

# UNITED STATES OF AMERICA NUCLEAR REGULATORY COMMISSION

Title: BRIEFING ON STATUS OF NRC TECHNICAL TRAINING PROGRAM

Location: ROCKVILLE, MARYLAND

Date: SEPTEMBER 14, 1989

Pages: 65 PAGES

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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BRIEFING ON STATUS OF NRC TECHNICAL  
TRAINING PROGRAM

- - - -

PUBLIC MEETING

Nuclear Regulatory Commission  
One White Flint North  
Rockville, Maryland

Thursday, September 14, 1989

The Commission met in open session, pursuant  
to notice, at 10:00 a.m., Kenneth M. Carr, Chairman,  
presiding.

COMMISSIONERS PRESENT:

KENNETH M. CARR, Chairman of the Commission  
THOMAS M. ROBERTS, Commissioner  
KENNETH C. ROGERS, Commissioner  
JAMES R. CURTISS, Commissioner

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## STAFF SEATED AT THE COMMISSION TABLE:

SAMUEL J. CHILK, Secretary

JOE SCINTO, Deputy General Counsel

HUGH THOMPSON, Deputy Executive Director for  
Operations

EDWARD L. JORDAN, Director, AEOD

R. LEE SPESSARD, Director, DOA, AEOD

KENNETH A. RAGLIN, Director, TTC, DOA, AEOD

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

10:05 a.m.

CHAIRMAN CARR: Good morning, ladies and gentlemen.

Today the staff will brief the Commission on the status of NRC technical training programs. Since enhancing the technical effectiveness and professional credibility of the staff, particularly our inspectors, remains one of our major goals, the Commission is particularly interested in the ongoing technical training process and any innovations being implemented to keep the staff up to date. In my experience, a valid and continuing training process is essential to maintaining a viable technical organization.

I understand copies of the briefing slides are available at the entrance to the meeting room.

Do any of my fellow Commissioners have any opening comments?

If not, Mr. Thompson, please proceed.

MR. THOMPSON: Thank you, Mr. Chairman, Mr. Commissioners. I'd like to certainly echo my support that we have for the importance of the training center and the training programs for NRC employees. I think it's even more important these days that the training centers and our training capability provide us with

1 the capable employees that we depend on for the key of  
2 our safety mission. The college programs today are  
3 having fewer graduates in the nuclear training  
4 program, which really emphasizes the need for a  
5 training program that covers not only the inspector  
6 program but also all of NRC.

7 It's certainly been my observation in the  
8 recent years to see the training program grow from one  
9 that was focused primarily to the inspection  
10 enforcement activities of the region, which remains a  
11 very important effort, but also to cover areas such as  
12 the operator licensing program that NRR would have a  
13 major responsibility for, at least when we initially  
14 started our request to expand that, as well as to the  
15 NMSS program.

16 So, today I'm just delighted to see the  
17 progress the training center has made in being able to  
18 support the mission of NRC overall. I think today's  
19 briefing will focus and highlight on that. In fact, I  
20 think Mr. Jordan will identify things even beyond that  
21 that the training activities do today.

22 So, the briefing will be done today by Mr.  
23 Jordan and Mr. Raglin, and Lee Spessard here who's  
24 also responsible for the activities here in  
25 headquarters are with us today. So, we'll be pleased

1 to respond to any questions after the briefing.

2 Ed?

3 MR. JORDAN: Okay. We last briefed the  
4 Commission in January of 1988 and at that time we  
5 described the scope, the quality and quantity of  
6 training that was being done, and we identified some  
7 initiatives that were underway, including -- we were  
8 in the process of procuring a B&W simulator at the  
9 time and we were in the process of developing a  
10 training and qualification program in conjunction with  
11 the program offices for all of the NRC technical  
12 staff, and we were going through some curriculum  
13 enhancements at the time. This is consistent with our  
14 mission to develop and provide technical training,  
15 manage contracts in support of that, manage the  
16 simulator facility and, in addition, provide technical  
17 assistance in various areas where the training center  
18 has special expertise. For instance, in the numbers  
19 of senior licensed personnel that worked at the  
20 center.

21 We feel that the organization and people are  
22 the most important element. There are a total of 28  
23 positions at the training center. There is a vast  
24 experience and capability there in terms of their  
25 background. Nineteen of the people are from the Navy

1 Nuclear Program, 15 of them have SRO licenses,  
2 certifications, and 18 of them have prior commercial  
3 experience. Of course, that's an overlay of the same  
4 people having many of the same elements.

5 We feel also a strength is the coordination  
6 with the program offices. We have a training advisory  
7 group that the program offices have participated in to  
8 a very high level that provides advice to the center  
9 on our overall training programs. We have good  
10 feedback from that.

11 I'd like to talk briefly about the  
12 facilities, for those that have not been there, and we  
13 have a couple of slides that we can show to describe  
14 the facilities.

15 (Slide) Could I have the first slide,  
16 please?

17 There is a modern office building on the  
18 outskirts of Chattanooga, which is about five miles  
19 outside of the town. Motel facilities are adjacent, a  
20 pleasant, harmonious area.

21 (Slide) Could I have the next slide,  
22 please?

23 The training center occupies three floors of  
24 that building and this is a photograph showing the  
25 installation of one of the simulators. This is a



1 black box General Electric simulator that was  
2 installed in 1986. I was just sort of struck by the  
3 difficulty of installing a simulator on a third floor  
4 of a modern office building.

5 (Slide) Could I have the next slide,  
6 please?

7 This is a picture in the classroom. That is  
8 the simulator classroom, the black box boiling water  
9 reactor. This is a plant -- I'm sorry, a simulator  
10 that's close to the Clinton facility in terms of its  
11 design layout. It has many CRT displays, so it  
12 provides a good environment for the modern control  
13 room for our personnel.

14 (Slide) Could I have the next slide,  
15 please?

16 The next is the SNUPPS Westinghouse  
17 simulator. This was installed in 1987. This is a  
18 view from the instructor's platform and it looks like  
19 a real casualty in process there. The panels are lit  
20 up very brightly, not normal operations.

21 (Slide) Next slide, please.

22 That's the most recent simulator, the third  
23 and last simulator that we have, WNP-1, B&W that was  
24 installed in 1988. The SPDS panels are being pointed  
25 to and this was during a briefing of the Soviet

1 inspectors that were here last month and one of the  
2 simulator engineers, Jim Griffin, is giving a  
3 description.

4 There are five classrooms at the facility, a  
5 number of training aids.

6 (Slide) Could I have the next slide,  
7 please?

8 Just an illustration. A BWR jet pump and a  
9 control rod drive module and these are static displays  
10 but they're beneficial in communicating with the  
11 students.

12 I'd like to step on Ken just a little bit  
13 and talk about the training and qualification program.

14 (Slide) Could I have the next slide,  
15 please?

16 Because that was a commitment we made during  
17 the last briefing that we were in the process of  
18 establishing a cooperative training qualification  
19 program for the program offices and we --

20 (Slide) Could I have the next slide,  
21 please?

22 And what I wanted to point out is that the  
23 miles -- this is page 3 -- the milestones that were  
24 established for 1988 and 1989 have essentially all  
25 been met. The positions that were identified for

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1 having the training and qualification program were  
2 identified, training needs have been established in a  
3 rather rigorous fashion, and those training needs  
4 between the offices have been integrated so that the  
5 training center can provide a reasonable level of  
6 efficiency in meeting those needs. And finally the  
7 requirements and the revised training programs have  
8 essentially been developed and we'll be then reviewing  
9 the effectiveness of this program.

10 The next area that we will look at will be  
11 reexamining the inspector training itself. We've been  
12 conducting, of course, the normal inspector training  
13 program and refreshers, but I think it's time to  
14 reexamine that overall program.

15 With that, I turn it over to Ken and let him  
16 carry through the rest of the material.

17 MR. RAGLIN: Thank you very much, Ed.

18 I'd just like to highlight some of the  
19 phases that were associated with that program for  
20 developing the headquarters training aids.

21 (Slide) Could I have slide 3 again, please?

22 The first part was associated with grouping  
23 positions and that involved job analysis in some cases  
24 and an intuitive approach in other cases and I'd just  
25 like to recognize a great deal of hard work on behalf

1 of the program offices and on behalf of the Office of  
2 Personnel, in particular in the job analysis process.

3 As we continued through the phases, group  
4 needs were identified and the groups we're talking  
5 about are groups of similar technical positions. For  
6 example, in NRR there are seven groups, including  
7 positions such as project managers, reviewers from  
8 different divisions, technical assistants.

9 The established requirements line on the  
10 chart there indicates the program office  
11 implementation through an office letter or whatever  
12 means of the actual training requirements and the two  
13 stars on the bar there indicate the implementation by  
14 NRR and NMSS. So, we're very pleased that this has  
15 happened because it greatly facilitates quantifying  
16 the real needs of the program offices.

17 I'd like to highlight the fact that the  
18 development of the revised programs actually got an  
19 early start. We were able to proceed on that almost  
20 immediately because from the beginning we had a pretty  
21 good idea of where NRR was headed in reactor  
22 technology courses and we were able to develop and  
23 implement the courses in 1988, and that process has  
24 continued with several presentations of courses  
25 specifically for the NRR staff through 1989.

1 (Slide) The next slide, please?

2 COMMISSIONER ROGERS: Excuse me. Before you  
3 do that, how many positions did you identify in  
4 numbers?

5 MR. RAGLIN: For NRR, it's seven large  
6 groups. For NMSS, it's 28 smaller groups, where each  
7 of those groups still has an accumulation of different  
8 positions, but similar positions. Then within AEOD  
9 there are maybe ten different technical groups.

10 COMMISSIONER ROGERS: And those are groups,  
11 those aren't individual positions though, is that  
12 right?

13 MR. RAGLIN: In some cases it might just be  
14 one position description, several people. In other  
15 cases it would be a grouping of two or three position  
16 descriptions that might include eight or ten people.

17 MR. THOMPSON: But I think, and correct me  
18 if I'm wrong, it covers say most of the technical  
19 inspection activities in the regions. So, all your  
20 technical inspectors would be covered, as well as most  
21 of your reviewers in NMSS and NRR headquarters. So I  
22 think most of the technical positions within NRR, NMSS  
23 and the regions and AEOD --

24 MR. RAGLIN: And AEOD, right.

25 MR. THOMPSON: -- are covered by this

1 program.

2 COMMISSIONER ROGERS: This just says  
3 headquarters though.

4 MR. RAGLIN: Right.

5 COMMISSIONER ROGERS: The headquarters part  
6 of it.

7 MR. JORDAN: We had already a regional  
8 training program and so we've continued to implement  
9 that.

10 MR. THOMPSON: But this was to broaden it to  
11 include the headquarters things. So, I think if  
12 you're trying -- what does it cover today, we cover  
13 just about all of our technical positions that we have  
14 there.

15 MR. RAGLIN: (Slide) Slide 4, please?

16 Feedback is an extremely important part of  
17 the training process and in support of the feedback,  
18 we do provide a dynamic schedule. We try to project  
19 out a year and a half in advance. In fact, the  
20 schedule for FY '90 and continuing about halfway into  
21 FY '91 is presently at the printers.

22 On the other hand, we realize that in order  
23 to meet the needs, the schedule will change, the  
24 priorities will shift. Certain courses will have to  
25 be added. Certain courses will not be able to be

1 supported because of one reason or another. It's a  
2 constant process of responding to changing needs. A  
3 couple of examples of these changing needs have been  
4 within the last year we were able to accommodate the  
5 training of about 25 contract operator license  
6 examiners, 15 in Westinghouse technology and ten in  
7 General Electric technology. That's a significant  
8 perturbation in the training process because these  
9 were people that were going through the full course  
10 series and it required some coordination, but it was  
11 accomplished.

12 Another example of shifting needs has been  
13 the use of simulator emergency operating procedure  
14 training as simulator refresher training. That was  
15 something that was suggested by the regions based on  
16 the needs today compared with the needs a year ago and  
17 so that's being implemented at this time.

18 Another example of the response to the needs  
19 has been the development and the shifting of some of  
20 the courses in direct support of the headquarters  
21 offices.

22 Another thing I'd like to particularly  
23 highlight is the training advisory group because I  
24 just can't overemphasize the importance of this  
25 particular group in providing feedback and direction

1 to where the technical training programs really should  
2 be headed.

3 It's an outstanding group whose typical  
4 representatives are division directors, the regions  
5 and the program offices are all represented on the  
6 group that meets twice a year at the training center  
7 and it allows us to maintain very close ties with both  
8 the regions and the program offices. It's resulted in  
9 a number of new initiatives and feedback which have  
10 changed some of the existing programs and these, in  
11 turn, have led to program revisions which are  
12 translated into changed training requirements such as  
13 in the NRC Inspection Manual Chapter 1245 for  
14 inspectors, the examiner standards for operator  
15 license examiners and office letters for the programs  
16 associated with headquarters offices.

17 (Slide) Next slide, please.

18 This chart gives an indication of the  
19 quantity of technical training that's been provided  
20 over the last few years. We use the term "course  
21 weeks" because that's something that can be correlated  
22 generally with the level of effort required to put on  
23 the course if it's something that the staff does, or  
24 with the amount of money that's required in order to  
25 contract for the course.

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1           The chart shows an increase in course weeks  
2 both for reactor technology training and for  
3 specialized technical training. Specialized technical  
4 training is a name that we give a grouping of  
5 training. It's primarily non-reactor training,  
6 although not totally exclusive of that.

7           The big increase in reactor technology  
8 training actually occurred in the statistics for  
9 fiscal year 1988 and that was associated with bringing  
10 on line full course series in the B&W design and  
11 development and implementation of some courses for  
12 NRR.

13           The big change in the statistics for  
14 specialized technical training has occurred within the  
15 last year. There are 13 new specialized technical  
16 training courses that have been brought on line in the  
17 last year. The statistics are dominated by several  
18 presentations of examination techniques courses for  
19 operator license examiners which I'll speak to  
20 momentarily. Secondly, site access training and site  
21 access refresher training which has involved large  
22 numbers of the headquarters staff within the last  
23 year.

24           So, the overall statistics certainly support  
25 the idea that the quantity of training that is going

1 on has been increasing. We appear to be pretty stable  
2 in reactor technologies, so I would essentially  
3 project that line straight across. On specialized  
4 technical training, I believe we're probably at a peak  
5 right now because the statistics over the last year  
6 are higher because of all the site access and site  
7 access refresher training. I would expect it to go  
8 down a little bit and level off.

9 The distribution of training over this same  
10 period of time has shifted a little bit. For reactor  
11 technology courses going back to FY '86, there was an  
12 approximate distribution of 75 percent regional people  
13 attending and 25 percent headquarters. A comparison  
14 for FY '89 on the number of training opportunity  
15 slots, it's about 50/50 for reactor technology. For  
16 specialized technical training courses, we project the  
17 long-term distribution to be about 60 or 70 percent  
18 from the regions and about 40 or 30 percent from the  
19 headquarters offices.

20 (Slide) Next slide, please?

21 There have been some significant  
22 modifications to the reactor technology curriculum in  
23 support of the user needs and a few of these are  
24 highlighted on this slide. First of all, there's been  
25 a development in implementation of a full course

1 theories in Combustion Engineering technology. This  
2 gives us the full series in all four vendor designs  
3 and when I speak of a full series I'm speaking of a  
4 three week reactor technology course, followed by a  
5 two week advanced technology course, followed by a one  
6 week simulator course, all in the same technology.

7 Another major initiative has been the  
8 development of a cross training series in the B&W and  
9 CE technology areas. The idea here was to provide a  
10 mechanism by which technical personnel who are already  
11 formally qualified in one of the PWR vendor designs  
12 could qualify in a second one in a shorter period of  
13 time without sacrificing any of the quality. And so,  
14 what we've ended up with is a three/one series where  
15 it's a three week combined course picking up the best  
16 features of the first two courses and a simulator  
17 course. It allows qualification from a formal  
18 training standpoint in four weeks as opposed to six  
19 weeks and it maintains the same standards of level of  
20 detail and exam quality.

21 These full series courses and cross training  
22 courses are typically attended by the reactor  
23 inspectors, the operator license examiners,  
24 headquarters operations officers and some other  
25 miscellaneous troops.

1           Another big effort has been associated with  
2 the development of courses for the NRR staff. We  
3 called it a mini-series, just for lack of a better  
4 name. It's been developed and implemented for the  
5 Westinghouse and General Electric technologies and  
6 it's a two/one series for NRR, or two weeks followed  
7 by one week -- a two week classroom followed by a one  
8 week simulator course. And it's widely attended by  
9 NRR project managers and some other technical groups.

10           Finally in reactor technology area, there's  
11 been extensions of the full course series in support  
12 of additional needs for operator license examiners.  
13 So, one to two course weeks simulator time have been  
14 provided for operator license examiners. The first  
15 one is associated with more hands-on training doing  
16 normal evolutions, actions that they will be directly  
17 observing licensed candidates conducting during the  
18 exams.

19           The second extra week is associated with  
20 emergency operating procedures on the simulator. It's  
21 vendor specific, EOP training in that case.

22           (Slide) Next slide, please.

23           In addition to the expanded reactor  
24 technology training that's been provided on behalf of  
25 operator license examiners, a great deal of effort has

1 also taken place to provide examination techniques  
2 training. It's involved a great deal of work by the  
3 training center staff and NRR, in particular the  
4 operator licensing branch, over the last year and a  
5 half. The initial development and presentation of the  
6 courses was provided through contractors. Initially  
7 there were three courses, a written exam techniques, a  
8 simulator exam techniques and a walk-through exam  
9 techniques course. There were four rounds of these  
10 three courses given over about the last year or so.  
11 Relatively recently, we've shifted and brought the  
12 responsibilities in house such that the instructors  
13 for the examination techniques courses are the  
14 training center for one of the instructor positions  
15 and NRR from the operator licensing branch.

16 So, we feel this has been a good move. It  
17 gives a better perspective, a better NRC perspective  
18 for the training that we're trying to provide and we  
19 feel it's also given us better quality.

20 CHAIRMAN CARR: Who is the contractor? Do  
21 you remember?

22 MR. RAGLIN: We used the task order  
23 contracts that we had in place for reactor technology  
24 and RTS, Resource Technical Services, was the task  
25 order holder. Separately, they subcontracted to an

1 individual who has been involved with operator  
2 licensing as a contract examiner before and it was  
3 really a combination.

4 CHAIRMAN CARR: Okay.

5 MR. RAGLIN: The courses have now been  
6 consolidated into two courses that will be presented  
7 on a continuing basis by the NRC staff. One of them  
8 is the written exam techniques course and the other is  
9 an operating exam techniques course which incorporates  
10 both the simulator and the walk-through portions.

11 (Slide) Next slide, please.

12 Another major area of emphasis over the last  
13 couple of years has been associated with health  
14 physics training, both in the reactor area and the  
15 nuclear materials fuel cycle area. There have been  
16 training development workshops in November of '88 for  
17 the reactor HP community. That got us started on the  
18 right foot. There's been a great deal of coordination  
19 with NMSS and the regional materials personnel in  
20 establishing new manual chapter requirements for  
21 materials inspectors.

22 I was personally involved in the state cost  
23 sharing task force that recently issued NUREG 1356.  
24 As part of that, I got to take a good look at the  
25 programs that were in place and planned for the

1 training of agreement state personnel. As a result of  
2 the work with the different groups of people, we've  
3 been able to consolidate our position a bit and make  
4 more efficient use of the resources.

5 One of the breakthroughs has been the actual  
6 structure of the curriculum for the reactor HPs, the  
7 materials HPs, the fuel cycle HPs and, in all  
8 probability, the agreement state personnel. By the  
9 curriculum structure, I'm speaking of instead of  
10 having all courses front loaded such that you have to  
11 do everything before you're able to be certified as a  
12 qualified inspector, there's now a grouping where one  
13 batch of them is required for certification. And at  
14 that point in time, assuming the individual has  
15 completed all of the other activities, he can be  
16 certified for independent inspections.

17 There's another grouping that still required  
18 training, but it's not required right away. It's  
19 required over a period of time, maybe two years. And  
20 then there's a third grouping that's supplemental  
21 training for specialization, the idea there being that  
22 not all HP inspectors need this specialization in this  
23 particular area or that one.

24 Another breakthrough I feel we've made in  
25 the HP area has been the concept of having certain

1 courses that can be attended by both reactor and  
2 materials personnel. There are some examples of that  
3 where it's a stand alone course and it's the same all  
4 the way through.

5 There are other examples where it's a course  
6 that has certain modules which are core modules  
7 attended by all people in the class and other modules  
8 split out into breakout sessions where the materials  
9 people go into one room and get a specific module at  
10 the same time the reactor people go into another room  
11 and get something different.

12 We look forward to common courses that would  
13 involve both NRC staff and agreement state personnel  
14 as well. This has to increase the flexibility for the  
15 managers that are trying to schedule the courses in,  
16 schedule the people into the courses. It typically  
17 allows an opportunity to attend maybe one of three  
18 different presentations of the course during a given  
19 year rather than being specifically limited on this  
20 one particular week that a course might only be given  
21 once in a year.

22 So, we feel there's been a lot of progress  
23 in the consolidation of the health physics area.

24 (Slide) Next slide, please.

25 A number of courses associated with the



1 health physics curriculum have been provided during  
2 the last year. This particular slide shows some of  
3 other HP courses which will be made available during  
4 the next year. The way they're grouped on the slide  
5 is chronologically. I'd like to highlight the second  
6 one, the HP technology course. That's a course that  
7 we consider to be the cornerstone of the curriculum  
8 for the reactor and materials health physicist. It  
9 includes basic coverage of exposure, instruments  
10 surveys, ALARA findings and applications. This is an  
11 example of one of those courses which would be  
12 attended by reactor and materials personnel and it  
13 would have breakout sessions.

14 The one above it, teletherapy and  
15 brachytherapy is an example of a course which is  
16 specific to the materials area and, of course, is not  
17 appropriate for the reactor people.

18 The third one on the list, whole body  
19 counting/internal dosimetry is an example of a course  
20 which is appropriate and included in the curriculum  
21 for both reactor and materials personnel. There's no  
22 change in that class. I mean there's no breakout  
23 session in that class.

24 The last two, reactor radwaste course and an  
25 advanced health physics course, are courses that are

1 required for reactor health physicists and not  
2 appropriate for the materials or fuel cycle personnel.

3 (Slide) Next slide, please.

4 In addition to the courses associated with  
5 the health physics curriculum, a number of other  
6 specialized technical training courses have been  
7 provided. Some of these are highlighted on this  
8 slide. I'd like to mention non-power reactor  
9 technology. That's one that's come to pass in the  
10 last year, in fact within the last quarter. It  
11 involves non-power reactor design types and systems of  
12 these reactors, reactor physics as specifically  
13 related to the fuel, non-power reactor licensing,  
14 technical specifications, inspections. Another one,  
15 cold chemistry course that was given within the last  
16 year. This dealt with analytical techniques,  
17 analysis, technical specifications, et cetera.

18 One area that's consumed quite a bit of our  
19 time over the past year is associated with site access  
20 training and site access refresher training. Right  
21 now, both of these are given in stand-up classroom  
22 environment. I'd like to highlight our plans for site  
23 access refresher training for the future. The  
24 refresher training is something that all personnel  
25 needing unrestricted access to the different

1 facilities need to be refreshed on every year. That's  
2 a fairly massive effort. So, our long-range solution  
3 for this involves the use of computer based training  
4 for the site access refresher training. We project  
5 that will be available here in headquarters in the  
6 learning center managed by the Office of Personnel  
7 starting in FY '90 and continuing and it will also be  
8 available in the regions.

9 One more thing I'd like to highlight is a  
10 new initiative on safeguards training. This  
11 represents, in essence, a program shift somewhat from  
12 NMSS to the training center. It's associated with  
13 physical security performance testing workshops that  
14 previously were funded by NMSS and developed by Sandia  
15 National Lab. Recently there was a safeguards  
16 training development workshop at the training center  
17 and there will be some revision to the program for the  
18 safeguards inspectors. There's going to be a  
19 consolidation of the courses previously given by  
20 Sandia into a new two week safeguards technology  
21 course.

22 I just highlight this one because we're  
23 really just scratching the surface from a training  
24 center standpoint in the safeguards area, but the  
25 surface is now scratched.

1 (Slide) Okay. Next slide, please.

2 Over the last year there have been a number  
3 of special requests for previously unscheduled  
4 training. Some of these are highlighted on this  
5 particular slide. Some training for the government of  
6 Mexico and its regulatory agency. There was a two  
7 week reactor technology course given in Mexico last  
8 October. That's the fourth such course that's been  
9 given in Mexico since 1977.

10 As an aside, there have been a number of  
11 courses given in foreign countries over the years,  
12 maybe ten or 11 different ones.

13 As a follow-up to that course, we'll be  
14 providing some simulator training for some of the  
15 Mexican individuals who were involved in the previous  
16 course and there's a simulator course on the General  
17 Electric simulator at the training center in October.

18 We've been able to provide a couple of  
19 reactor technology courses for the State of Illinois  
20 personnel. We were just able to work those in on  
21 short weeks, weeks that had holidays where we  
22 typically don't have courses scheduled for the NRC  
23 staff. We were able to accommodate that and they were  
24 able to accommodate it by having their people work on  
25 a holiday. So, that worked out pretty well.

1           There have been two national news media  
2 seminars given at the training center over the last  
3 year and I would distinguish these a little bit from  
4 the previous maybe 30 or so news media seminars that  
5 have been given in the past. These are different in  
6 that they were a little longer, they were given at the  
7 training center, they involved some demonstrations on  
8 the simulators at the training center and they also  
9 involved a question and answer session associated with  
10 some health physics issues.

11           COMMISSIONER ROBERTS:       What was the  
12 attendance at those?

13           MR. RAGLIN:   It was maybe 10 or 12 people  
14 scattered from around the country. There were  
15 newspaper reporters. The last one we had a couple of  
16 people from *The Washington Post*. We had one from  
17 *Nucleonics Week*. We typically have newspaper or TV  
18 personnel. One of the last two we had three or four  
19 people from the State of Florida, but it's media  
20 personnel.

21           CHAIRMAN CARR:   How long do they last?

22           MR. RAGLIN:   It was a day and a half.

23           There's a similar session that's planned for  
24 October, reactor concepts training for congressional  
25 staffers. It will be similar to the national news

1 media seminars except that it will be totally focused  
2 on reactor technology and there's no question and  
3 answer session in health physics that's planned for  
4 that one.

5 CHAIRMAN CARR: Do you do anything for  
6 schools, service clubs, boy scout troops, that kind of  
7 stuff?

8 MR. RAGLIN: Actually we've never been  
9 requested to do anything like that. We've given some  
10 tours on occasion, but that's something that could be  
11 accommodated relatively easily if asked.

12 (Slide) Next slide, please.

13 Another significant area of interest over  
14 the last year and for the foreseeable future is  
15 associated with severe accident considerations. A  
16 course has been developed in support of the emergency  
17 response function. The course has been a  
18 collaborative staff effort in developing and  
19 presenting. The pilot version was given in May of  
20 this year. It's one that's designed for reactor  
21 safety team members, protective measure team members.  
22 It could be given to the executive team if that was  
23 considered desirable.

24 The course content includes accident  
25 instrumentation and emergency operating procedures,

1 which is part of it, and then a large part of it is  
2 associated with severe accident phenomenology, core  
3 melt sequences and consequences, some sample  
4 calculations and some severe accident insights. This  
5 collaborative effort has involved AEO-D as the program  
6 office from the Incident Response Branch outlook. The  
7 direct instruction has been provided by training  
8 center and, in particular, research personnel. The  
9 feedback function is coming from NRR on that one.

10 The plans for the future are to give a  
11 second headquarters presentation and then once the  
12 content is well established and stable, the plans are  
13 to provide one of these seminars in each of the  
14 regions during the next fiscal year.

15 (Slide) Next slide, please.

16 A big initiative for the next couple of  
17 years will be associated with expanding risk based  
18 perspectives within our existing, well established  
19 training curriculum. Recent events such as the one at  
20 the Bilbus Plant and Agency concerns about certain  
21 high risk events and precursors to these high risk  
22 scenarios have caused us to take a look at what we're  
23 doing within the reactor technology training program.  
24 After we've looked, we've concluded that we really  
25 need to build in an additional culture at the training

1 center.

2 We have a very strong culture right now from  
3 an operational perspective. What we plan to do over  
4 the next year and a half is continue that, but also  
5 build in a risk based culture. The goal is to  
6 increase the staff awareness of risk dominant  
7 sequences, major risk contributors and the staff  
8 here -- I'm first talking about the training center  
9 staff and then I'm secondly talking about the NRC  
10 staff as a whole and in particular those who attend  
11 technical training center programs.

12 The concept here is not to create a special  
13 risk course. It's to factor in these perspectives  
14 into the existing programs. This likewise is a  
15 collaborative staff effort that will be heavily  
16 involving AEOD, NRR and Research. It will result in  
17 some specific training to all members on the training  
18 center staff, a couple of courses in the PRA  
19 technology transfer curriculum, and it will result in  
20 integration into the existing courses, integration all  
21 the way into the lesson plans, the course manuals and  
22 routine or special presentations as appropriate. So  
23 that's one of the things that we intend to do over the  
24 next couple of years.

25 (Slide) Next slide, please.



1 Simulator training is provided in all four  
2 reactor vendor designs. As noted earlier, there are  
3 three full scope simulators at the training center,  
4 one modeling GE, one modeling Westinghouse and one  
5 modeling B&W. In addition to those, we presently  
6 obtain CE simulator time through a contract with  
7 Combustion Engineering and the use of the facility at  
8 Windsor, Connecticut.

9 This graph shows the usage of NRC simulator  
10 training time over a ten year period starting in FY  
11 '85 and projecting out to FY '94. That's the graph  
12 that is represented by the black rectangles for each  
13 of the data points. The other graph is associated  
14 with cost per hour for the simulator training based on  
15 the actual costs and the actual hours. That is  
16 highlighted by the triangles there.

17 There are some inflection points on these  
18 curves that I would like to point out, starting with  
19 the graph that's showing simulator hours. If we go  
20 back to fiscal year 1985, all of the simulator  
21 training that we were providing was achieved by  
22 procuring the time and paying by the hour on a number  
23 of different simulators. It's increased and there's a  
24 down dip in fiscal year '87 and the reason for that is  
25 that Westinghouse simulator time was generally not too

1 available during that time period.

2 We were previously using the TVA Sequoyah  
3 simulator for Westinghouse simulator training and TVA  
4 requirements essentially shut us out of simulator  
5 training time on that particular machine. Also, this  
6 was the year in which the procurement for the  
7 Westinghouse SNUPPS simulator was taking place and as  
8 a result we were only able to provide a little over  
9 600 simulator hours in Westinghouse technology in FY  
10 '87. So that's why that particular data point is as  
11 low as it is.

12 As we continue on, FY '88, '89 and '90, we  
13 believe that we will reach a stable, steady state  
14 simulator hour usage of about 4200 hours. That's  
15 about 1500 hours on the GE simulator, 1500 on  
16 Westinghouse, 600 on the Babcock & Wilcox simulator  
17 and about 600 hours of Combustion Engineering  
18 simulator training. Those numbers support the number  
19 of full course series and cross training series,  
20 NRR mini-series and all of the other training that we  
21 believe we'll be providing for years to come.

22 CHAIRMAN CARR: And how many training hours  
23 in a year do you usually work with?

24 MR. RAGLIN: For the simulators or --

25 CHAIRMAN CARR: Well, yes, whatever you

1 call -- what's a year's worth of training hours? I  
2 guess I'm trying to figure out how much time these  
3 things are idle.

4 MR. RAGLIN: Oh, okay. From that  
5 standpoint, the Westinghouse simulator is busy on day  
6 shift almost all of the time. The GE simulator is  
7 about the same. On most weeks, we have swing shift  
8 available, although several times throughout the year  
9 we'll have a day shift and a swing shift class on the  
10 same simulator. We presently do no training on night  
11 shift.

12 So, there is a substantial amount of  
13 simulator time that's available particularly on the  
14 swing shift. On the other hand, all of the simulator  
15 time involves the use of staff and that's really where  
16 we're more limited than the availability of the time.

17 The graph of the cost per hours shows an  
18 increase from FY '85 to '86.

19 (Slide) Could I have the slide, please?

20 That increase reflects the start-up costs  
21 for the General Electric simulator, relocating it to  
22 the training center, building modifications, et  
23 cetera. Those start-up costs were \$329,000.00. So  
24 that's why there's a relatively high number there.

25 For FY '87, it's still relatively high

1 because it reflects the start-up costs for the  
2 Westinghouse simulator project and that was  
3 \$325,000.00 and it also reflects a relatively low  
4 number of Westinghouse simulator hours.

5 For FY '88, it reflects the start-up costs  
6 for the B&W simulator and those were \$299,000.00. And  
7 then it heads down. The apparent anomaly for FY '90  
8 is associated with the fact that we are upgrading the  
9 capabilities of the NRC simulators and so these  
10 upgrade costs are reflected in the computations here  
11 and that's why FY '90 is higher than FY '89 and then  
12 it goes down to a relatively low number. So, if we  
13 look at the out years, the cost per hour gets down to  
14 around \$200.00 or even less, \$200.00 per hour. This  
15 compares extremely favorably with the present \$700.00  
16 per hour that we're paying for Combustion Engineering  
17 simulator time.

18 It's also worth noting that we have a stable  
19 solution for General Electric, Westinghouse and  
20 Babcock & Wilcox. We do not have for Combustion  
21 Engineering. The solution that we had before is  
22 disappearing and we believe that Combustion  
23 Engineering will be shutting down that facility in the  
24 near future. So, we're presently exploring  
25 alternatives for a long-term combustion engineering

1 simulator solution.

2 CHAIRMAN CARR: What are they going to do  
3 with it?

4 MR. RAGLIN: I think they'll just shut it  
5 down and use the space for something else because  
6 their paying customers have gone away. Everybody has  
7 site specific simulators and the need will go away.

8 CHAIRMAN CARR: So, you might get it on the  
9 cheek?

10 MR. RAGLIN: Possibly.

11 COMMISSIONER ROGERS: Offer them space for  
12 it.

13 MR. RAGLIN: (Slide) Next slide, please.

14 A comprehensive plan to upgrade the  
15 capabilities of the NRC controlled simulators is in  
16 progress at this time. The upgrade will be  
17 accomplished within the existing budget and at  
18 substantially less cost than commercial rates. It's  
19 associated with both the hardware and a software  
20 upgrade to the simulators. It's necessary to upgrade  
21 the hardware, and when I speak hardware I'm talking  
22 the computer hardware that runs it, in order to  
23 support better thermal hydraulic modeling which is  
24 necessary.

25 The simulator computer procurement has been

1 completed. The delivery of the first upgraded computer  
2 should take place yet this month. The software  
3 improvements include redesign of the instructor  
4 stations, adding input/output override, which allows  
5 failing any individual meter or indicator. Something  
6 that's extremely important when we're training  
7 examiners, not quite as important when we're training  
8 inspectors.

9 Finally, the upgrade includes the addition  
10 of a high fidelity thermal hydraulic model. This is  
11 possible through the use of the in-house expertise,  
12 and when I speak of the expertise I'm talking about  
13 two simulator engineers in Chattanooga on the training  
14 center staff, as well as Doctor Stan Fabric on the AEOD  
15 staff. This combination of people gives us a unique  
16 opportunity to carry out the upgrade at relatively low  
17 cost in comparison to what utilities are paying for  
18 commercial upgrades.

19 We're projecting that when done, these  
20 simulators will then have state-of-the-art  
21 capabilities, advanced simulation capabilities, the  
22 ability to run extended scenarios, ability to do  
23 multiple failures. It will allow us to do several  
24 things that presently we can't do. We project that  
25 this is a project that will be completed over the next

1 two to three years.

2 (Slide) Next slide, please.

3 In addition to the technology improvements  
4 associated with the simulators, a number of other high  
5 technology enhancements are either in place or are  
6 being actively pursued at this time. These two will  
7 be accomplished within the existing budget. Some of  
8 the major examples are highlighted on this particular  
9 slide. A computerized examination bank system is  
10 something that we obtained more than a year ago and is  
11 in operation right now.

12 Over the last year we've added some  
13 audiovisual editing equipment at the training center.  
14 That gives us local video tape production capability  
15 for small scope projects. Case in point, we're  
16 producing a video tape that will be used by the  
17 regions as part of the site access training. It's not  
18 something that we're into on a large scale, but we do  
19 have some capability in this area.

20 Another example is laser videodisc plant  
21 tours. There are some systems that we've watched  
22 evolve over the last two to three years and the  
23 evolution has reached a point where it's extremely  
24 attractive to us now. These laser videodisc systems  
25 involve a disk which typically contains about 54,000

1 color slides of components and locations for some  
2 particular plant. These slides were actually shot at  
3 that plant. Our plans are to have this capability in  
4 the classroom and to have multiple disks so that we  
5 can show plants of different BWR product lines and  
6 maybe two or three examples for each of the reactor  
7 technology areas. So there's a procurement effort on  
8 this line already in progress.

9 Another major addition for the future will  
10 be classroom engineering simulations. This will take  
11 a great advantage of work that's been done by Doctor  
12 Fabric on the AEOD staff in the development of analysis  
13 work stations. We're extending it from analysis to  
14 training purposes and what we project is that in the  
15 classroom we will have this engineering simulation  
16 capability running the high fidelity thermal hydraulic  
17 code, essentially the same code as will be added to  
18 the NRC controlled simulators.

19 We'll have an ability to show certain things  
20 in the classroom that you just can't see on the  
21 simulators because the parameters either are not  
22 computed or they're not displayed. It should allow  
23 great enhancement to the transient analysis that's  
24 done in our advanced technology course for each of the  
25 technologies as well as some specific examples such as



1 BWR instability, for example. We can show that on one  
2 of these engineering simulations.

3 The displays from the videodisc and from the  
4 engineering simulations will be projected in the  
5 classroom on projection TVs which will typically fill  
6 up an image size maybe eight by eight feet. What  
7 we're trying to do there is make sure the people in  
8 the back of the room can always see the displays and  
9 see what's going on.

10 Okay. This concludes the major items that I  
11 wanted to describe. I'd like to turn it back over the  
12 Ed Jordan.

13 MR. JORDAN: (Slide) Okay. I'd like to  
14 have the next slide, please, and just discuss briefly  
15 the other uses of the TTC expertise.

16 Individuals from the staff participate in  
17 diagnostic evaluations. In fact, each of the  
18 diagnostics to date has had a reactor engineer  
19 participating, participate in other NRC team  
20 inspections such as recent work at Pilgrim and South  
21 Texas. Performing technical consulting for, for  
22 instance, the CRGR or the ERDS Project within AEOD.  
23 Incident response support, the training center  
24 provides and the personnel provides support in  
25 exercises and we expect to have one of the ERDS

1 stations available from the training center back to  
2 the operation center for use during drills. So we'll  
3 be able to drive an ERDS station back here from the  
4 training center. So, it will be a big benefit for  
5 exercises in the future.

6 We've participated in human factors research  
7 projects with the Office of Research in team skills  
8 and behavior using the equipment and using personnel  
9 from the center itself. And so there is a resource  
10 there that has a --

11 CHAIRMAN CARR: How much use have those  
12 civilian human factors research people made of the  
13 simulators when we offered them to them? Have they  
14 used them?

15 MR. JORDAN: Outside of NRC --

16 CHAIRMAN CARR: Remember they came in and  
17 said, "One of our problems is we can't ever get on a  
18 simulator," and we said, "Try us."

19 MR. JORDAN: I'll let Ken answer that.

20 MR. RAGLIN: We've had no formal requests  
21 other than those through the Office of Research.  
22 There were two projects that involved research and  
23 research contractors that were completed last year and  
24 there's another one on enunciator research that will  
25 be completed sometime between now and May of the next

1 year. But we've had no university requests or  
2 anything like that.

3 MR. JORDAN: (Slide) Last slide, please.

4 In summary, I think I would sort of trace  
5 the maturation process of the training center. We  
6 really started the training center years ago as more  
7 or less an operator training program using utility  
8 operator training techniques and procedures. It  
9 evolved to being an inspector training program. Now a  
10 technical staff training and I think becoming even  
11 more advanced in terms of the culture change that Ken  
12 described toward severe accident and emphasizing the  
13 risk perspectives. So, it continues to grow and I  
14 think prosper.

15 These are, in my view, extraordinary  
16 contributions from a staff of 28. We feel that the  
17 center has been very responsive to needs of the  
18 Agency, particularly now in the health physics and  
19 materials and waste areas. But the using of our in-  
20 house expertise in upgrading the simulators is a  
21 substantial cost savings for the Agency that will in  
22 fact provide a very high quality engineering simulator  
23 within a very limited budget and, in fact, will also  
24 provide expertise for the Agency that we didn't have.

25 High technology enhancements, we're

1 continually looking for ways to improve the  
2 effectiveness and efficiency of training. We're  
3 looking for training aids that are beneficial for our  
4 staff to use as well as different techniques.

5 So, I'm very pleased with the progress that  
6 the training center has made and I appreciate your  
7 interest in hearing the story.

8 MR. THOMPSON: That concludes our briefing,  
9 Mr. Chairman and Commissioners. If you have any  
10 questions, we'd be delighted to respond to them.

11 CHAIRMAN CARR: Commissioner Rogers?

12 COMMISSIONER ROGERS: I've got some  
13 questions, but before I ask them I just want to say  
14 that I think your presentation today was absolutely  
15 superb and what you're doing is really exciting. I  
16 started making a little list of things that I wanted  
17 to compliment you on and I stopped making the list  
18 because it was getting too long.

19 So, I'll ask you some questions, but it's  
20 really just for my own information. I want to just  
21 simply say that there's no doubt in my mind that what  
22 you've done here is really outstanding and it's just  
23 a -- I did visit the center almost a year ago, I  
24 guess, and was very impressed with what I saw there.  
25 There's been obviously a lot of progress since then.

1       So, I think we're getting a lot of mileage for our  
2       money in this center. It's really a fine effort.

3               Just a few questions though, if I could, to  
4       get a little more information. You mentioned early on  
5       that there are people at the technical training center  
6       who have had corporate experience and some that don't  
7       have corporate experience. Some come from the Navy  
8       and haven't had any corporate experience, some have  
9       come from the private sector. How are you getting a  
10      cross fertilization of experience among these people?

11             One of the comments that I hear frequently  
12      in the field in talking to people at nuclear power  
13      plants is that they think in general our people are  
14      very highly qualified technically but they haven't had  
15      much corporate experience or much operating  
16      experience. And we know that that's always a  
17      difficulty for us to fill that need.

18             Do you have any ways in which you're trying  
19      to somehow or other share the perspective of a person  
20      who has had operating and corporate experience with  
21      those who have come without it?

22             MR. RAGLIN: Are you talking about sharing  
23      that with members on our staff?

24             COMMISSIONER ROGERS: Yes. No, no, within  
25      your own staff, within your own team.

1 MR. RAGLIN: Okay. Well, included in this  
2 headquarters training program development, we're part  
3 of that and there is an instructor qualification  
4 program. We have a rigorous program that brings any  
5 new instructor up to speed. We do have a mixture on  
6 the staff where several of the people are former  
7 senior reactor operator license -- or former SROs and  
8 we have some other people who haven't had that  
9 experience.

10 We spend a great deal of time in instructor  
11 training on the simulators. Over the last couple of  
12 years, we've gotten all of the staff out in the field  
13 on a lot of different activities. For example, we've  
14 supported every diagnostic evaluation that's taken  
15 place. We've had a number of these team inspections  
16 in addition to some of the things that aren't--  
17 weren't listed on the slides there. We've had trips  
18 to individual facilities by a number of our people.  
19 But we make a very conscientious effort to try to have  
20 the same result from each course, independent of who  
21 the actual instructors are. There's no substitute for  
22 having been an SRO on shift for several years, but we  
23 try to compensate for it as best we can.

24 Going the other way, we do have some people  
25 who are non-degreed and who are working on the

1 completion of the degree. So, the way we're  
2 approaching it is trying to even out the staff all the  
3 way around.

4 COMMISSIONER ROGERS: Well, sometimes  
5 informal mechanisms work as well or better than a more  
6 formal approach to trying to -- you know, a course or  
7 something like that. I don't have anything specific  
8 to suggest, but it does seem to me that somehow or some  
9 way of informally talking about different perspectives  
10 as they relate to the training programs, from past  
11 experience, can be a -- it may be sort of telling war  
12 stories, but they really do help in giving some  
13 insights that don't -- you never really want to write  
14 down in a course outline or something.

15 MR. RAGLIN: I think that we do that to some  
16 degree in the qualification program because one of the  
17 components of that is for each qualifying instructor  
18 to get a system check out from certain people for  
19 every system that's covered there. Those are very  
20 detailed system checkouts, not unlike those in the  
21 Navy qualification program. A great deal of material  
22 is covered in the --

23 MR. THOMPSON: But I think cross  
24 fertilization will be a key, is an important area that  
25 we can look at in a little bit more detail since the

1 key staff is small and I think that's a good point.

2 Lee, did you have something?

3 MR. SPESSARD: Yes. I just wanted to add  
4 that in addition to everything he mentioned, we've had  
5 a lot of turnover in our staff. We push that. We've  
6 brought in senior resident inspectors to the training  
7 center. In fact, we have an individual that's leaving  
8 momentarily to go to the Waterford plant. So, we're  
9 sending them out and we're bringing them in in  
10 addition to --

11 CHAIRMAN CARR: Turnover inside NRC or  
12 what's the loss rate, I guess?

13 MR. RAGLIN: The last few people who have  
14 left the training center have gone to other positions  
15 within the Agency.

16 MR. SPESSARD: All within the Agency.

17 CHAIRMAN CARR: Okay. And how about are you  
18 able to hire industry retired operators? They're  
19 starting to retire out there these days. Are you  
20 looking at that opportunity?

21 MR. SPESSARD: We're always looking.

22 CHAIRMAN CARR: Advertising for --

23 MR. SPESSARD: Well, every vacancy that I  
24 have, we are actively recruiting.

25 CHAIRMAN CARR: Okay.



1           MR. SPESSARD:     My name is mud in the  
2 regional offices, I can tell you that.

3           MR. THOMPSON:    I'm not aware of any recent  
4 retired SROs that have applied, but obviously the  
5 training center would be high on the list of  
6 opportunities for them.

7           COMMISSIONER ROGERS:    They may not be  
8 thinking of it though.

9           MR. THOMPSON:    That's true.

10          CHAIRMAN CARR:       That's why I keep  
11 advertising that when I visit.

12          COMMISSIONER ROGERS:    I think that's a great  
13 thing to do. I hadn't thought to do that, but I've  
14 heard of people --

15          CHAIRMAN CARR:    I tell them we're looking  
16 for them down there and we're also looking for them on  
17 our inspection teams.

18          MR. SPESSARD:    We just worked out a three  
19 person deal within our Agency where a resident  
20 inspector from Region IV is coming to the training  
21 center and we're sending an instructor there. We've  
22 sent an instructor over to Sequoyah and we have  
23 examiners coming to the center. So --

24          CHAIRMAN CARR:    I would imagine some of our  
25 residents will be looking for places to go other than

1       headquarters as we start moving them around.

2               MR. RAGLIN: That's a distinct possibility.

3               COMMISSIONER ROGERS: Could you say a little  
4       bit about what the site access training involves?  
5       What really is involved in that course?

6               MR. RAGLIN: It's what the utilities  
7       typically call nuclear general employee training.  
8       It's the part of the training which is not site  
9       specific such that when the individuals go on site all  
10      they need to do is get to site specific stuff in order  
11      to get unrestricted access. It includes dressing out  
12      in NIC clothing. It includes the standard type of  
13      briefings that would be given by the licensees at  
14      their facility if our people needed to get the same  
15      thing there.

16              COMMISSIONER ROGERS: Okay. Do you have any  
17      special training or have you thought about offering  
18      any special training for inspectors of fuel  
19      fabrication facilities?

20              MR. RAGLIN: There's an effort along those  
21      lines that's planned. It may be within the next  
22      fiscal year and I'm no sure when it's going to end up.  
23      But that's one of the areas that was identified by  
24      certain NMSS technical groups as a part of this phased  
25      plan and, yes, it's on the drawing board.

1           COMMISSIONER ROGERS: Well, I've picked up  
2           some indications in just my travels around that that's  
3           an area that we maybe should be paying more attention  
4           to, particularly with respect to questions such as  
5           approaching criticality, that a lot of misconceptions  
6           on the part of some of the licensees themselves, or  
7           there have been in the past, as to what is safe--  
8           what are safe distances and so on and so forth and  
9           not -- and being approached from a rather  
10          unsophisticated point of view that actually have come  
11          rather close to creating a critical situation when  
12          they thought they were making it less than critical.

13                 In other words, greater distance isn't  
14          necessarily moving you away from criticality. It may  
15          be moving you to criticality under certain conditions.

16                 It just seems to me that maybe there's some  
17          issues there that we're not -- we haven't been quite  
18          enough alert to and trying to include some training on  
19          these things from an engineering point of view. I'm  
20          not thinking so much from the point of view of health  
21          physics, although that would obviously be an important  
22          part of it. But maybe from the standpoint of reactor  
23          engineering.

24                 MR. RAGLIN: Yes.

25                 COMMISSIONER ROGERS: And I would hope that

1 if we do have a program that it would at least have  
2 some part addressed to questions of geometry and  
3 criticality.

4 MR. RAGLIN: Criticality was an area that  
5 was identified also in the NMSS plan and we have a  
6 couple of leads on some criticality courses. In all  
7 probability, based on the relatively small numbers of  
8 people, these would be arranged through slots to an  
9 existing course. But we have a couple of hot leads in  
10 that area.

11 MR. THOMPSON: Maybe Mr. Glen Sjoblom, who  
12 is responsible for part of that area in NMSS, can  
13 address the point. He is also, I believe, on the --

14 MR. SJOBLUM: Criticality safety is an  
15 extremely important, though somewhat unique, area and  
16 we and the industry as well have a problem with having  
17 fully qualified people. We do have an existing  
18 training program that is available through two  
19 different lengths of courses at the University of  
20 Mexico and, in fact, some of the NRC senior  
21 criticality safety people participate in the teaching  
22 of that course. Two people in NMSS participate in  
23 that.

24 We have been -- at one of the recent  
25 workshops we had with the fuel facility licensees in

1 May of this year, we in fact had an item on the agenda  
2 there. And as a result of talking this issue up, the  
3 University of Tennessee has established a sub-element  
4 in their nuclear engineering program like a major in  
5 criticality safety. They intend to run five or six  
6 people through that. It is an extremely important  
7 subject. We do not ever want to have another  
8 inadvertent criticality accident in our program.

9 And so, we are not currently working really  
10 directly with TTC on that because there is this  
11 available course, but as Ken mentioned, that's  
12 something that is for the future.

13 COMMISSIONER ROGERS: I hope I'm not taking  
14 too much time, but I've got a little list of things  
15 here that I'd like to hear about. The other is non-  
16 power reactor technology. How many times has that  
17 course been given and who attended it?

18 MR. RAGLIN: It's just been given this one  
19 time.

20 COMMISSIONER ROGERS: Given once. How many  
21 people and who were they?

22 MR. RAGLIN: Mostly -- well, there's a  
23 distribution. It was mostly regional people and some  
24 from headquarters. I think the class had 15 to 18  
25 people in it. It was given within the last quarter.

1 The primary presentations were given by INEL and Les  
2 Constable of the Region IV staff gave NRC perspectives  
3 on one day during the course, most of that day. It's  
4 something that's established now and so would  
5 logically be presented on a regular basis perhaps once  
6 a year.

7 COMMISSIONER ROGERS: And just one more  
8 comment and then I'll back away because I want to give  
9 other people a chance.

10 It does seem to me that your risk based  
11 perspective is a very important initiative. That's  
12 really important to try to weave that into our  
13 program. It certainly is much more the approach that  
14 we're all taking on looking at nuclear issues. I  
15 think to try to put that in as a component of all of  
16 your courses is really very, very important and I  
17 think it's a marvelous initiative.

18 Okay. Thank you.

19 CHAIRMAN CARR: Commissioner Curtiss?

20 COMMISSIONER CURTISS: I just have one  
21 question. In the area of maintenance, are we doing  
22 anything to provide specialized training in that area  
23 and in particular now as we've got the maintenance  
24 team inspections out on the road and participants,  
25 different teams and different individuals and perhaps

1 with different interpretations of the way the TI  
2 operates, what to look for and how to look for it? Is  
3 there anything that we're doing or ought to do in that  
4 area to ensure that what we get back from the team  
5 inspections now over the next several months will, in  
6 fact, be based upon a uniform interpretation of what  
7 we're looking for?

8 MR. RAGLIN: We are doing certain things  
9 that relate to maintenance. I don't know that I could  
10 closely align these with the maintenance team  
11 inspections yet. For example, we do offer motorized  
12 valve operator training. We do offer emergency diesel  
13 generator training. In the last meeting of the  
14 training advisory group, there was some discussion  
15 there by the NRR representative about some upcoming  
16 training in the electrical area in support of the  
17 maintenance team inspections. We haven't gotten to  
18 the point of quantifying those needs and proceeding  
19 with them. Those are some examples.

20 We don't have any hard needs -- from the  
21 training center perspective, we don't have any hard  
22 needs that have been identified other than the ones  
23 that are being provided right now. It's something we  
24 see as coming. It's still a little fuzzy to us right  
25 now.

1                   COMMISSIONER CURTISS: But the sense is at  
2 this point it's just a preliminary sense that as you  
3 look at the team inspections that are coming in, it  
4 may be comparable to what we saw in the early days of  
5 the SALP reports where the results and the approach  
6 and what you're looking for and how you're looking for  
7 it may depend more on the personality and makeup of  
8 the team with the consequent result that it's  
9 difficult to compare team inspections from region to  
10 region and from team to team. I wonder if it might  
11 not make sense to take a look at what can be done  
12 there.

13                   MR. THOMPSON: Yes. We'll take a look at  
14 get back to the Commission just kind of outlining the  
15 training and the programs that we plan to have in  
16 place for those teams that go out.

17                   COMMISSIONER CURTISS: That's all I have.

18                   CHAIRMAN CARR: On the time that you spend  
19 doing inspections for other people as part of  
20 inspection teams, do they reimburse you for your time?  
21 How do you account for that in your budgeting because  
22 I gather that's kind of random?

23                   MR. RAGLIN: Within the budget process we've  
24 developed a model that can predict how many course  
25 weeks of training we can provide with a given size



1 staff and it make certain assumptions. Included in  
2 those assumptions are the time that is associated with  
3 the various inspections.

4 I will have to admit, however, that the time  
5 that we have in fact devoted to the diagnostic  
6 evaluation teams has greatly exceeded what we had  
7 assumed in the labor area.

8 CHAIRMAN CARR: So you can update your  
9 model.

10 MR. RAGLIN: A little bit.

11 MR. JORDAN: I think I'd make a comment  
12 about that. There is clearly a positive side to that,  
13 to having the instructors out in an environment with  
14 inspectors --

15 CHAIRMAN CARR: If you have to pay him,  
16 you're going to turn around and charge him for  
17 educating him on your trips.

18 MR. JORDAN: It's sort of like you pay them  
19 now and pay them later. Within our program office, we  
20 believe it fits and is beneficial.

21 CHAIRMAN CARR: Okay. Well, we ought to  
22 have some consistent way of figuring out how much of  
23 this we're going to spend because we've got to get it  
24 into the real budget. You know?

25 MR. JORDAN: And I think maybe the point

1 should be made that we're getting training support  
2 from the other offices. For instance, severe accident  
3 training, the Office of Research is actually putting  
4 on part of the course presentation. So there is a  
5 reasonable interchange and the NMSS also provides some  
6 training. So, we feel that there's a reasonable  
7 exchange there that probably comes out pretty close.

8 CHAIRMAN CARR: Well, as we keep adding all  
9 that training in there though, we can't keep taking it  
10 out of hides. Sooner or later we've got to account  
11 for it and budget for it and make sure that we do  
12 that.

13 MR. JORDAN: Yes, sir.

14 CHAIRMAN CARR: How about when we train  
15 Illinois and Mexico, who pays for that?

16 MR. JORDAN: We do.

17 MR. RAGLIN: The travel is paid by the host  
18 country or, in this case, the State of Illinois. We  
19 were just able to accommodate both of those cases.

20 CHAIRMAN CARR: You provide the people --

21 MR. RAGLIN: Yes.

22 CHAIRMAN CARR: -- and the training.

23 MR. THOMPSON: I think that probably was  
24 addressed in the report about typically they'll have  
25 spaces available and we'll accommodate them to the

1 extent that we can.

2 CHAIRMAN CARR: Right. Yes, it's not a  
3 question of when they send them down there, it's a  
4 question of when you're going. You travel to Mexico,  
5 I assume.

6 MR. THOMPSON: Right.

7 MR. RAGLIN: They pay the travel.

8 CHAIRMAN CARR: When you briefed us back in,  
9 I guess it was early or last fall and you sent us a  
10 memo then later on in October on materials training.  
11 You said there were a lot of courses set up but there  
12 were still four going to be set up at the technical  
13 training center. Is that the ones you're talking  
14 about for materials inspection that are going to be  
15 set up there, four more courses?

16 MR. RAGLIN: It's probably more than four,  
17 more now. We know a lot more about where we need to  
18 be in the materials curriculum than we did when we  
19 last briefed in January of '88. So, what we were  
20 referring to is definitely now incorporated into what  
21 we're planning now. But there's some new things that  
22 have also been added.

23 CHAIRMAN CARR: I guess my curiosity is  
24 we've got qualified inspectors. Are we requiring  
25 those inspectors to take these additional courses that

1 might not have been around when they qualified, to  
2 keep their qualification up to date or current or  
3 whatever?

4 MR. THOMPSON: Let me ask Glen Sjoblom,  
5 who's been working directly with the regions on  
6 establishing the basic qualifications to respond to  
7 that question.

8 Glen?

9 MR. SJOBLUM: Let me give an example of a  
10 course that would be in a category like you're talking  
11 about, the irradiators. We have underway in TTC some  
12 development of a contracted for course to teach people  
13 about the large pool type irradiators. That is going  
14 to be a subcontracted course. So that's one example.  
15 A course where we've had --

16 CHAIRMAN CARR: Well, it's not the course  
17 I'm as much interested in as what are we going to  
18 require the inspectors to attend?

19 MR. SJOBLUM: We definitely would -- for  
20 those who haven't had a sufficient basis for believing  
21 they have a good understanding of that technology, we  
22 would require them to take that course. It is not  
23 going to be necessarily a hard and fast rule because  
24 some people could have a come on knowledge of that  
25 technology through years of their experience. But the

1 intent is, yes, as we add new courses, we would  
2 require those people needing that to go back and take  
3 those courses.

4 MR. THOMPSON: But generally, I suppose, the  
5 section leader and the branch chiefs in the regions or  
6 headquarters would evaluate the individual's training  
7 need. Typically we do it on an annual basis and say,  
8 "Hey, this course is now available. It wasn't  
9 available previously. We have a need for you to make  
10 sure you have your background in that area." So I  
11 think that's the way it would be.

12 CHAIRMAN CARR: Okay.

13 MR. JORDAN: And maybe I could make a point  
14 there that I think in the past 18 months we've changed  
15 from responding to individual's training desires and  
16 changed to accommodating the Agency's training needs.

17 CHAIRMAN CARR: That's what I'm looking for.

18 MR. JORDAN: This being a substantial  
19 difference, yes.

20 CHAIRMAN CARR: The other thing is are we  
21 able to accommodate all the people that we need to be  
22 trained, or are we -- I guess, are we training hours  
23 limited or are we budget limited?

24 MR. RAGLIN: I feel comfortable that we're  
25 essentially meeting the need. There were some

1 adjustments made about a year and a half ago,  
2 particularly in the reactor technology area. We had  
3 what appeared to be a peak coming and we adjusted the  
4 class size for the full course series classroom  
5 courses from 18 to 24 on a trial basis. I'm pleased  
6 to report that our evaluation was that it didn't  
7 deteriorate the course and we were able to continue  
8 that.

9 So what we expect for those courses is that  
10 normally we'll have 18 people, and we typically do,  
11 but we allow up to 24. And so by making that one  
12 shift, we're able to accommodate some peaks and  
13 valleys in the program. Many of the courses will be  
14 oversubscribed and people will have to wait until the  
15 next presentation of the course. But looking on a  
16 yearly basis, I'm comfortable that we're presently  
17 meeting the needs that have been identified.

18 CHAIRMAN CARR: We don't have a large  
19 backlog of people needing training we're not able to  
20 accommodate, then?

21 MR. RAGLIN: Let me throw in one more  
22 qualifier. Now, this headquarters training and  
23 qualification program development, one of the things  
24 that's still going on by the Program Office is, now  
25 that the program has been defined, is to look at the

1 incumbents and make these decisions. Does this person  
2 have enough here, or does he need to go to this  
3 training? And I haven't seen the numbers yet from  
4 NRR, and it's such a big office that that potentially  
5 could change my answer on that question. But right  
6 now, I'm comfortable that we're meeting the needs.

7 CHAIRMAN CARR: Well, keep an eye on it so  
8 we can stay informed.

9 As I wander around, I get lots of comments  
10 about the inspectors and their -- let's say their non-  
11 similarity in inspection techniques and processes and  
12 opinions. And I understand we have a course down  
13 there that you teach in the initial inspector training  
14 area that teaches philosophy of inspection, or  
15 somebody teaches it. It's your training.

16 MR. SPESSARD: The fundamentals of  
17 inspection course.

18 MR. RAGLIN: Right.

19 CHAIRMAN CARR: And somewhere in that, we  
20 give the NRC philosophy, I assume, of inspection.

21 As far as we know, have all our inspectors  
22 taken that course?

23 MR. RAGLIN: Yes. I think that's a very  
24 good assumption. That's one of the things that's  
25 specifically listed in the regional qualification

1 journals and in the similar document for the  
2 headquarters position. That is a course that there  
3 was a significant Agency effort to revise about two  
4 years ago to standardize, and it's been given several  
5 times in the new format. So, we feel comfortable that  
6 the same information is being transmitted independent  
7 of which region it is, and it's been given several  
8 times in headquarters, several sessions for the NRR  
9 staff.

10 CHAIRMAN CARR: And do we have a requirement  
11 for a refresher training in that area?

12 MR. THOMPSON: Not in the fundamentals. We  
13 do have a requirement for refresher training, or what  
14 are called "continuing training" for the resident  
15 inspector types and I guess our inspectors. But I  
16 don't believe it goes back over that course.

17 MR. SPESSARD: Not for the fundamentals, no.

18 CHAIRMAN CARR: I understand that's only a  
19 couple hours or something, the re-fundamentals or --

20 MR. SPESSARD: No, sir, that's three --

21 CHAIRMAN CARR: Or the philosophy portion of  
22 that fundamentals is what I'm really worried about. I  
23 mean, do we inspect by the module and ignore the fire  
24 because it's not on the check-off list, or do we look  
25 for the safe -- I guess, how do you inspect?



1                   MR. THOMPSON:     Safety versus compliance  
2 philosophy.

3                   CHAIRMAN CARR:     That kind of thing.  
4 Presumably, that's where this philosophy is put out.

5                   MR. THOMPSON:     Right.

6                   CHAIRMAN CARR:     My concern is it's not put  
7 out the same to everybody and we don't refresh that  
8 philosophy at a routine basis. So, take a look at  
9 that, will you?

10                  MR. THOMPSON:     We'll look into that, because  
11 I think that is an important area. I know that we --

12                  CHAIRMAN CARR:     I'm trying to get  
13 consistency --

14                  MR. THOMPSON:     Right.

15                  CHAIRMAN CARR:     -- in the residents  
16 throughout the -- so that we don't get, well, one guy  
17 want's to do this or one region wants to do that or  
18 your headquarters guy comes out and he wants a  
19 different thing than somebody else does.

20                  In the manuals you talked about and in the  
21 guides for procedural inspection and all that stuff  
22 that we worked over a couple of years ago, is there  
23 any follow-up to make sure those things are being used  
24 consistently? Do we audit that program? Who audits  
25 training? Anybody?

1 MR. RAGLIN: We don't specifically audit it,  
2 but we do get feedback from everyone of those  
3 fundamentals of inspection courses. We end up issuing  
4 certificates on them and we keep heavily involved with  
5 their -- we know that the new modules are being used  
6 uniformly in the regions. As far as the --

7 CHAIRMAN CARR: How do you know the regional  
8 program conforms to your suggested program in the  
9 manual?

10 MR. RAGLIN: Because the regional managers  
11 who are giving the presentations are using the same  
12 lesson plans --

13 CHAIRMAN CARR: Okay.

14 MR. RAGLIN: -- that were developed, and it  
15 was -- when the major change occurred about two years  
16 ago, there was a wide developmental effort that was  
17 then circulated for comment through the regions and  
18 program offices, and then everybody bought into it.  
19 And we feel comfortable that it's consistent on that  
20 basis, because the same lesson plans, the same  
21 presentations during the fundamentals of inspection  
22 course.

23 CHAIRMAN CARR: Okay. Any other questions?

24 Well, I certainly join my fellow  
25 Commissioners in thanking you for the presentation. I

1 think it's been a very informative briefing and  
2 training is one of the keys to doing our work right.  
3 The programs seem to be responsive to the needs that  
4 we've got and I'm interested that you've got  
5 specialized training going on now, and the future  
6 looks bright as far as the kinds of things you're  
7 getting into. Certainly, upgrading our simulators and  
8 getting state-of-the-art type response is important.

9 I would encourage continued efforts to  
10 improve training for fuel cycle and material  
11 inspectors, because I feel like that's some of our  
12 weakest points. And I say I note that we may need  
13 periodic refresher training in the area of NRC  
14 inspection philosophy. I'm trying to weed out those  
15 few people who may have their own idea of how to  
16 inspect, rather than our idea. So, I urge the staff  
17 to continue seeking and making improvements in  
18 training quality and diversity offered to our staff,  
19 as well as to other people we can.

20 Any other comments? If not, we stand  
21 adjourned.

22 (Whereupon, at 11:30 a.m., the above-  
23 entitled matter was concluded.)  
24  
25

CERTIFICATE OF TRANSCRIBER

This is to certify that the attached events of a meeting  
of the United States Nuclear Regulatory Commission entitled:

TITLE OF MEETING: BRIEFING ON STATUS OF NRC TECHNICAL TRAINING PROGRAM

PLACE OF MEETING: ROCKVILLE, MARYLAND

DATE OF MEETING: SEPTEMBER 14, 1989

were transcribed by me. I further certify that said transcription  
is accurate and complete, to the best of my ability, and that the  
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# **NRC TECHNICAL TRAINING PROGRAM**

**September 14, 1989**

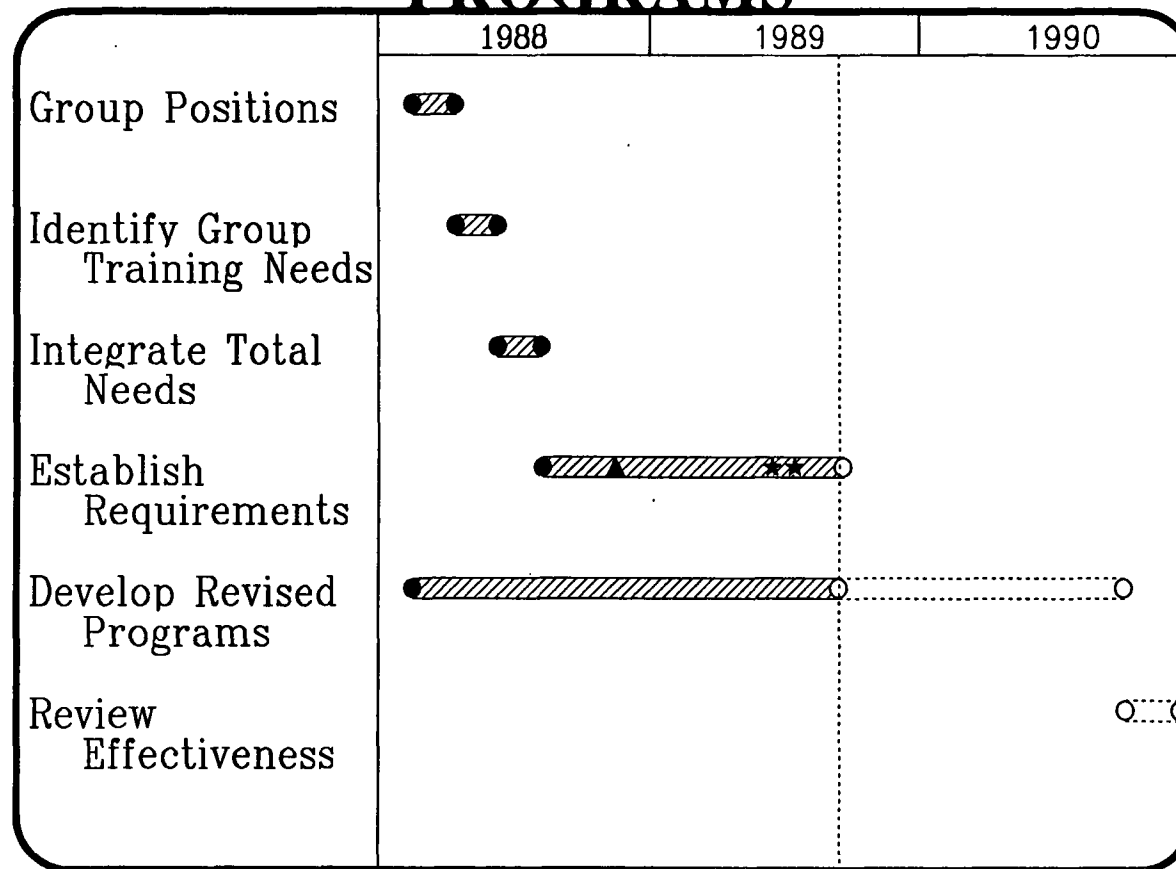
**Edward L. Jordan, Director, AEOD**  
**R. Lee Spessard, Director, DOA, AEOD**  
**Kenneth A. Raglin, Director, TTC, DOA, AEOD**

Contact: Kenneth A. Raglin  
Phone: FTS 856-6500

# INTRODUCTION

- Background
- TTC Mission
- TTC Organization
- TTC Facilities

# HEADQUARTERS TRAINING PROGRAMS

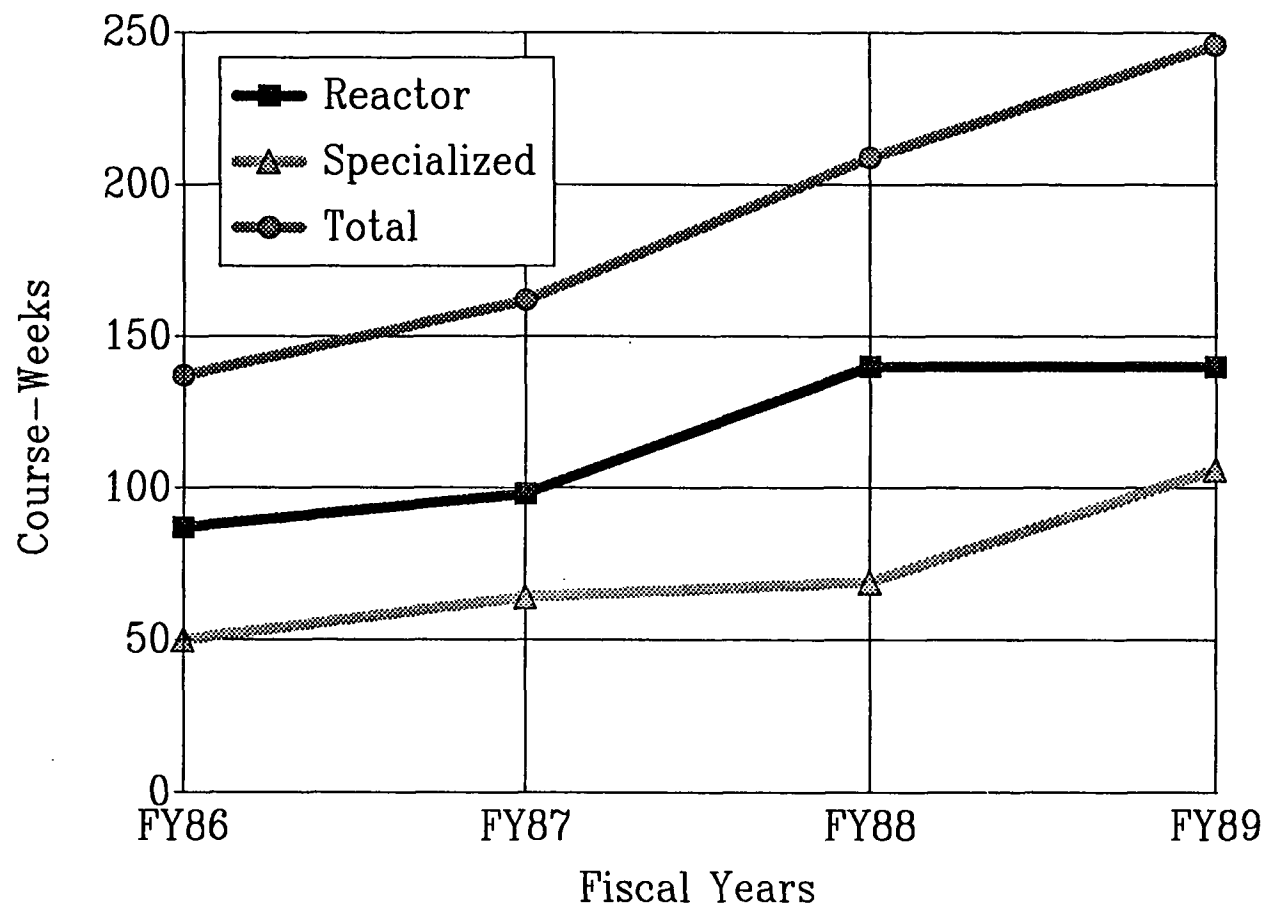


## **FEEDBACK PROCESS**

- Dynamic Schedule
- Response to Changing Needs
- Training Advisory Group
- Program Revisions



## COURSE-WEEKS OF TRAINING



## **REACTOR TECHNOLOGY TRAINING INITIATIVES**

- Full Course Series in CE Technology
- Cross Training Series (B & W and CE Technologies)
- NRR Mini Series (Westinghouse and GE Technologies)
- Full Series Extensions for Examiners (All Technologies)

## **TECHNIQUES TRAINING FOR EXAMINERS**

- Heavy Involvement by TTC Staff and Operator Licensing Branch of NRR
- Development and Initial Presentation by Contractors
- Content revision and Instruction by NRC Staff
- Consolidation of Material into Two Courses

## **CONSOLIDATION OF HEALTH PHYSICS TRAINING**

- Reactor Radiation Protection Specialists
- Materials Radiation Protection Specialists
- Common Areas with State Personnel
- Most Efficient Use of Resources

## **HP INITIATIVES**

- Teletherapy and Brachytherapy (9/89)
- HP Technology (12/89)
- Whole Body Counting/ Internal Dosimetry (Early FY90)
- Pool-Type Irradiators (Mid-FY90)
- Reactor Radwaste Course (Late FY90)
- Advanced Health Physics (Late FY90)

## **ADDITIONAL TRAINING**

- Incident Investigation Team Training and A/I Workshops
- Non-Power Reactor Technology
- Cold Chemistry Course
- Site Access Training (SAT) and Site Access Refresher Training (SART)
- Safeguards Training Initiative

## **SPECIAL REQUESTS**

- GE Technology Course in Mexico
- GE Simulator Course for Mexico (10/89)
- Westinghouse and GE Technology Courses for State of Illinois Personnel
- National News Media Seminars
- Reactor Concepts Training for Congressional Staffers (10/89)

## **SEVERE ACCIDENT CONSIDERATIONS**

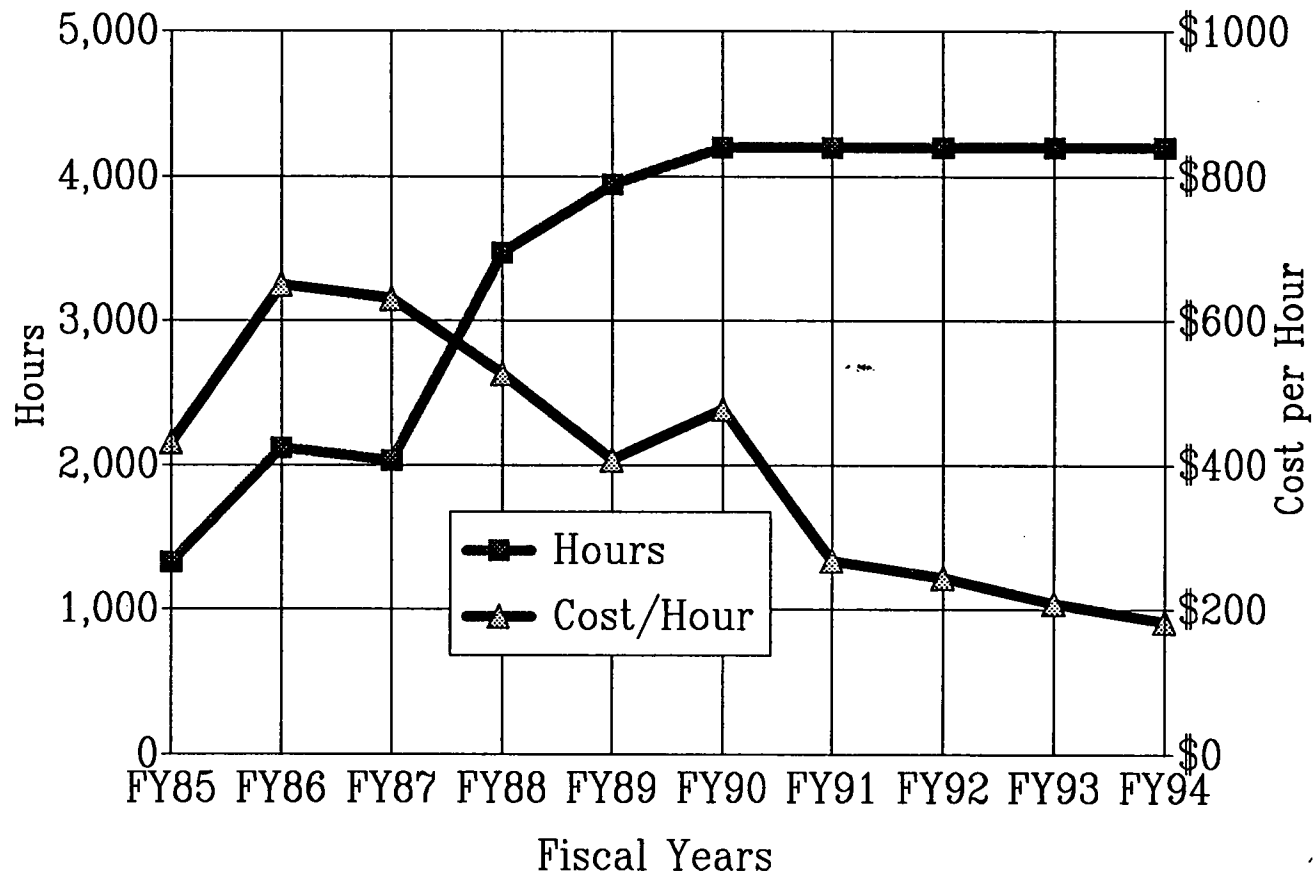
- Increase Staff Awareness of Severe Accident Methodology and Insights
- Collaborative Staff Effort
- Current and Planned Activity



## **EXPANDING RISK BASED PERSPECTIVES**

- Increase Staff Awareness of Risk  
Dominant Sequences and Major Risk  
Contributors
- Collaborative Staff Effort
- Specific Training for TTC Staff
- Integration into Existing Courses

## SIMULATOR USAGE AND COST



## **SIMULATOR UPGRADE PLAN**

- Hardware and Software Improvements in Progress
- Use of In-House Expertise
- Projected State of the Art Capabilities
- Timing

## **HIGH TECHNOLOGY ENHANCEMENTS**

- Computerized Examination Bank System
- Audio-Visual Editing Equipment
- Laser Videodisc Plant Tours
- Classroom Engineering Simulations
- Classroom High Resolution Video Displays

## **USES OF TTC EXPERTISE**

- **NRC Diagnostic Evaluations**
- **NRC Team Inspections**
- **Technical Consulting Projects**
- **Incident Response Support**
- **Human Factors Research Projects**

## SUMMARY

- TTC Continues to Mature As Agency Resource
- Program Evolving in Support of Agency Needs
- Risk Perspectives Being Incorporated
- Simulators Being Upgraded to State of the Art
- High Technology Enhancements Being Pursued