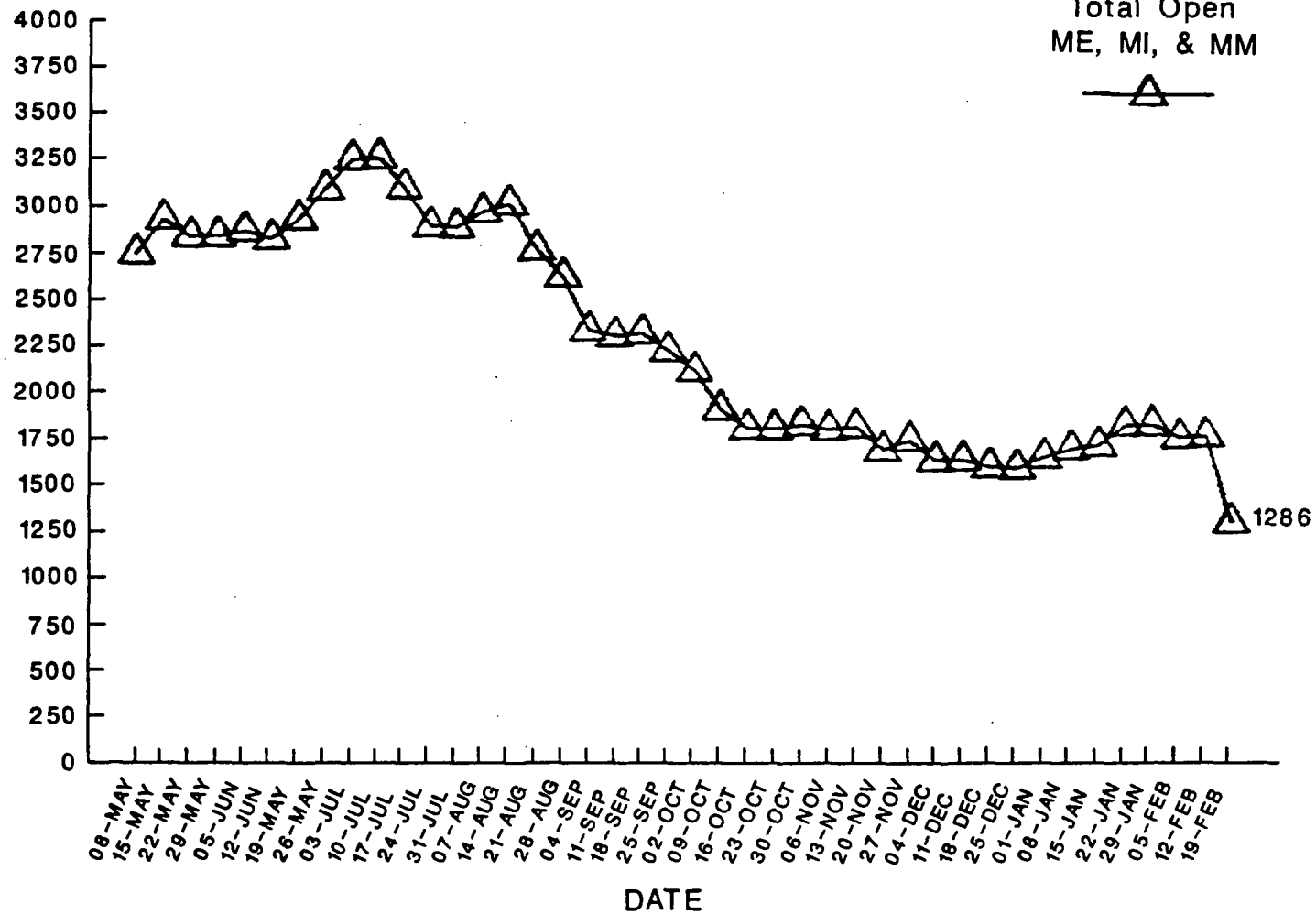
## WORK REQUEST PERFORMANCE

1986	SUBMITTED 19,842 COMPLETED 19,001
1987	SUBMITTED 20,043 COMPLETED 20,362
1988 THRU 2-23-88	SUBMITTED 2,776 COMPLETED 2,438

OUTSTANDING WORK REQUESTS FOR  
UNIT 2 RESTART -- 89

# MAINTENANCE TOTAL OPEN MRs/WRs

Number of MR's/WR's



## WORK REQUEST BACKLOG

CURRENT TOTAL	1276
HOUSEKEEPING AND MATERIAL CONDITION	APPROX. 500
CORRECTIVE MAINTENANCE	APPROX. 750
BASED ON 2 YEAR WORKOFF RATE, THIS IS ABOUT 2-2½ MONTH BACKLOG	

# **COMMUNICATIONS**

- **DAILY PLANT STATUS SHEET**
- **STRUCTURED PERIODIC MEETINGS WITH ALL PLANT PERSONNEL**
  - **SENIOR SUPERVISORS THREE TIMES WEEKLY**
  - **ALL SUPERVISORS MONTHLY**
  - **ALL PERSONNEL QUARTERLY**
- **PERIODIC INFORMATION MEETINGS WHENEVER EVENTS DICTATE**
- **PLAN OF THE DAY MEETINGS**
- **MANAGEMENT ATTENDANCE AT TRAINING SESSIONS WITH PLANT EMPLOYEES**
- **MANAGEMENT ATTENDANCE AT DAILY SHIFT TURNOVER MEETINGS**
- **COMMUNICATIONS FORMALIZED BETWEEN OPERATIONS/MAINTENANCE PERSONNEL**

# NUCLEAR ETHIC

- DEDICATION TO THE PROTECTION OF THE ENVIROMENT AND PUBLIC SAFETY
- ACTIVE IMPLEMENTATION OF INDUSTRY PROVEN STANDARDS FOR PERFORMANCE AND OPERATION
- RIGOROUS ADHERENCE TO PROCEDURES AND INSTRUCTIONS
- WILLINGNESS TO IDENTIFY AND SOLVE PROBLEMS
- CLEARLY DEFINED EXPECTATIONS AND RESPONSIBILITIES
- PROFESSIONALISM AT ALL ORGANIZATIONAL LEVELS

## **PLANT READINESS CONCLUSION**

- **PLANT AND EQUIPMENT UPGRADED**
- **STARTUP TESTING VERIFIED EQUIPMENT OPERABILITY**
- **NON-NUCLEAR HEATUP VERIFIED OPERABILITY AND PERSONNEL READINESS**
- **UPGRADED MAINTENANCE PROGRAM ENSURES CONTINUED EQUIPMENT READINESS**
- **TRAINING PROGRAM ENSURES CONTINUED PERSONNEL PERFORMANCE**

### **CONCLUSION**

- **READY FOR OPERATIONS**



# **OPERATIONAL READINESS**

**J. R. BYNUM**

# **INPUTS**

## **ASSESSED BY:**

- **MANAGEMENT**
- **NRC**
- **INPO**
- **NUCLEAR MANAGER'S REVIEW GROUP**
- **OPERATIONAL READINESS REVIEW**
- **OTHERS**

## **OPERATIONAL READINESS**

- **MANAGEMENT INVOLVEMENT**
- **ADMINISTRATIVE CONTROLS**
- **STANDARDS OF PERFORMANCE**

## **OPERATIONAL READINESS MANAGEMENT INVOLVEMENT**

- **EMPHASIS ON WALKING SPACES PHILOSOPHY**
- **OBSERVATION AND CRITIQUE OF TRAINING**
- **PERIODIC MEETINGS WITH ALL PERSONNEL**
- **REVISION OF PLANT OPERATIONS REVIEW COMMITTEE  
RESPONSIBILITIES**

## **OPERATIONAL READINESS ADMINISTRATIVE CONTROLS**

- **ESTABLISHMENT OF A WORK CONTROL GROUP**
- **ADMINISTRATIVE PROCEDURES CHANGES**
  - **CONDUCT OF OPERATIONS**
  - **CONFIGURATION STATUS CONTROL**
  - **TAGGING PROCEDURE**
  - **CONTROL OF TEMPORARY MODIFICATIONS**

# **OPERATIONAL READINESS STANDARDS OF PERFORMANCE**

- **OPERATING CREW TRAINING**
  - **CONDUCT OF OPERATIONS**
  - **STARTUP TRAINING**
  - **HEATUP**
  - **TEAMWORK AND DIAGNOSTIC SKILLS**
- **EVALUATION OF NON-LICENSED OPERATOR PROFICIENCY**
- **INTEGRATION OF SHIFT TECHNICAL ADVISORS INTO  
SHIFT COMPLEMENT**
- **CHEMISTRY SHIFT ASSESSMENT**
- **RADIATION CONTROL SHIFT ASSESSMENT**

## **OPERATIONAL READINESS REVIEW**

- **ALL RESTART ITEMS COMPLETE**
- **ALL NON-RESTART ITEMS HAVE ACTION PLANS**

### **INPO**

- **ALL RESTART ITEMS COMPLETE**

# **IMPLEMENTATION VERIFICATION**

- **HEATUP**
  - **MANAGEMENT INVOLVEMENT**
  - **SHIFT OPERATING ADVISOR - QA**
  - **NUCLEAR MANAGER'S REVIEW GROUP**
- **POST RESTART**
  - **MANAGEMENT INVOLVEMENT**
  - **NUCLEAR MANAGER'S REVIEW GROUP**
  - **QUALITY ASSURANCE**



# VERIFICATION

- SHIFT OPERATING ADVISOR PROGRAM - QUALITY ASSURANCE REVIEW
  - ALL AREAS OF SHIFT CONDUCT ACCEPTABLE FOR RESTART
  - ALL SHIFT CREWS ARE ACCEPTABLE FOR RESTART
- NUCLEAR MANAGERS REVIEW GROUP
  - ALL OPERATIONAL READINESS REPORT, INSTITUTE OF NUCLEAR POWER OPERATIONS RESTART ITEMS HAVE BEEN ADEQUATELY ADDRESSED
  - CORRECTIVE ACTION IMPLEMENTATION IN ALL AREAS IS SATISFACTORY FOR RESTART
- INSTITUTE OF NUCLEAR POWER OPERATIONS
  - FOLLOWUP VISIT REVIEWED CORRECTIVE ACTION PLAN FOR INPO RESTART ITEMS - ALL CORRECTIVE ACTIONS ACCEPTABLE
- ASSISTANT UNIT OPERATOR PROFICIENCY EVALUATION
  - ALL AUOs CERTIFIED PROFICIENT FOR EACH WATCH STATION ASSIGNED

## **CONCLUSIONS**

- **ALL AREAS OF OPERATIONAL READINESS HAVE BEEN ASSESSED**
- **PROGRAMS ARE IN PLACE TO ENSURE CONTINUING IMPROVEMENT AND SELF ASSESSMENT**
- **SEQUOYAH NUCLEAR PLANT IS SAFE FOR RESTART**



## **POLICY ISSUE**

### **(Commission Meeting)**

March 8, 1988

SECY-88-69

For: The Commissioners

From: Victor Stello, Jr.  
Executive Director for Operations

Subject: CURRENT AND POTENTIAL APPLICABILITY OF "DE MINIMIS" AND  
"BELOW REGULATORY CONCERN" CONCEPTS TO COMMISSION POLICIES

Purpose: To discuss the de minimis and below regulatory concern concepts and inform the Commission of the status of staff efforts to develop a proposed policy statement identifying a level of radiation risk below which government regulation would become limited or unwarranted.

Background: The staff requirements memorandum of November 24, 1987, directed that a proposed policy statement be developed that would "...identify a level of radiation risk below which government regulation becomes unwarranted." In this memorandum, the Commission requested a status report/options paper on the current and potential uses of the de minimis and below regulatory concern (BRC) concepts in the formulation of the desired policy. Previously, in a staff requirements memorandum of February 5, 1987, the Commission had requested advice on how existing and proposed de minimis, BRC, and residual radioactivity standards are related and how consistent release standards for all NRC licensed activities are to be achieved.

Discussion: The term "de minimis" is a short form of a phrase which is supposed to read "de minimis non curat lex", i.e., the law is not concerned with trivialities. As used in radiation protection, however, the term has no legal connotation, and has been used in a variety of ways. In particular, "de minimis" has been used at various times to mean both the general region of low dose levels which an individual would consider to be trivial and the larger region of low dose levels in which regulation to further control dose and risk is unwarranted. To reduce the potential confusion created by multiple usages of the same term, the staff will reserve the term "de minimis" for dose levels which an individual would consider trivial, i.e. not take action to reduce, and use the term "below regulatory concern" to represent dose levels at which some types of regulation might be unwarranted.

Contact:  
Stanley M. Neuder, RES  
492-3737

The framework for radiation protection consists of three fundamental principles. The first of these is whether a particular usage of radioactive material is justified, i.e. whether there is some net benefit to be gained from the use of radioactive material. For example, the 1965 Commission Policy Statement on the use of radioisotopes in consumer products draws a line between justified and unjustified uses. The second principle is dose limits, which establish the boundary between allowable and unacceptable exposures to individuals. These limits are contained in 10 CFR Part 20 and establish adequate protection for public health and safety. The revision of 10 CFR Part 20, currently under preparation by the staff, establishes a limit for members of the public of 100 millirem per year. All sources of exposure and practices involving radioactive material must meet these basic principles.

Within the region of potential acceptable exposures, i.e. within the dose limits, exposures are further limited by application of the third principle, ALARA. Doses are reduced by licensees, under the review of the NRC, to levels that are As Low As Reasonably Achievable, taking into account economic and social factors. Also within the region below the basic dose limits are other limits imposed by both the NRC and other agencies such as EPA which further restrict the dose levels from some licensees such as nuclear power plants and nuclear fuel cycle facilities. These levels have been established, at least in part, on the basis of what is achievable given the current state of technology.

At the lower end of the ALARA region of doses, well below the basic dose limits mentioned above, the concept of below regulatory concern comes into play. BRC connotes levels of risk or dose that may be considered trivial from a regulatory standpoint, i.e., individual and collective doses that warrant limited government attention taking into account the cost of further regulation and the likelihood that such regulation would significantly alter the resulting dose. A source of exposure could be considered as a candidate for reduced regulatory requirements if certain specific conditions were met. The conditions for BRC consideration might include requirements such as additional controls on the source of exposure not resulting in additional reduction in the dose received; or the costs of additional regulatory controls not being balanced by the benefits of dose reduction that could be achieved.

Establishment of a BRC level for a particular practice or source of exposure would not imply that the dose would be considered as trivial by individuals. Under the linear non-threshold dose effect relationship assumption, any dose will have a corresponding risk.

The region of dose levels that would be low enough for the assumed risk to be considered as trivial by an individual, i.e., "de minimis", is a subset of the BRC dose region, and could be on the order of a few millirem. The choice of a specific value requires subjective personal judgements, and will be different for each individual. The relationships between dose limits, ALARA, BRC, and de minimis are illustrated in Enclosure 1.

A below regulatory concern threshold or level may be specified in terms of risk, dose, dose rate, radionuclide quantity, or radionuclide concentration. Current NRC regulations include several instances of implied or de facto BRC levels, although they are seldom referred to as such. These exemptions were promulgated by previous Commissions, not because they were assumed to entirely risk free, but because either the degree of risk was too small to justify the burden of additional regulatory requirements, or because there would have been little gain in risk reduction by the addition of regulatory controls. In general, limited regulatory controls are associated with de facto BRC levels. Enclosure 2 provides a listing of some of these de facto BRC levels.

The concepts of de minimis and BRC are not new, and numerous efforts have been made, or are currently underway in these areas. These include implementation of the Low-Level Radioactive Waste Policy Act by the NRC, development of public dose criteria including BRC levels by the EPA, development of an "annual negligible individual risk level" by the NCRP, and development of residual radioactivity levels for decommissioning by the NRC and EPA. A summary of the actions related to BRC and de minimis by various agencies and groups is provided in Enclosure 3. Enclosure 4 provides a description of a draft interagency framework being considered by EPA for development of presidential guidance on public radiation protection.

The staff is currently formulating possible options for the policy statement on de minimis and BRC risks. Some of the issues that must be addressed include:


- ° What benefit would be realized in establishing a generic BRC level as opposed to source specific levels (e.g., low level waste streams, decommissioned lands and structures, recycled materials and equipment, consumer products, etc.)?
- ° Of the possible ways to express BRC levels (e.g., cancer risk, individual dose, collective dose, exempted quantities or concentrations), which are appropriate for the various sources or practices licensed by NRC?
- ° Given the complexity of some licensed activities, some of which may involve multiple contribution to public dose, what are the most useful definitions of "sources" and "practices" for which BRC dose limits would be developed?

- ° If cost vs risk reduction analyses are to be performed to establish BRC levels, what cost-averted/risk ratio (or ratios) should be used for the various licensed sources or practices?
- ° What approach should be taken to translate operational BRC levels (such as individual or collective dose or exempt quantities and concentrations) into fatality or cancer risks given the absence of data correlating such levels with risk (i.e., do we use the linear non-threshold dose-response relationship at very low doses)?
- ° Can a dose or risk be set at which radioactivity can be ignored (i.e., can a definition of radioactive be usefully established)?

Staff efforts to resolve these and other issues will be conducted over the next several months. The Office of Nuclear Regulatory Research has been assigned the lead in formulating the policy options, with significant support necessary from NMSS, NRR, and OGC. An interoffice steering group at the management level with representatives from these offices will periodically review the progress on policy options. A preliminary estimate of resources needed to develop the broadly-based de minimis and BRC policy statement and other BRC criteria are described in Enclosure 5.

A Commission policy identifying a level of radiation risk below which government regulation would become limited or unwarranted would have both national and international implications. As a result, the staff believes that the successful development of this policy would be enhanced if the views of national and international regulatory authorities were given consideration during policy development. To provide a vehicle for soliciting and documenting these views, the staff is attempting, within the June-October 1988 timeframe, to sponsor an international symposium on the regulatory use of BRC and de minimis concepts in cooperation with the Nuclear Energy Agency (NEA). The 2-3 day symposium would be attended by 20-40 appropriate national and international regulatory authorities and would focus attention and discussion on the issues implied by the de minimis and BRC concepts and the form and magnitude of potential regulatory levels. The staff is currently working with the NEA to arrange the symposium and is planning to prepare a final agenda at a meeting with NEA in March. The staff has not yet developed a position to be taken at the symposium on the issues outlined above. However, the staff plans to prepare draft positions prior to the symposium to serve as focal points for the discussion. The Commission will be notified of the arrangements for the symposium as they are developed.

The Office of the General Counsel has reviewed this paper and has no legal objections.



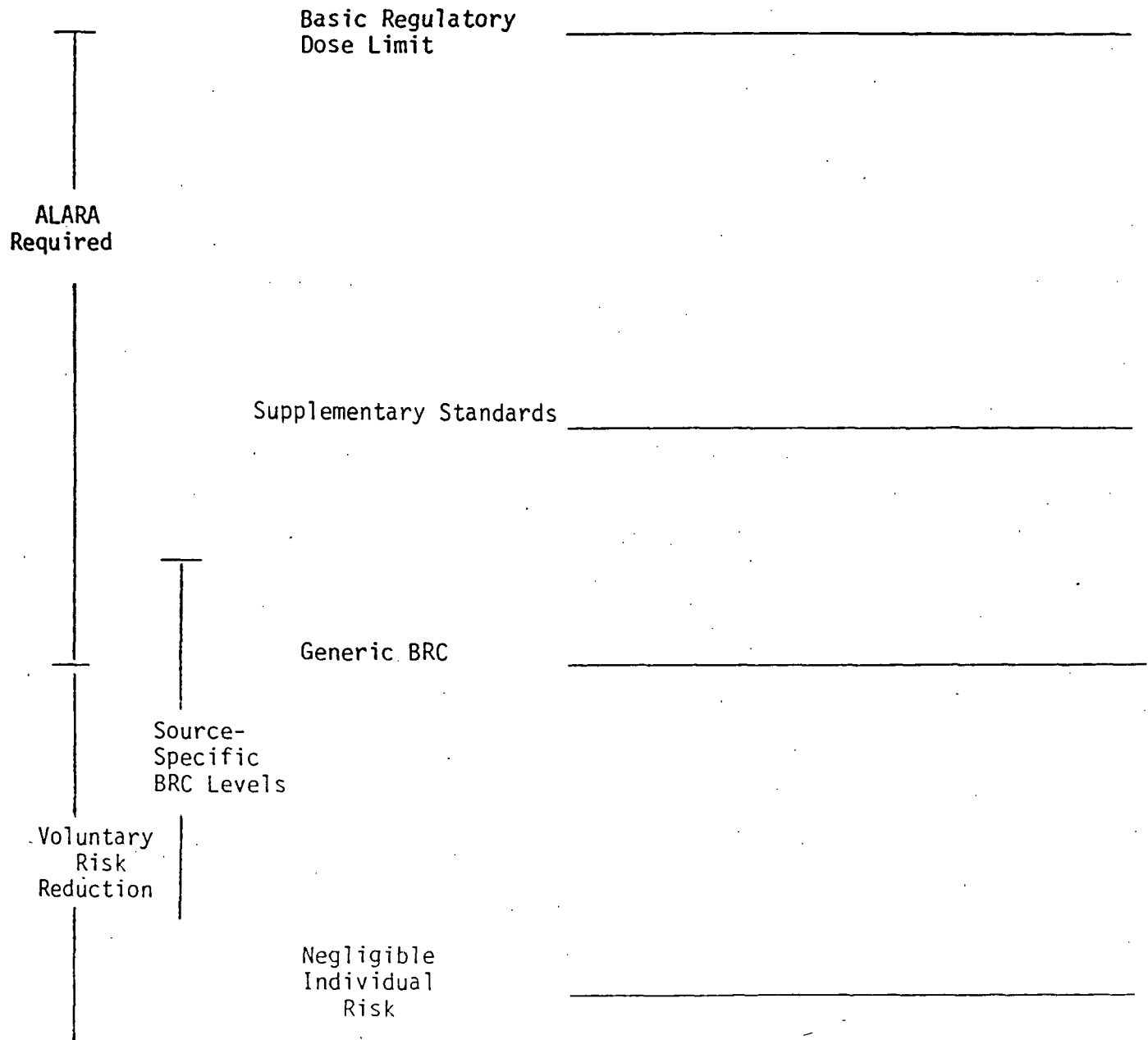
Victor Stello, Jr.  
Executive Director for Operations

Enclosures:

1. Relationships of Dose Limits, ALARA, BRC, and De minimis
2. De facto BRC Levels in Current Regulatory Practice
3. Summary of Actions Related to BRC and De minimis
4. Draft Interagency Framework for Development of Presidential Guidance on Public Radiation Protection
5. Resources Required to Develop the Generic Policy Statement and Other BRC and De minimis Criteria

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# DOSE FRAMEWORK





### EXAMPLES OF DE FACTO BRC LEVELS IN CURRENT REGULATORY PRACTICE

- Disposal by release into sanitary sewerage systems (20.303).  
Radionuclides may be released, in limited quantities, into sanitary sewerage systems.
- Disposal of specific wastes (20.306). Limited concentrations of tritium and carbon-14 in animal tissue and scintillation media may be disposed of without regard to radioactivity.
- Exempt concentrations (30.14), (30.70). Persons possessing materials and products containing certain limited radioactive concentrations are exempt from the requirements for a license and from the regulations in Parts 30-35.
- Certain items containing byproduct material (30.15). Persons possessing certain specific products (e.g., smoke detectors, radioactive timepieces, illuminators, compasses, etc.) are exempt from the requirements for a license and from Parts 20, 30-35.
- Exempt quantities (30.18) (30.71). Persons possessing materials and products containing certain limited radioactive quantities are exempt from the requirements for a license and from the regulations in Parts 30-34.

- ° Numerical guides for design objectives ... (Part 50, App. I). Permits limited exposure rates from liquid and gaseous reactor effluents released to unrestricted areas.
- ° Acceptable levels of surface contamination (Reg. Guide 1.86). Surfaces contaminated by residual levels of radioactivity (specified in disintegrations per minute per unit area) may be released for unrestricted use.

## CURRENT NRC, EPA AND INTERNATIONAL ACTIVITIES

### De minimis and Below Regulatory Concern

Recent Federal actions with regard to BRC applications of the de minimis concept include the publication in August 1986 of the NRC policy for the deregulation of radioactive waste streams with dose rates no more than a few millirems per year (51 FR 30839), implementing Section 10 of the Low-Level Radioactive Waste Policy Act, as amended. During the latter part of 1988, staff expects to receive several petitions for rulemaking to deregulate certain reactor waste streams under this policy. Sandia National Laboratories will provide needed technical assistance to evaluate the merits of petitions for rulemaking expected as a result of the Commission's existing BRC policy.

The U.S. Environmental Protection Agency (EPA) is developing generally applicable environmental standards for land disposal of low-level radioactive waste, which include criteria for BRC waste streams. EPA is currently considering a 4-mrem/yr BRC individual dose criterion for waste streams. These standards are expected to be proposed in 1988.

Similar action was taken in 1985 by the Atomic Energy Control Board of Canada in proposing a 5-mrem/yr criterion for exempting the disposal of low-level waste from licensing control.

The NRC published an Advanced Notice of Proposed Rulemaking (ANPR) in December 1986 (51 FR 43367), asking for public comment on whether to proceed on generic deregulation of slightly contaminated (BRC) wastes. The NRC has recently received a proposal from the Texas Low Level Radioactive Waste Disposal Authority in collaboration with the University of Texas, to provide technical assistance to compile the necessary data base, estimate the public health impacts from a variety of disposal options and develop standards and procedures needed for a generic rulemaking. The staff is studying the feasibility of this project and, based on the conclusions reached and the evaluation of comments on

the ANPR (93 received), a recommendation will be made to the Commission for future action.

The United Kingdom's National Radiological Protection Board (NRPB) considers that doses up to 5 mrem/yr (1% of the current annual dose limit of 500 mrem/yr for members of the public) are insignificant as far as the individual is concerned.<sup>1</sup> The NRPB describes this risk as too low to be considered in personal decision-making processes. The NRPB reduced this number to 0.5 mrem/yr for individual sources to account for potential exposures from multiple sources. In addition, the NRPB recommended that collective doses less than 100 man-rems, comprised of individual doses less than 0.5 mrem/yr, be neglected.

For the major revision of 10 CFR Part 20, published as a proposed rule on January 9, 1986 (51 FR 1092), NRC staff proposed that doses to individual members of the public receiving 1 mrem or less in a year be omitted in collective dose evaluations to prevent an unwarranted commitment of resources for controlling or regulating exposures at levels where theoretical risks are negligibly small. Similar proposals have recently been made by the NCRP and are being considered by the International Atomic Energy Agency (IAEA). The NCRP recommends 1 mrem/yr as a threshold level "below which further effort to reduce radiation exposure to the individual is unwarranted." The IAEA is considering exemption of sources and practices provided that the annual dose to individuals does not exceed 1 mrem and the collective dose is of the order of 100 man-rems or less.

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1 For a large population the fatality risk would be  $10^{-6}$  per person per year. This calculation, however, presumes that a risk factor of  $2 \times 10^{-4}$  per person-rem is valid for such low doses.

### Radiological Criteria for Decommissioning

Decommissioning includes reduction of residual radioactivity to a level that permits release for unrestricted use and termination of license. Criteria for the release of residual levels of radioactivity have been issued in a Regulatory Guide but are only applicable to surface contamination. Specific criteria for acceptable levels of residual contamination in soils are not codified. When required, past decommissionings have typically relied on a draft technical position for uranium and thorium in soils or on surface contamination limits listed in Regulatory Guide 1.86. In addition, a limit on external gamma radiation of 5  $\mu$ R/hr above natural background, measured at one meter from the contaminated surface has been imposed for the release of decommissioned reactor facilities. The 5  $\mu$ R/hr exposure rate is an imposed criterion designed to limit the dose to an individual to no more than 10 mrem/yr, taking into consideration residence time and shielding effects.

The NRC published an ANPR on decommissioning in March 1978 (43 FR 10370) requesting comments on a number of issues related to decommissioning, including residual radioactivity criteria. A supporting draft Generic Environmental Impact Statement was published in January 1981 as NUREG-0586. In February 1983, a decision was made to separate the issue of residual radiological criteria from the other issues - principally involving decommissioning alternatives and assurance of adequate funding. These latter issues were the subject of a proposed rule published in February 1985 (50 FR 5600) and a final rule scheduled for publication in early 1988.

Separate activities were undertaken in 1983-1984, both at EPA and NRC, to consider the appropriate radiological criteria for residual contamination. Although a draft proposed rule was developed at NRC, it failed to gain a staff consensus and the task of defining residual radioactive contamination limits was channeled to a Federal Interagency Working Group organized by EPA. The EPA published an ANPR in June 1986 (51 FR 22264) concerning residual radioactivity in buildings and soils in which it requested comments on several questions concerning the approach that might be taken in criteria development. Since

that time, some progress has been made by the Interagency Working Group but EPA staff limitations have caused serious delays, suggesting that the specific guidance (a part of the new Presidential guidance to Federal agencies on protection of the public from all sources of radiation subject to government control) may not be ready for at least four years.

Because there is a near-term need for guidance for current and future decommissionings of nuclear facilities, the NRC staff is proposing to develop for Commission consideration a source- or practice-specific interim policy statement to be issued in mid-1988 which could be used until Federal interagency guidance is established. Following the pattern of the Commission's BRC low-level waste policy, the guidance would be expected to establish allowable individual dose levels generally applicable to residual radioactivity on lands and structures and would propose a set of acceptable models which can be used to convert contamination levels into dose estimates. For certain license termination cases, higher dose levels may be justified on ALARA principles. A Battelle PNL study is scheduled for completion at the end of FY88 which will provide analysis which will assist with the longer-term development of acceptable, measurable limits on contamination consistent with the established dose limits. This cost analysis will also be used by EPA in the development of Federal interagency guidance.

The staff is also considering development of specific concentration or exposure levels which must be met for the recycle of equipment and materials following decommissioning and decontamination. These limits will be based on studies of the mechanisms for exposure of the public from such activities and on the anticipated broad Commission policy regarding BRC/de minimis risk levels.

DRAFT INTERAGENCY FRAMEWORK FOR DEVELOPMENT OF PRESIDENTIAL  
GUIDANCE ON PUBLIC RADIATION PROTECTION

The Existing Dose Limitation System, ALARA, and Risk Control

The system for limiting public exposure to radiation consists of three basic elements (1) justification of practice or activity, (2) regulatory dose limits, which establish maximum permissible doses for the public and (3) the ALARA concept, which assures reduction and acceptable distribution of individual doses beneath these limits. The last two components work together to control and maintain individual and population (collective) radiation dose at acceptable levels, i.e., as far below the dose limit as is reasonably achievable. The criterion under which the ALARA concept was implemented during Appendix I development involved the use of a value of \$1,000 per person-rem which balances the costs of radiation control systems against the savings in population dose. This value is high compared to international derived values which are less than \$100 per person rem.

The EPA has the responsibility for establishing environmental and public protection standards for protection against radiation. The EPA carries out this responsibility by issuing generally applicable regulations and developing Presidential guidance for Federal agencies (Federal guidance). Federal guidance, which limits health risk and applies to exposures from all sources of radioactivity except background or medical exposures, has usually been developed by consensus among affected Federal agencies and is signed by the President.

EPA regulations impose limits on radiation exposures to the public; these are usually more restrictive than EPA's Federal guidance limits. Examples include (1) 40 CFR Part 190 which applies to effluents and external radiation from uranium fuel cycle facilities and (2) 40 CFR Part 61 which applies to airborne effluents from all licensees. Both of these regulations impose dose limits which in magnitude are a small fraction of Federal guidance limits. Appendix I of 10 CFR Part 50 also establishes annual whole body and thyroid dose equivalent design objectives lower than the EPA Federal guidance.

To date, the EPA, NRC, DOE, DOD, DOT, State agencies and others have established and enforced standards applicable within their mandated jurisdictions. There has been a tendency to develop specific standards on the basis of cost-risk reduction analysis that considers only the source under study. However, no coordinated action has been initiated to establish an acceptable level of collective risk for public exposure to multiple sources of ionizing radiation or to allocate appropriate fractions of this risk to each contributing source. A Federal interagency working group has been formed under the lead of the EPA to prepare new Presidential guidance to Federal agencies on protection of the public from all sources of radiation subject to governmental control. An objective of the guidance is to assure consistency throughout the nation in the control of these sources, which include facility effluents, radioactive waste, transportation, decommissioned lands and structures, unrestricted release of materials and equipment, and radioactivity in consumer products, among others.

#### A Proposed Framework For Consistent Radiation Protection Standards

As with recently-issued Presidential guidance for occupational protection (January, 1987), subsequent Presidential guidance will establish a limit on the acceptable annual risk level for members of the public. For example, an annual dose limit of 100 mrem/yr is being considered. This level would correspond to a dose that any individual may receive from all combined sources subject to regulatory control. The ICRP, for example, currently recommends 100 mrem/yr. The ICRP recommendation includes a 500-mrem/yr exposure limit if the lifetime average does not exceed 100 mrem/yr. These are upper limits for combined sources. Smaller dose limits for specific sources and ALARA practices are also considered necessary to further reduce risks.

A framework for radiation protection standards for the public is being considered by the Federal Interagency Committee to account for doses from multiple sources of exposure and which could include the concept of BRC risk levels. As depicted in Figure 1, multiple sources of exposure include, for example, liquid and gaseous effluents from nuclear facilities, shipments of radioactive material, waste disposal operations, decommissioned lands and structures, recycled materials and equipment, and radioactivity in consumer products. For each one of these sources, an upper limit of



one-fourth the annual dose limit would be established. This is based on the assumption that the probability of exposing an individual to multiple sources in a manner to exceed the aggregate limit is very small. In terms of the example above, each source would be assigned an upper dose limit of 25 mrem/yr. This would be consistent with existing EPA and NRC regulations as, for example, 25 mrem/yr from waste disposal operations (10 CFR Part 61). In addition, ALARA measures may be considered to reduce each source below the 25-mrem/yr limit.

A generic BRC level applicable to every individual source, if developed, might be expected to be of the order of a few mrem/yr based on recent precedents. This would be a small fraction of the annual dose limit to the individual (100 mrem), is less than the standard deviation in the natural background level, and is a very small fraction of the average annual dose to the individual from natural background.

At these very low levels of exposure, regulatory decision criteria to accept or reject the risk associated with possession, use, transfer or disposal of radioactive materials would generally be based on the inferred impact on public health and safety and the environment and on cost-risk reduction considerations. In the dose framework, no operation (e.g., an individual licensee) would be expected to exceed a risk level greater than that implied by the acceptable annual dose limit (25 mrem). An operation associated with a risk level less than the acceptable annual risk, but greater than the risk associated with a BRC risk, could be authorized based on a sound ALARA analysis. An operation associated with a risk level less than the risk associated with BRC would be acceptable and authorized without cost-risk reduction considerations.

To permit a comprehensive treatment of the subject, the concept of a commonly accepted level of negligible individual risk could be included in the framework. This level might be a fraction (e.g., 1/10) of the BRC level. Risk between negligible and BRC could be considered in a range where only voluntary control is justified.

DRAFT FRAMEWORK FOR DOSE LIMITATION

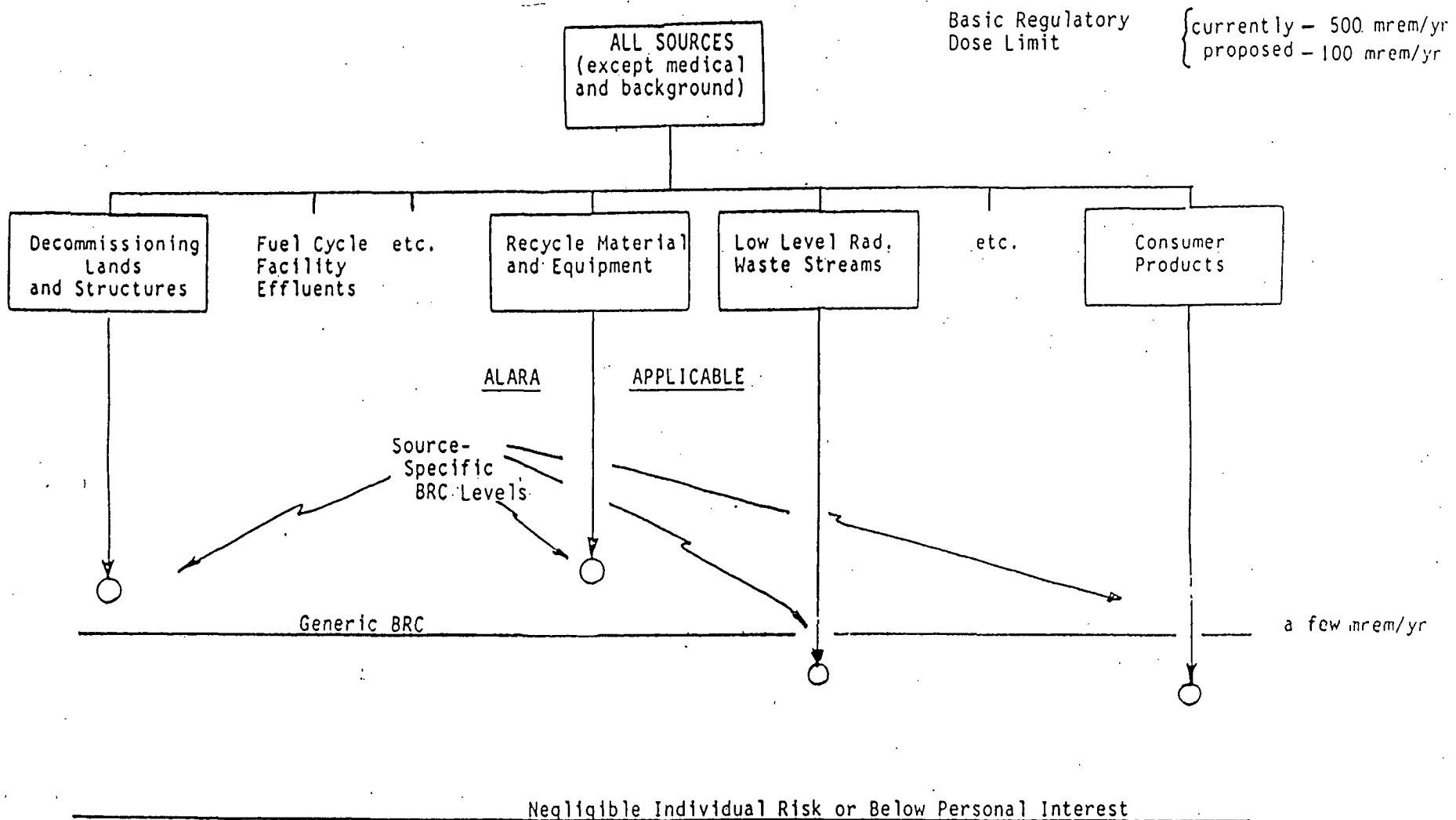


Figure 1

PRELIMINARY ESTIMATE OF RESOURCES REQUIRED TO DEVELOP THE GENERIC  
POLICY STATEMENT AND OTHER DE MINIMIS (BRC) CRITERIA

The RES staff estimates that the task to develop the broad policy statement on de minimis/BRC would require 4-5 total FTE's over an approximate 1½-2 year period. Currently, these resources are not specifically budgeted.

Approximately 40% of these resources would be required within RES with 60% divided between NMSS, NRR and OGC. This resource commitment would include the convening of the proposed international symposium on the regulatory use of the de minimis/BRC risk concepts and the staff's consideration of the resulting viewpoints. As directed by the staff requirements memorandum, the necessary reprogramming of resources for this task will be accomplished.

In several cases, commitments of NRC resources have already been made to incorporate BRC concepts into NRC's regulatory framework. The Low-Level Radioactive Waste Policy Amendments Act of 1985 directed the Commission to make practical and timely decisions to determine when wastes need not go to a licensed low-level waste disposal site. The Commission subsequently issued both a policy statement and advanced notice of proposed rulemaking on the disposal of radioactive waste streams below regulatory concern. The policy statement established standards and procedures that will permit the Commission to act upon rulemaking petitions in an expeditious manner. The purpose of the ANPR was to determine the feasibility of a generic rulemaking on BRC wastes.

Approximately 7-9 total FTEs have been estimated to be necessary to expeditiously review and, if appropriate, initiate rulemakings on a minimum of 4 to 8 petitions expected to be submitted by EPRI/EEI beginning in mid CY 1988. NMSS has budgeted 3 total FTEs for this task over FY88-90. RES has budgeted 1 FTE and both RES and NRR intend to reallocate from existing resources as necessary. An additional 2-3 total FTEs would be needed by RES over the FY89-90 period to determine the feasibility and extent of a generic BRC waste rulemaking activity. A proposal is under review which would provide technical support for both petition evaluation and generic rulemaking tasks. Funding for

this task within RES has been budgeted at \$500K over a two-year period. NMSS has budgeted \$100K in FY88 for licensing capability development. A closely related task, a rulemaking to allow incineration of waste oil, which is in response to an existing petition for rulemaking, is in progress.

The staff is currently proposing that a Commission policy statement be developed to use the BRC concept to establish acceptable residual radioactivity levels which would allow license terminations and release of lands and structures for unrestricted public use. Resources required for this task are estimated at 3 total FTEs over 2 years (2 FTEs budgeted within RES) with technical support being provided through an ongoing contract. This task would be followed by staff development of criteria for release and recycle of contaminated equipment and materials.

The resources necessary to further develop and implement a negligible risk policy are difficult to estimate without knowledge of the form of the policy and the specific implementation approach. The extent, if any, to which existing prohibitions would be retained on certain uses of byproduct material (e.g., material in food, beverages, cosmetics) could significantly influence the level of resources associated with policy implementation.