

1
UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BRIEFING ON STATUS OF NRC OPERATOR LICENSING
INITIAL EXAMINATION PILOT PROCESS

PUBLIC MEETING

Nuclear Regulatory Commission
Commissioners Conference Room
One White Flint North
11555 Rockville Pike
Rockville, Maryland

Tuesday, June 18, 1996

The Commission met in open session, pursuant to notice, at 10:02 a.m., the Honorable SHIRLEY A. JACKSON, Chairman of the Commission, presiding.

COMMISSIONERS PRESENT:

SHIRLEY A. JACKSON, Chairman of the Commission
KENNETH C. ROGERS, Member of the Commission
GRETA J. DICUS, Member of the Commission

2
STAFF AND PRESENTERS SEATED AT THE COMMISSION TABLE:

John C. Hoyle, Secretary
Karen D. Cyr, General Counsel
James Milhoan, NRR
Frank Miraglia, NRR
Bruce Boger, NRR
Stuart Richards, NRR

3
P R O C E E D I N G S

[10:02 a.m.]

CHAIRMAN JACKSON: Good morning, everyone. The purpose of this meeting is for the NRC staff to brief the Commission on the results of the operator licensing program.

The Commission previously consented to the staff's proposal to initiate a pilot process to examine the feasibility of revising the operator licensing program to allow facility licensees to draft the written examinations and operating tests that the NRC administers as part of initial operator licensing.

The Commission directed the staff to carefully consider the experience gained from the pilot program before considering full implementation.

The staff provided its recommendation regarding this program to the Commission in SECY 96-123. The Commission now must make a decision on whether to fully implement the new examination process on a voluntary basis and consider the pursuit of rule-making to require all power reactor licensees to implement the new program.

Before the Commission makes its decision, it is important for us to review the results of the pilot program and hear not only the potential gains to be made and achieved by full implementation, but also to weight any potential negative consequences of changing a program of

4
such importance, that we have successfully performed for quite some time.

And I would say that in reading the SECY paper, 96-123, it leaned very much on the gain side and there was

essentially very little in terms of the consequence. So it would be important today that the balance be presented.

So the Commission is very interested in the pilot results, especially a comparison, and there was an interesting comparison between historical past fail rates and those experienced under the pilot program.

The Commission would also like to understand what controls a plant, because, again, the paper was a bit light on that, to ensure that a challenging test of initial licensed operator applicants continues to take place.

Finally, a discussion on the staff's position that a rule change would be necessary to implement the revised program, if it is considered acceptable, is warranted.

So we'll look forward to a full discussion of all aspects of the proposed revision to the operator licensing program with you today.

Now, I understand that copies of your presentation materials are available at the entrance to the meeting. Do any of my fellow Commissioners have any comments at this point? Mr. Milhoan.

MR. MILHOAN: Good morning. I think you have

5

certainly stated the purpose of the meeting and I will not repeat that. With me at the table today is Frank Miraglia, Deputy Director of NRR; Bruce Boger, Director, Division of Reactor Controls and Human Factors; and, Stu Richards, Chief of the Operator Licensing Branch.

Bruce will lead off the first part of the presentation. Bruce.

MR. BOGER: Good morning. I'd like to spend a few moments with you to review some background information to set the stage for Stu Richards, who will really talk about the pilot exam process. Can I have the slide numbered two, please?

[Slide.]

MR. BOGER: As a result of our favorable experience with the transfer of examination responsibilities to facility licensees as part of the requalification examination process and the potential for us to save about \$3 to \$4 million in resources, the staff felt that we ought to embark on a path to consider alternate approaches to the exam process. As you indicated, Chairman Jackson, we outline those in SECY 95-75.

Our underlying authority to conduct examinations stems from the Atomic Energy Act. It requires us to determine the qualifications of candidates, to prescribe uniform conditions for licensing, and to issue licenses as

6

appropriate. 10 CFR 55 is our guidance and our rules and it establishes the requirements for applications and the contents for examinations. It identifies that a written examination and an operating test be administered, but it does not state who will create the exam, who will write, administer and grade the exams.

NUREG 1021 is the NUREG that provides the guidance to the examiners. Specifically, it provides procedures for examiners to use and follow to prepare and conduct exams. Historically, these examiner standards have been used by the NRC and contract examiners. However, facility licensees have had considerable experience with them and are quite familiar with the standards.

As you indicated, we did receive an SRM indicating that we could go ahead with the pilot process and we are here today to talk about the final implementation.

CHAIRMAN JACKSON: The hoped final.

MR. BOGER: Yes, ma'am. When we considered the exam process a little over a year ago, we had several objectives in mind and I thought we might go over those just to see where we stand. We saw this as an opportunity to improve our efficiency and maintain effectiveness if we maintained a high level of NRC involvement in the process and also to get the people that have the most knowledge of the plant design and operations, the facility licensees, to

7

contribute more in the exam process. At the same time, that would allow us to reduce our reliance upon contractors.

Our intent was to remain consistent with the act and Part 55 and, in fact, we originally considered that a change to Part 55 would not be necessary because the rule was silent with respect to who administers the exams and also because we determined that it was not a backfit.

However, we now believe that rule-making is appropriate because we want it to be a mandatory process

across all licensees and also because it's a task that has been historically performed by the government, by the NRC, and that would require rule-making or issuance of orders. We decided to stay away from the issuance of orders because that would lead to individual orders for each plant and we felt that rule-making would be the cleaner and the clearer way of establishing that regulation.

We wanted to make sure that the process was not - changes to the process were not apparent to the candidate. We didn't want the test-taker to suffer any consequences because of the change in the examination process. Accordingly, the exam format, the exam content and the level of difficulty are expected to remain unchanged from the current process.

One of our objectives was to implement the process early in 1997. In view of the aspects of rule-making, we

8

will have to delay that somewhat. So it will take a little longer transition for us if we do, in fact, proceed into a full implementation.

Stu has the results of the pilot program that you requested.

MR. RICHARDS: Slide four, please.

[Slide.]

MR. RICHARDS: I'm Stu Richards. I'm the Chief of the Operator Licensing Branch. The first slide talks a little about the genesis of the program, the pilot process. After briefing the Commission on the proposed changes to the program in April of 1995, we formed a team of examiners to define the proposed new process. All four regions were represented on the team. The results of the team's efforts were used to issue Generic Letter 95-06 in August of 1995.

Generic Letter 95-06 outlined the pilot process to the industry and solicited participants on a strictly voluntary basis. We advertised with the power program. We scheduled a run from October of '95 to March of 1996 and we followed up on the Generic Letter with a public workshop in September of 1995. During the workshop, we explained the process and we fielded questions from the industry.

We were fortunate to have 20 sites volunteer to participate. I might add I think we had a lot of help from NEI on that. Between October 1st of 1995 and April 5th of

9

'96, we administered 22 exams; that is, of those 20 sites, there were two sites that had two exams.

The exams were administered without contractor assistance. All four regions participated and all the reactor vendors were represented in the sample size.

We had 95 reactor operator candidates and 92 senior reactor operator candidates tested as a part of the pilot process.

CHAIRMAN JACKSON: The slide says 54.

MR. RICHARDS: 54, I'm sorry. You're right.

[Slide.]

MR. RICHARDS: Slide five starts an overview of the process and then weighs out the facilities' responsibilities under the pilot program. In accordance with the pilot program, facility licensees drafted the initial operator licensing written exams and the operating tests, submitted the to the regional offices for review and approval about 30 days before they were scheduled to be given.

To maintain the uniformity required by the Atomic Energy Act, the staff expected that the examinations would be drafted in accordance with our examiner standards and the supplemental information provided in Generic Letter 95-06. We did not consider any alternative testing methods.

The Generic Letter also contained the

10

supplementary criteria in addition to what was already in the examiner standards. The criteria were added recognizing that this was a change; no longer were we preparing the exams, but now the utilities were. So additional criteria were added to ensure the integrity of the examination process, to maintain the consistency of the examinations, and to limit predictability to the candidates.

Examples of the additional criteria that were added; to minimize a potential conflict of interest in writing exams, facility employees who played a substantial direct role in training the license applicants were not permitted to write the licensing examinations or tests. Because the NRC does not regulation examination banks and some utilities maintain question banks, we placed limits on

drawing questions out of the examination banks. We allowed up to 50 percent of the questions to be drawn from the utility's question bank. We allowed another 40 percent to be drawn as long as those questions were substantially modified, and required ten percent of the questions to be new.

Limits were also placed on the degree to which examination questions could be duplicated from examinations or quizzes that the candidates had seen during their training process or questions being duplicated from the last two NRC exams administered at that facility.

11

Additionally, the licensees were required to state the source of each examination, written examination item, and if it was given at the facility in the past, to state when it was past given, so we could recognize if this was a question that the candidates had been exposed to in the past.

CHAIRMAN JACKSON: Let me just ask. How many of these criteria that were in this Generic Letter then were migrated or remained parts of NUREG 1021? Because it seemed from the SECY paper that, in fact, you were proposing relaxations along each of these lines that you said were part of the pilot.

MR. RICHARDS: I think it's really a mix. There were some areas where, in discussions with the industry, we feel it was appropriate to relax, not significantly, but there were other areas where we added more restrictions. So I think on whole, the steps we're taking should ensure the integrity of the exam.

CHAIRMAN JACKSON: Can you walk us through?

MR. RICHARDS: It's largely covered on a later slide, if it would be all right to wait until then.

CHAIRMAN JACKSON: Sure.

MR. RICHARDS: And if that slide doesn't answer all the questions, we'll add to it at that point, if that's all right.

12

CHAIRMAN JACKSON: Yes.

MR. RICHARDS: The last bullet there talks about the utility administering and grading the written examinations. Upon approval by the NRC staff of the written examination, the utility was allowed to administer the exam. You should note that the examination is a 100-point multiple choice test. It's not an essay test. So the answer key is developed before the test is administered.

Administering the exam is largely placing it in front of the candidate, ensuring that the appropriate security measures are maintained. There can be questions asked during the exam, but there are guidelines on how to address those questions or whether they should even be fielded at all. So it's largely an administrative function.

The licensee, after administering the test and grading the test, again, it's a multiple choice test, they submit the results to the regional offices with any recommended changes in the answer key. Then the regional office would review the results, check the grading, review any changes recommended by the facility, and then make the final decisions on whether those changes should be made and approve the final grading.

CHAIRMAN JACKSON: Is the grading machine grading or is it done by individuals?

MR. RICHARDS: It varies. I think some people do

13

it machine at sites. Some people use hand. I think it's mostly hand right now.

[Slide.]

MR. RICHARDS: Slide six, please. This slide is an overview of the NRC's participation in the pilot process. As stated before, the examinations, once drafted by the utilities, were submitted to the regional offices for review and approval. We did not restrict the regional offices on how many changes that they could ask the facility to make.

Basically, we told the regional examiners that we wanted this examination to be on par with an examination that we would administer and were adamant that we would not administer any examinations that did not meet that criteria.

The examiners were focused to or instructed to focus on the content and construction of the written exam, that being the format and the level of knowledge and difficulty, rather than on the technical accuracy. One of the things we felt we could save some time on here was when we write the exam, frequently the utilities will review it

ahead of time and they'll comment that, well, this valve number is not right or we don't use that terminology.

We expected that the fact that the facilities were writing the exam, that all the terminology, the technical details would be correct, but we did focus on the level of difficulty and format and the psychometric principles of the examination.

14

We did administer all the operating tests. This is the simulator portion of the test and the plant walk-throughs. This is a change from our intent when we briefed the Commission back in the spring of '95. At that time, we still hadn't worked out the details on what we proposed to do, but I think the discussion was more along the lines of there being parallel grading, where the facilities would actually administer the operating tests, be grading their own candidates, and the NRC examiners would be doing parallel grading or some kind of an oversight inspection.

When we got our team of examiners together and looked at the pros and cons of that, we felt that, one, we had about the same number of resources that it would take to do one or the other. We felt it would be more independent for us to do that portion of the exam. Additionally, the industry was generally opposed to the concept of doing parallel grading. So we decided that we would go with the NRC examiners performing, in the field, the operating portion of the test.

Of course, we graded those tests in accordance with the existing examiner standards. So that portion of the test, once the exam is written by the facility, has not substantially changed.

As noted before, we did review the facility

15

grading of the written exams. Management and the regions continue to review the examination results and we were ultimately responsible for making the final licensing decisions. We did administer the appeal process that was preexisting before the pilot process was put into effect. The operators had the opportunity to ask for an informal review if they should fail the exam. The process calls for the candidates to submit a package to the regional office.

They have an opportunity to consider the information and if they contend that the failure is still valid, then the package comes to headquarters. The process presently has us forming an appeal panel of three examiners from an uninvolved region or regions. They consider the candidates' contentions and then they provide a recommendation to my branch. We put together a final package and Mr. Boger is the final decision-maker on whether to uphold that failure or overturn it.

Slide seven, please.

[Slide.]

MR. RICHARDS: Overall, we felt that the examinations drafted by facility licensees subject to review and changes were appropriate by the NRC staff or as effective as examinations written by our contractors and administered in the traditional manner.

We felt that --

16

CHAIRMAN JACKSON: Let me ask you a question in terms of pass rates. How many total SRO examiners were there during the pilot period on SRO exams?

MR. RICHARDS: It's in the table attached to the Commission paper. The total number was 85 written and 85 operating tests.

CHAIRMAN JACKSON: Is that the number of pilot tests?

MR. RICHARDS: Yes.

CHAIRMAN JACKSON: I'm asking for the total for '95 for all tests.

MR. RICHARDS: For 1995.

CHAIRMAN JACKSON: That's right.

MR. RICHARDS: In 1995, I believe we gave 386 examinations.

CHAIRMAN JACKSON: Okay. And what about operating exams?

MR. RICHARDS: I don't have the breakdown between written and operating. Typically, that 386, the vast majority of those are going to be people taking both the written and the operating. The difference by a few numbers is in the case where a candidate passes one part of the test and fails the other. Typically, we will wave the part that they passed, and so they only have to retake the part that

they failed.

17

So there's a few odds and ends that way that they don't add to the same number.

On the effectiveness issue, we noted that some of the written -- well, we felt that the as-written examinations that were administered to the candidates were comparable in quality and level of difficulty to those that we traditionally give. We did note that a number of the examinations that the facilities submitted required substantial involvement by the NRC examiners and re-work in order to get that up, that examination up to the standards, we felt were acceptable.

CHAIRMAN JACKSON: I had a question for you anyway on that one. Can you square for me, when you say that they were comparable, within the substantial number required significant work, those don't seem to track.

MR. RICHARDS: The examinations that were put in front of a candidate for an exam we felt were comparable.

CHAIRMAN JACKSON: But not as written.

MR. RICHARDS: Not as written. The examinations that we received from the facilities, there were some that were fairly well written. There were a few that, particularly in the written exam, we felt were actually harder than what we typically would have produced. But there were others that we felt missed the mark.

CHAIRMAN JACKSON: Did you actually keep

18

statistics on how many needed to be changed and what were the major kinds of changes?

MR. RICHARDS: I can talk to the major kinds of changes. Actually, there were a few that were not very well that stick in mind and there were a few that were very well done generally that stick in mind and then the rest kind of fall in the middle of the pack and they were in need of some work, but not too far off the mark.

CHAIRMAN JACKSON: Did you keep those statistics?

MR. RICHARDS: I can give you the names of the plants. I can't tell you ten percent at the bottom and two percent at the top. We only had 22 facilities that -- or 22 exams with 20 facilities that participated.

MR. BOGER: Is your question directed at the types of problems that we saw on the exams and whether --

CHAIRMAN JACKSON: It's twofold. It's kind of the -- how widespread or not, what the problems were, where they concentrated at a few plants, and then, yes, then among those, where you had to make -- have the change and work with the licensees, what were the kinds of problems you found.

MR. RICHARDS: There were four or five facilities where it required substantial involvement on our part in order to get to the exam, where we felt it was ready to go. The kind of problems that we noticed on the written

19

examination, probably the number one issue was that too many of the questions were at too easy of a level, simple memory level questions. Sometimes the questions were not psychometrically sound. We have instructions on how to construct questions and in a number of cases, the questions weren't constructed the way we felt they were appropriate or that they should be. But number one was that too many of the questions were too simple.

On the operating exams, the exams split into the simulator portion of the test and then the walk-through portion. I think generally the simulator examinations were close to the mark. In some cases, we felt they might be a little bit too easy, but generally they weren't too bad.

In the walk-through portions, this is where you ask the candidate on a one-on-one basis to perform some kind of a task, a surveillance or a system lineup, we felt that some of those job performance measures, as they're called, were too simple or that once the job performance measure is conducted, there are two questions that are prescribed or asked the candidate, once the evolution is conducted. Those questions are supposed to challenge the candidate's depth of knowledge in the area.

A number of times, we felt that those questions were too simple, a simple look-up question where you would go to the tech specs or a procedure and read it, and those

20

are not the type of questions we expected to see.

Any more on that?

COMMISSIONER ROGERS: Just a general comment that

multiple choice questions are a lot harder to write ambiguously than most people recognize. Even today, on SAT exams, which get put through all kinds of reviews, people turn up alternative answers that are not regarded as a correct answer, that are, in fact, correct, they are an acceptable answer.

So it's a very tough area to deal with and I was just curious as to how you felt the licensees were dealing with that. I know that our experience has probably kind of honed our ability to write multiple choice questions, but how do you feel licensees dealt with that?

MR. RICHARDS: Again, it's a mixed bag, but I think it's an area that the industry as a whole will need to gain experience in. I mentioned before that the psychometric construction of the questions was a problem in a number of cases and that's exactly the challenge of writing a multiple choice question. You need to have, one, a hopefully higher level of knowledge, not simply a memory level question, and, secondly, you need to have distractors that are reasonably close to being correct, but clearly wrong at the same time, and that makes a good multiple choice question very difficult to write.

21

We did have that problem with a number of exams. As we address later, though, we feel that the industry is learning quickly. It is a steep learning curve, but we feel that with some additional experience, that they will be able to write those questions as well as we do.

COMMISSIONER ROGERS: Do you mean that they are learning very fast or that there's a tough challenge?

CHAIRMAN JACKSON: A tough hill.

MR. RICHARDS: Well, it's a tough hill. I think that -- the sense I got was that they are learning quickly. We did have two sites that did two exams and in both cases, they maintained that the second time around was quite a bit easier than the first.

There's the challenge of understanding what we expect in the writing of questions and then there's the challenge of just understanding the entire process, which is quite detailed and strictly controlled.

So for somebody who thinks that you're going to sit down and write an examination in a few days time, they have the wrong concept.

MR. BOGER: We've had over ten years experience in writing the questions and provided instructions to the examiners, training sessions and the like, and I think the utilities got into the mode of reviewing our questions instead of having to create the questions, and there's a

22

difference in that area. But it was positive that we thought people were seeing the light as we went through the program.

CHAIRMAN JACKSON: And now we're going to switch it. We'll be the reviewers.

MR. BOGER: Right. Yes, ma'am.

MR. MIRAGLIA: But the key to that, Madam Chairman, is NRC involvement. At your opening remarks, you talked about controls and Stu indicated some of the controls that we tried to institute above 1021, since we are having the utilities write the exam, and it's the NRC involvement that I think is the key to that control and we'll have to maintain that level of involvement to have confidence in those examinations.

MR. RICHARDS: Unless there are further questions, the next item speaks to a point that I believe, Chairman Jackson, you mentioned in your opening remarks, and that's the pass rates. We felt that the pass rates on the exams compare with the pass rates prepared in past NRC examinations.

Those pass rates are contained in the Commission paper in the last table attached. Actually, the pass rates from the pilot examinations were a little bit lower than what we've seen in fiscal year '95.

Generally, as I've said before, we felt the

23

examinations were as challenging as the ones that we had given traditionally in the past and the pass rates seem to bear that out.

CHAIRMAN JACKSON: But that was after your involvement.

MR. RICHARDS: Yes, ma'am. We feel that our involvement is very important in getting the proper product in front of the candidate.

The staff believes that the new examination process can be implemented with the same level of direct NRC resources that are currently allotted to the operator licensing program. We estimated that we would spend about 370 hours, on average, for each pilot examination and when we were done, the average came out to be about 350 hours per examination.

There is quite a range from the low to the high, depending upon how well the licensee did in writing the initial product.

We did not ask for feedback from the facilities on exactly how many hours it took them to write their products, but the feedback that we got from NEI was that it was taking roughly 400 to 600 staff hours to prepare the examinations by the utilities. This is somewhat higher than we would have expected and it's higher than it would have taken us to write the exams, but, again, we feel there is a steep

24

learning curve and with experience that that number will come down and the industry will become more efficient.

In talking with the industry, it appears that they feel that they would get better at it, also.

Slide eight.

[Slide.]

MR. RICHARDS: This slide speaks a little bit to the lessons learned from the pilot process. The industry generally agrees with the changes that the staff proposes to make to the licensing process. In February of this year, as I think was previously mentioned, the staff issued for public comment and for industry comment a draft revision to the examiner standards. The revision incorporated the lessons learned up to that point through the pilot process.

The Nuclear Energy Institute submitted comments and recommendations on behalf of the nuclear industry. In addition, two facility licensees provided additional comments which generally mirrored the NEI comments.

CHAIRMAN JACKSON: The NEI comments, do you have any way of judging how many -- the universe of licensees who actually -- that actually represented?

MR. RICHARDS: I do know that NEI formed a working group on this issue and, in fact, we met with the working group on two occasions. The NEI representative on that group is here today and I believe there were ten or 12

25

utilities represented on that group.

So I feel that their comments -- the NEI comments incorporated those received from the working group. We did have a number of utilities, a large number, represented at our workshop in September. We spoke to the issue at the regulatory information conference. The regions have talked probably to all utilities almost on a one-on-one basis and had training managers meetings in the last year. So there's been a lot of opportunity to receive feedback.

CHAIRMAN JACKSON: Have you solicited the industry to know that they also support the rule-making to impose this on all licensees?

MR. RICHARDS: No, we did not, and the reason for that is that that was a change that came about late in the process. We felt that because we had told the industry that we intended to implement this as an administrative change, to go back in the recent times and to talk to the industry would have been, in effect, sharing something that was pre-decisional at that point, because we hadn't really shared it publicly.

So I don't understand or I really can't speak to the industry's viewpoint on rule-making.

CHAIRMAN JACKSON: Please go on.

MR. RICHARDS: The comments that we received from NEI and the two facilities are summarized, the major ones

26

are summarized on the additional or the later slide which I will cover in a minute.

We already addressed the fact that the facility learning curve was fairly steep, but with time, we feel that they will gain experience and become more efficient at producing the exams. I think as they gain experience and become more efficient, that will also reduce the amount of time that we have to spend working with them to produce the exams.

I might note that if the change is approved, the staff is also anticipating participating in a national workshop that NEI would arrange later in the year to, again, cover the finer points of how to construct an NRC exam and

some of the lessons learned from the pilot process.

One of the lessons that we did learn was to increase emphasis on the technical accuracy of the examinations. As I had mentioned before, we had hoped that because the facilities were writing the exams, that the exams would be technically accurate when received. Unfortunately, there were cases where that was not so.

We have taken some corrective action in the final examiner standards to address that and we're encouraging the licensees to take more deliberate steps to validate the examinations before they provide it to us. We're also going to ask the regional examiners to validate or check a

27

sampling of the technical accuracy of the questions on the examinations as part of their review process.

COMMISSIONER ROGERS: For every exam.

MR. RICHARDS: Every exam, yes. One of the additional items that we did learn out of the pilot process that involved technical accuracy has to do with the number of appeals that we got. The appeal rate jumped up substantially from the pilot. We have roughly ten failures from the appeal process out of 21, where the candidate appealed the decision.

Based on that appeal rate, we decided to take some additional actions to make sure that we were making the right licensing decisions. We're encouraging the licensees to provide to us the candidate comments after the written examination is complete. Typically, after the examination is over, the facility will provide comments on the written examination, asking that different answers be accepted or questions be deleted because of the experience of having given the exam.

It wasn't clear to us that because the licensees were now writing it, that they were as open to accepting comments from the candidates. So for the future, we would ask that the facilities provide us not only the facility endorsed comments on the examination, but they also provide us the comments that they receive from their candidates,

28

even if they don't endorse those comments. So hopefully we would get that feedback early on rather than getting that through the appeal process.

CHAIRMAN JACKSON: What happened with those appeals?

MR. RICHARDS: We have two of the appeals that are still in the process of being reviewed. But of the ten failures to date, two of them were overturned and resulted in licenses being issued. I might add that one of the two that were overturned were overturned at the region and basically it was the result of an examiner making an error in the way he administered part of the test and it was really not related to the pilot process.

There was a third appeal where the candidate had failed both the written exam and the operating exam, and we at headquarters had overturned one part of the examination, that being the operating exam, but we sustained the failure on the written examination. We count that as a half. So of the ten appeals to date, two and a half of one have been overturned.

Unless there are other questions on lessons learned. The next slide, slide nine, please, speaks to our coordination with the industry.

[Slide.]

MR. RICHARDS: I mentioned before that we have

29

communicated regularly with the industry generally through NEI. I might note, again, that last September, we did have a workshop with the industry here in Rockville before we kicked off the pilot process, where we described the process and answered their questions.

At that point, in January, midway through the pilot program, we attended a public meeting with NEI and their working group to get feedback from the industry on the process at that point and also to share our views.

After completing the pilot program, we conducted another public meeting with NEI and other industry representatives to review their comments and recommendations. At this point, the draft examiner standards had been issued for public comment, so they had the benefit of that to provide us their feedback on. Because the pilot examinations had been complete, we had full benefit of our feedback to share with them.

As noted earlier, we do plan to have a workshop

later in the year if we go forward with this process.

There was a formal comment period. We issued a full public comment in February. We put the entire examiner standards on the worldwide web. I already mentioned that we did three responses, one from NEI and two from the facility licensees.

COMMISSIONER ROGERS: But as you pointed out, that
30

was not on the basis of it being a rule. Is that right?

MR. RICHARDS: That is correct. At the time it went out, the examiner standards were a format that they would be implemented on a mandatory basis. And in the Federal Register, as a matter of fact, we specifically asked for feedback on the burden on the industry and the three comments we got back spoke to specific details in the examiner standards, but we didn't get any comments back about the burden.

The last bullet on the slide talks about some specific industry concerns and hopefully this will address some of the questions you had earlier, Chairman Jackson.

CHAIRMAN JACKSON: When you go through it, could you explain what was in NUREG 1021 relative to this, when we were giving the exams, and as you talk about the concerns, what -- proposed changes in the NUREG that addresses that concern and what vulnerabilities you see in making that change.

MR. RICHARDS: All right. The first issue is probably the largest issue we've faced from day one, and clearly this is the biggest issue of the industry. It involves who can participate in writing the examination. Originally, the Generic Letter that kicked off the pilot program said that if you had substantial involvement in instruction of the candidates, that you could not be

31

involved in writing the examinations.

Now, in the Generic Letter, there was an out. It said if this is too hard on you, come and talk to us and we'll accept, on a case-by-case basis, other arrangements, recognizing that we couldn't foresee every situation. But generally speaking, we limited the people who authored the exams to people who were not substantially involved. At the time, we did not define what substantially involved meant.

We had a lot of dialogue with the industry on this and for the larger utilities, this isn't very much of a concern. They have enough of a trained staff that they have people to draw on without too much difficulty. But generally speaking, for the smaller utilities, they may only have four or five people who are involved in licensing initial classes and they don't have a lot of experienced people elsewhere in the training staff to draw on, they felt that this was a burden.

The industry argues, and I think with some merit, that because of all the other restrictions we've added to the way the examination is constructed, where you can draw up the questions from the fact that there is a sample plan that has to be developed, that basically locks you into examining in various areas, that it's very difficult to bias the test in a significant way.

There is some merit, I believe, to that argument.

32

But nonetheless, on our side, the concern was we didn't want people who were teaching candidates, even so consciously, that in writing the exam, recognizing what they had presented to the candidates, because the test should be an independent judgment of those candidates' ability to be licensed.

What we proposed to do, because of the numerous restrictions we have placed on the construction of the examination, is to allow the facility to have one individual who was involved in a substantial way participate in constructing the exam. That individual would not be allowed to write questions in an area in which they instructed and their total involvement in the class would be limited to 15 percent of the scheduled construction time in the classroom and an additional five percent in the simulator, for a total involvement of 20 percent.

Additionally, I'd have to go back and check on the numbers, but I believe that if somebody has had less involvement than 40 hours in instructing, we would allow a limited number of those people to participate, recognizing that in a lot of these classes, you might have an engineer come over and teach a class for a day or somebody come out of the plant and spend the day teaching the class. We don't

want to completely eliminate all of those people from participation. So we said if you have less than, say, 40

33

hours of involvement, I believe the number is, those people can participate in an unlimited number, but, again, they can't write questions in the areas in which they instructed.

That's our proposal to address that area.

CHAIRMAN JACKSON: What are the vulnerabilities?

MR. RICHARDS: Well, again, the vulnerabilities are for the one individual that you have instructed, substantially involved, the person who may have up to 20 percent involvement, somehow introducing a bias into the exam. But I believe that we have addressed that by precluding them from writing questions in the areas that they participate in the instruction by requiring that a sample plan be drawn up. And I didn't mention this before, but we're going to require that the sample plan be defined by somebody who has had no involvement in the instruction of the class.

So that the base document that the examination construction is drawn from is the sample plan; that is, somebody who has not participated. Then the NRC review; typically, these pilot examinations demonstrate that we get these examinations and we're going to recognize questions that we felt are overly simplistic. The examiners, I think, are in a good position with their experience to recognize an examination that, on its whole, is felt to be too easy.

So we put a lot of faith in the examiners in

34

ensuring that the proper level of difficulty is included in that examination.

The second item addresses a burden that the industry felt was too excessive with regard to defining the history of examination questions. We put limits on where they can draw these questions from, but I think as the industry gains experience, they'll probably get good at sharing their examination banks to increase efficiency, working together on this. We see an opportunity for a lot of gains in efficiency that way.

But at the same time, you want to make sure that the examination is not predictable to the candidate. So we want to know where the questions come from. This issue basically had to do with the industry feeling that we were asking for an extensive amount of information on the history of each question. We really hadn't intended that. We just wanted to know if it came out of a bank, whether -- has it been seen by the class or not, if it was modified from the bank, what the original question looked like, and if it came from outside the utility, where did it come from.

For instance, a utility may go to a facility elsewhere that has a similar power plant and take the NRC exam that was administered six months before and convert it into their product. Well, if they're going to do that, we want to know that because there's a chance that the

35

candidates may have had access to that old exam at another site. So for that reason, we do want to know the history of where all these questions come from, but we think we've clarified our requirements in that area to demonstrate that it's not that burdensome on the industry.

CHAIRMAN JACKSON: Are you then asking for the same thing?

MR. RICHARDS: Yes. We think it's the same material we've always asked for. It's the material we need to ensure that the questions aren't predictable to the candidates.

CHAIRMAN JACKSON: Whereas in the first area, the revision you've made of NUREG 1021 is actually a relaxation in terms of the restrictions on exam authors.

MR. RICHARDS: It's a relaxation specifically with regard to who can participate, but, again, I think we've inserted some additional safeguards to address that; for example, the sampling plan being written by somebody who was not involved in the instruction of the class at all. That was something we had not spelled out previously.

CHAIRMAN JACKSON: I'm sorry. Go ahead.

COMMISSIONER ROGERS: Just one observation. It's a little off to the side, but I think we ought to keep it in mind. That is the -- we're concerned here about the validity of the examinations and that there not be any

36

opportunity to pass an exam without knowing the material that's appropriate. I think it's well to keep in mind some

thought with respect to the relationship between instruction and examination.

One of the negatives of having people make out the exams that teach is that they will be teaching to the exams. And it isn't so much that they're prepping the students for the exam, that's a problem, but the problem is that other things are left out that might be important that aren't necessarily on the exam.

And so the best quality instruction covers a lot more material than will ever be tested on any one exam and one of the big difficulties in having people who teach also make the exams is if they are participating continuously in this process, they may unconsciously be teaching to the material which they know is on the exam, whether they quite recognize that or not. That's why it's very good to have someone else do the teaching from making out the exam.

MR. RICHARDS: I might add that once somebody becomes involved in developing the examination, one of the requirements is that you are no longer involved in the instruction of the candidates. So typically a utility may start this process as much as 90 days ahead of time and at that point, that person is removed from any involvement with that class.

37

The next bullet talks to the duplication of items from an audit exam. An audit exam is typically an examination that the facility either writes themselves presently or has a contractor write it for them that they give their candidates towards the end of the instruction and just prior to the examination. It's a screening tool typically or a tool that demonstrates where they have weak areas. The examination is intended typically to look just like an NRC exam.

One of our original criteria was that there would be no questions repeated from the audit exam on the examination written by the facility. The industry's comment on that was, well, we, the NRC, don't apply that same standard to our exams right now. If we have a few questions that happen to show up on both examinations, it's the luck of the draw, we're not going to change our test. Their comment was that if the people developing the audit examination and the people developing the facility-developed NRC exam are independent and a few questions happen to be common to both written exams, somewhere through the rules we apply to ourselves, why should they have to come up with more questions at the last minute.

We felt that that was an agreeable comment, up to a limit, and our proposal is to say that's acceptable up to five percent. That's not uncommon. You might say, well,

38

that's the chances of a question showing up on both exams, because one of the sources for building questions is a utility's examination bank. If you happen to go to the same question area, it can happen.

The next comment had to do with facilities who have closed examination banks. Some facilities do not allow candidates the opportunity to study from the examination banks that they maintain. The industry felt that in those cases, the ability to draw questions out of those banks ought to be treated differently.

We agree that that's a valid argument, but we feel that that whole issue is a complex issue. We would have to get into security of those closed banks and how you ensure that the candidates don't have access, and our decision was originally and is now to maintain or to consider all the banks as being open, recognizing that some facilities do control their banks.

We had two commenters who recommended that the facilities be able to use site-specific task lists when defining the contents of the exams. We haven't discussed it in any detail here today, but there is a fairly rigid procedure for building an examination. Part of that procedure is to make sure that you sample across many different areas of knowledge.

We have a document called a Knowledge and

39

Abilities Catalog and it lays out a large number of items that reactor operators, senior reactor operators are required to know in order to do their job. The test items are based on drawing these so-called K&As out of these catalogs. The licensees would like to be able to substitute their own site-specific task lists for those knowledge and ability catalog items, but our conclusion is that on a

wholesale basis, that would be inappropriate, but that on a task-by-task basis, that may be appropriate.

So if there is some specific area of an examination that a utility wants to examine and they would like to substitute that, in a few cases, before it would be required by the typical sampling plan, we would find that acceptable, but that would be discussed in the review with the NRC examiner.

The last comment we received from one of the utilities was that the process did not appear to allow for utilities who did not want to draft their own examinations to ask the NRC to draft those exams for them.

Originally, of course, our intent was to implement this on a mandatory basis. Of course, here today, we're proposing to implement it on a voluntary basis for those utilities who do not want to draft their exams. They would be able to ask us to do it and we would do that consistent with resources. But over the long term, we don't feel that

40

that would be a predictable way to go without knowing how many utilities would want us to draft exams and how many would want to do their own.

It would make the scheduling of resources and the planning of resources very difficult. So we feel it's important in the long term to either have them do it on a mandatory basis or not.

CHAIRMAN JACKSON: And you feel it's not a backfit.

MR. RICHARDS: No, I don't feel that it's a backfit. We talked with the Office of the General Counsel extensively on this issue. The backfit rule, 50.109, the entry conditions discuss what defines a backfit for entering 50.109. Basically, it says if you're going to change the facility in a physical way, if you're going to require a change in the procedures to operate the facility, or require a change in the staffing, then you must require or consider the change to be a backfit.

What we propose to do, if it does not change the physical plant and it does not involve an operating procedure for operating the facility, our examiner standards are written strictly to produce an examination that is really not related to the operation of the facility and it does not impact the facility organization, in that all facilities already have training organizations and they have

41

staff who already evaluate their candidates prior to taking them up for an NRC exam.

COMMISSIONER ROGERS: But it might require them to add more people in that organization.

MR. RICHARDS: Well, there's the legal question of whether you meet the backfit rule, 50.109, and in consulting with OGC, the answer is it does not constitute a backfit under 50.109.

The issue of whether it increases the burden on the utility is a little bit different. I agree that it shifts the burden of providing the examinations to the utility. Our view is that the utility is already paying for that burden. We go with the contractors generally now and have contractors write these examinations, and that bill has passed on directly to the facility who asks for the exam.

This process would allow the facility to go to the same contractors or other contractors and, I think likely for the same amount of money or less, have an exam produced for them. If they feel they have the resources internally to produce the test in a more efficient way, they have that option. They can work cooperative agreements with other utilities to share resources.

Additionally, it provides them the opportunity to have more input into the technical content of the exam on the front end.

42

So we see this as resource-neutral for the utilities and perhaps if they're efficient at it or good at the way they go about it, resulting in a resource reduction for them.

CHAIRMAN JACKSON: Have you actually got that input from NEI or from the industry?

MR. MIRAGLIA: No, we haven't to that degree, Madam Chairman. Commissioner Rogers, you raised the issue. It could be perceived and may be initially and maybe in the long term an imposed imposition of burden. That's why the staff has come to the conclusion that if we do this in a mandatory way, it should either by rule or order, because it

is, and that would put it through the process of proposed rule, comment, and fully expose and indicate what those concerns may or may not be.

So it is that potential and perceived imposition of burden that we're addressing through the proposal of changing the rule in order to make it mandatory. Until such time, we would continue it in a voluntary way.

MR. RICHARDS: The informal feedback we have received from some of the utilities that participated in the pilot process, I think some of the facilities' views on the process depended upon how well they did and the effort they put into it.

But some facilities came out very positive. They

43

felt that it wasn't an overburdensome thing to write the exam. Of course, those were the facilities that generally did a good job. Some of the facilities, it turned out to be somewhat of a struggle. Having gotten through the process, they seemed willing to go along because they recognized that there was that learning curve, but once it was overcome, they saw the opportunity to be more efficient rather than paying for the contractors through us.

There were a few facilities, however, that felt that the burden was significant and it may have impacted the results of the examination and probably felt that they shouldn't have volunteered. But I think as a whole, in talking with the NEI and the industry working group, through the meetings we've had with them, that the feeling is generally positive, that they think they can write these exams, that they're in the training business, they are much more familiar with the plant and the rest of the materials. They should be in a better position to write them more efficiently, and I think, generally, they want to take it on.

CHAIRMAN JACKSON: So OGC agrees that this was not a backfit, even in the procedural -- with respect to operating procedures. That's what you're saying.

MR. RICHARDS: Yes, ma'am. The Commission paper has about three-quarters of a page specifically addressing

44

those aspects. That was written with a heavy input from OGC, and, of course, they concurred on the Commission paper.

CHAIRMAN JACKSON: Why don't you finish.

MR. RICHARDS: The last slide, please, number ten. [Slide.]

MR. RICHARDS: The planning milestones for the future. I might note that in EDO's memorandum of April 12 of this year, sent to the Commission, indicated that we intended to continue to use the pilot process through the end of this calendar year, and we have solicited volunteers to continue that process. So we are doing that.

With the Commission approval, our intent is to issue Revision 8 to the examiner standards. That would provide all the changes that we have considered necessary to date. We would issue that and implement that revision six months after the date at which it's published. It's been our tradition to give the industry six months to acclimate themselves to that revision and to prepare to carry out the examinations in accordance with Revision 8.

Of course, it's a voluntary program at this point. So that would be for those utilities who wanted to volunteer under Revision 8 to write their own exams. We would also go out with a supplemental Generic Letter 95-06, where we would describe the lessons learned from the pilot examination process and formally solicit volunteers to continue to write

45

their exams.

We are also asking the Commission to approve the staff pursuing with rule-making to make writing of examinations by the power facilities mandatory in the future.

That concludes my prepared remarks.

MR. BOGER: In that regard, we would like the Commission to consider this SECY paper as our submittal of a formal rule-making plan. That was not explicit in the paper itself.

CHAIRMAN JACKSON: Has there been unanimous support from headquarters and the regions regarding this initiative?

MR. RICHARDS: It depends on who you want to count as unanimous. I don't think that if we had asked every examiner in the nation if they felt this was the way to go, they would all say yes.

On the other hand, we did have feedback --

CHAIRMAN JACKSON: What is the breakdown? Can you give us a rough idea?

MR. RICHARDS: I think that given the circumstances, we feel that -- we entered into this process change because of the resource issue and I think basically with the resource issue being considered, the examiners recognized the changes. They largely, I would say 90

46

percent of the people that participated in the pilot programs would say that the examinations that were administered after our involvement were as effective as the ones we administered.

There are feedback forms that were filled out by examiners that say that the process was more effective or the examination was harder than what we would have typically written. But I think the large majority of the feedback was that the new process is as effective.

I don't think anyone was dissatisfied with the old way of writing exams. We thought we were doing a good job and we were effective and sometimes change is hard. But I think from the feedback forms, probably 80 to 90 percent of the people felt that this new process was as effective, as efficient or more efficient, and, in some cases, more demanding.

CHAIRMAN JACKSON: Your paper states that the revised process could be implemented at all power reactor facilities with existing NRC resources allocated to the operator licensing program and then it further states that an initial resource investment would have to be made to train additional NRC employees as examiners.

Have you quantified what that additional investment would be?

MR. RICHARDS: Right now, the budget plan I think

47

is still in the draft stage and has not been sent to the Commission, is looking at, for fiscal year '97, an additional seven FTE that would be provided in the way of inspection support out of headquarters to allow additional inspectors in the region to be qualified as examiners.

Our intent here is to increase the examiner pool in the regions to provide flexibility for the scheduling of exams. It does not require more resources to actually carry out the program. But because we've always depended upon our contractors to be our surge tank of resources for the highs and lows and exam demands, we recognize that that surge tank is no longer going to be available. So in order to have that surge tank of examiners, we have to have those in the regions.

In order to have those people in the regions, we have to train up more people. We have to be in a better position to have examiners move on to new jobs or leave the agency. So we have to staff up more people and there are seven FTE, I think, in the draft budget in '97 and then an additional five beyond that in '98.

But we see that as a short-term investment until we staff up to a higher level and then we anticipate that additional support dropping off and returning to a maintenance level of examiners.

MR. MIRAGLIA: It's basically a transition from

48

contractors, Madam Chairman, to in-house capabilities and talent. As Stu has indicated, the contractors were sort of the surge tank.

Operator examiners in the region have been dual-qualified in order to be an examiner. There is a qualification program. So it takes time to build up those kinds of capabilities within the staff and the program. So what we have is a transition to get that in-house capability and reliance on contractors decreased in the transitional kind of way, and that's what that --

CHAIRMAN JACKSON: So you're going to try to be revenue-neutral. You talk about savings of three to four million in contractor funds.

MR. MIRAGLIA: In terms of the contractors, yes. The contractor numbers will go down and the staff capabilities in terms of number of examiners and inspectors qualified to give operating exams would go up.

MR. MILHOAN: That will be addressed as part of the budget process, assuming what the Commission would reflect -- the Commission decision in the budget review process, whatever that decision would be.

CHAIRMAN JACKSON: Would sufficient resources then

be available in-house on a moment's notice if we had to assess a licensee's program if we thought it was perhaps deficient?

49

MR. MIRAGLIA: I think the answer to that questions is yes, because consistent with what we do at re-qual, we have an inspection module, and I think our expectations are, as Stu explained, the controls in the NRC involvement in the front end. We also recognized that while we're in this voluntary mode, we're going to have to try to respond to utilities' requests for exams and the question of -- depending upon availability of resources, is how responsive could they be.

They need to give enough notice such that we can plan and utilize resources perhaps from headquarters or other regions to support those kinds of things. So it's a planning and resource application issue in that kind of context.

CHAIRMAN JACKSON: Do you imagine any role or does INPO accreditation of training programs play any role in any of this?

MR. MIRAGLIA: I would say that we wouldn't expect any changes to that program, because our goal and objective is to make this exam as effective as if we were doing it. That's not to say that given the change, they might look at things differently, but we have not had any indication of that at this point in time, nor would it necessarily be expected.

MR. BOGER: INPO has, likewise, created a task

50

force, if you will, to take a look at the issue. So they might be able to respond to it. To date, they haven't come forth in any way to say that they would like to volunteer to sponsor a program or anything like that.

CHAIRMAN JACKSON: We were talking a long time about instructors being involved in making up exams and there are two sides to it. One may be instructors teaching to an exam and that's a clear vulnerability. Or the converse, that if there's too much involvement, that the exams could too much reflect what an instructor would teach.

But, again, I ask you, the paper was very thin on pros and cons. Are there any vulnerabilities that the Commission needs to know about today?

MR. MIRAGLIA: I think that Stu tried to address those vulnerabilities in terms of having instructors that were involved in the process. We probably -- it could be perceived as a relaxation from a going-in position, as exposed -- a 95-08 Generic Letter, but there was countervailing provisions to try to limit those kinds of vulnerabilities. And I think the key is the NRC involvement in the review of the process.

MR. BOGER: And certainly each candidate is receiving an operating test from an NRC examiner. So that way, we will have --

CHAIRMAN JACKSON: Repeat that again.

51

MR. BOGER: Each candidate will receive an operating test from an NRC examiner. So there will be one-on-one contact with each candidate and an NRC examiner, both in the simulator setting and the plant walk-through.

MR. MIRAGLIA: That might be worth emphasizing and maybe it was inferred and maybe not said explicitly. As Stu mentioned, when we first conceived of the program, the operating test would also be administered with kind of a parallel grading line examiner. But the way the program was implemented, it's just a written piece, with the NRC involvement at the front end that's administered. Then they prepare the operating exam, but we administer everything else and do the walk-down. So there is independent eyeball-to-eyeball contact by an NRC examiner with each candidate, as well. So that's a difference.

COMMISSIONER ROGERS: I think this has been a very interesting presentation and I feel quite comfortable with the fact that this will lead to equally demanding tests of operators, and I don't really see it as offering too much in the way of -- or anything that I can see in the way of a diminution of safety.

Nevertheless, there is a public perception question that I think has to be addressed here and I think we have to think very hard and take whatever steps we can to try to make clear to anyone who is concerned and might be

52

concerned about a diminution in safety as a result of this

that we really have gotten on top of it and do not believe that there is any diminution in safety, if that is, in fact, the case.

So I think some real thought has to be given to how to present this to the public, because I can see it as a sensitive issue.

MR. MILHOAN: I understand.

CHAIRMAN JACKSON: Commissioner Dicus.

COMMISSIONER DICUS: No questions.

CHAIRMAN JACKSON: I'd like to thank you for your briefing of the Commission. You've presented a lot of information that indicates that the staff is concerned with changes to the operating licensing program and has carefully measured the pilot program to assess the impact.

All the changes sound positive. I just will say, and this is a personal comment, I, frankly, did find the SECY paper thin with respect to, in a sense, providing that comfort to the public in the sense of truly laying out not only the pros and the pros for the industry, but what the vulnerabilities are and laying out how those vulnerabilities are specifically addressed in the proposed changes or what remains in the NUREG 1021.

I think that that would have been helpful to the Commission not only in terms of the evidentiary record on

53

which to ask the Commission to make a decision, but also addresses the public perception piece. So I think that there are questions that have been raised or that kind of a balance that I think, as part of a submittal for the record, that you need to make, because the Commission wants to ensure that all positive and negative aspects of the program have been considered and that they have been fully understood before you take steps to permanently change the operator licensing program and that the appropriate controls have been put into place relative to the changes in the NUREG.

It's clear that you're aware of the sensitive nature and the Commission is particularly aware of the sensitive nature of changing a process, as important as the initial licensing. I know we do -- we have changed already the requalifications and we're talking about the control on operators. So, again, it's important that the Commission fully understand the expected benefits and be able to weigh them against any vulnerabilities of a change like this and understanding the extent of the industry sign-off in this regard.

I think the Commission, even in spite of your comment, Mr. Boger, would benefit from a more complete discussion of whether a rule change is appropriate and looking again at the question of the backfit. And since

54

you're talking about a proposed rule-making, I think you owe it to the Commission to present something that specifically addresses that.

Unless my fellow Commissioners have any further comments, we're adjourned.

[Whereupon, at 11:17 a.m., the briefing was adjourned.]