NUCLEAR REGULATORY COMMISSION

ORIGINAL

COMMISSION MEETING

In the Matter of: PUBLIC MEETING

BRIEFING ON QUALITY ASSURANCE - SECY-82-352

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BRIEFING ON QUALITY ASSURANCE - SECY-82-352

PUBLIC MEETING

Nuclear Regulatory Commission

Room 1130

1717 H Street, N. W.

Washington, D. C.

Wednesday, September 29, 1982

The Commission convened, pursuant to notice, at 3:05 p.m.

BEFORE:

NUNZIO PALLADINO, Chairman of the Commission
VICTOR GILINSKY, Commissioner
JOHN AHEARNE, Commissioner
THOMAS ROBERTS, Commissioner
JAMES ASSELSTINE, Commissioner

STAFF AND PRESENTERS SEATED AT COMMISSION TABLE:

S. CHILK
R. PARRISH
G. CUNNINGHAM
T. HARPSTER
W. DIRCKS
E. JORDAN
R. VOLLMER
J. ZERBE

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P R O C E E D I N G S

CHAIRMAN PALLADINO: The meeting will please come to order.

The subject of today's meeting is a briefing on quality assurance. The subject of quality assurance at nuclear power plants is one in which the Commission has had great interest and one in which I have been particularly interested since joining the Commission.

I believe that many of the quality assurance problems that some utilities have faced have been the result of the lack of attention paid to quality assurance by the management organizations. We have seen the results of the lack of attention very vividly in certain plants under construction. Improvements must be made both by industry and the NRC to correct inadequacies on the approach to quality assurance.

The staff has forwarded to the Commission a number of initiatives they believe they can help bring about and bring about improvements as a result and they are here to discuss these initiatives.

In the interest of time I have asked the EDO if he could summarize the position of the staff rather than go through all the slides and using only those slides that you think are absolutely necessary and see if it can't be done maybe in about 10 or at the most 15

minutes. I would ask the indulgence of the Commission to withhold questions until that is done. I would also ask OPE to be prepared to give a five or seven minute summary of their position so that we can get to the questions.

Are there any comments from my fellow Commissoners?

COMMISSIONER AHEARNE: I have one.

CHAIRMAN PALLADINO: Sure.

COMMISSIONER AHEARNE: In this short summary I would hope that he could start by defining what he means by quality assurance and perhaps contrast it with what he means by quality control.

COMMISSIONER GILINSKY: If I can add one more point.

(Laughter.)

COMMISSIONER GILINSKY: It doesn't count because ---

CHAIRMAN PALLADINO: I know. They haven't started.

(Laughter.)

COMMISSIONER AHEARNE: It may be they will never get started.

(Laughter.)

COMMISSIONER GILINSKY: There is a statement

somewhere in the presentation about the responsibility is the licensee's and so on. I think in a certain sense I agree with that, but I would like a clear statement of what we think is our responsibility and what we think is the licensee's responsibility.

CHAIRMAN PALLADINO: Why don't you take those under consideration, but if they don't cover it to the extent you would like why don't we come back with questions on those points.

Any other comments, Jim or Tom?

(No response.)

CHAIRMAN PALLADINO: Why don't you proceed, Bill.

MR. DIRCKS: The first question, I guess I could refer to Enclosure 1 to the paper. It uses a definition in Appendix B. But I think the short answer is quality assurance, as we define it in our program, is the attempt we have to assure ourselves that the plant essentially is constructed in the manner that the licensee has proposed that it be constructed in.

Now in terms of what quality assurance means in a more general sense, it really is a program in turn carried out by the licensee to assure that the structures, systems and components essentially are constructed in a satisfactory manner and will perform in

a satisfactory manner.

Quality assurance includes various other items of which quality control is one. I think quality control is the first-line inspection to assure that a particular job has been performed right. Quality assurance is the total program to ensure that the proper methodology and the proper procedures and the proper controls have been exercised over the construction of a project.

That is a rambling way of how I look at it. Quality control is the first-line at the fabrication stage. Quality assurance is the overall program of management and quality assurance as we use it is our general program to assure that the licensees have satisfactory quality assurance programs.

I don't know if somebody else may want to jump in on that.

MR. VOLLMER: Could I try one. My shorthand, Commissioner Ahearne, would be that quality assurance is the procedural and managerial activities necessary to provide a system to see assure and verify that the specifications which are important to quality in a plant have been met. The quality control would be the measurement or verification that specific specification requirements had been met. Again, quality assurance

being procedural and managerial and the quality control the act and the process of measuring and verifying that the specifications have been met. So quality control is sort of a subset of the quality assurance activity.

CHAIRMAN PALLADINO: Why don't we accept that for the time being and then you can probe further if you have further questions.

MR. DIRCKS: Do you want us to take a crack at the second question?

COMMISSIONER GILINSKY: No, you can just cover it somewhere along the way. That is fine with me as long as we get to it.

(Slide presentation.)

MR. DIRCKS: I don't know whether my time is ticking now or not, but let me briefly summarize. I think what we have done in this paper has been to essentially pull together in one document a series of initiatives. Some of them have been ongoing, some of them have been going on for some time, some have been developed at a rather late stage and others are in the formulation stage.

We call them a series of initiatives designed to essentially fulfill what we regard as our agency responsibility to assure ourselves or to provide ourselves with some confidence that our regulatory

program is being followed by the licensees and at the same time we have kept one eye on the requirements being developed in the Congress in the authorization bill. We believe the initiatives we have proposed here will essentially meet not only our own programmatic needs but at the same time fulfill the requirements that we think will be imposed upon the agency as a result of the passage of the authorization act.

What we had intended to do was to run through the series of initiatives and give you a brief description of them and demonstrate to the Commission the various schedules that we have been on. That was in the series of slides that we provided to the Commission. Essentially many of those initiatives you saw the last time we were here. I think we have added a few and polished up all of them I hope to make them more clear and to demonstrate how they fit in the totality of the package.

We again have put this thing together with one eye not only on our responsibilities to assure ourselves that our regulatory requirements are being followed, but at the same time we wanted to assure ourselves that whatever we did in this package of proposals would not relieve the burden on the licensee.

As we mentioned the last time, and I think the

Commission agreed, the responsibility to assure the safe construction of those plants, the satisfactory construction of those plants lies with the licensees. There is now way that we can regulate in quality. We have to rely on their initiatives and their management controls to bring off a soundly constructed plant.

We did refer in our paper to the series of actions that INPO was undertaking and we are building our program to some extent around the hope and promise that INPO will succeed in its efforts. I see Admiral Wilkinson is sitting in the first row there and if the question comes up he can certainly describe what INPO is doing far better than we can in the brief summary sheet that we have provided to the Commission.

The initiatives we have are both short term dealing with the NTOL plants, mid-term in dealing with some of the actions that we want to pursue in the development of the program and we have a provision in there for long-term review which I think has the basic elements contained in the proposed authorization bill.

That is a brief overview of what we have provided the Commission. If we went any deeper I would exhaust more than 50 minutes I think in reviewing item by item the series of initiatives we have proposed to the Commission.

COMMISSIONER GILINSKY: Could I ask, do you not plan to go over these items?

CHAIRMAN PALLADINO: I had asked for a short presentation because I thought if we went over the items we would never get to the questions.

COMMISSIONER GILINSKY: The questions would presumably be on the items.

CHAIRMAN PALLADINO: Oh, the questions can be on anything in the whole QA program.

Unless you think otherwise, I was going to ask OPE to give a summary of their comments on the proposal and then open it up for questions.

MR. ZERBE: First off, OPE reviewed the SECY paper and we certainly believe the initiatives identified by the staff are major steps forward as the NRC comes to grips with the quality assurance area.

CHAIRMAN PALLADINO: Jack, could you speak more into the mike, please.

MR. ZERBE: I would propose to just review the summary of our comments of what we recommend that the Commission consider on the subject.

One is we would propose that they consider publishing a policy statement which encompasses the following items: the importance that the Commission still puts on the area of quality assurance; an

indication of the Commission's concurrence with or modifications of the staff initiatives as approved within the authority of the EDO; and an indication of the Commission's approval of the staff to pursue revisions in the NRC statutory authority to implement a system such as being used by the FAA to extend the quality assurance area.

The next item is a number of questions have come up about the organizational realignment. The staff has gone quite far in coordinating and combining all of the various QA activities in the staff. However, there still are several areas that seem to be separate and only come up to the EDO where they go together and there could be some question about whether it is not desirable to have a nice clean line for all of the QA functions.

COMMISSIONER AHEARNE: Jack, is that a low-key way of say that you have a position that there should be such an activity?

MR. ZERBE: Well, you know, in a utopian society why an organization really doesn't matter. You can get the job done no matter what it is, and with real people it could possibly be enhanced if you ---

COMMISSIONER AHEARNE: Where do you place that kind of an organization?

MR. ZERBE: Pardon me?

COMMISSIONER AHEARNE: Is this where that utopia found?

(Laughter.)

MR. ZERBE: No, no, its real people. So I would say that I guess we would feel that it might be better to put in a straight line for most of the activities that are in the outfit. There might be reasons that that can't be done that we are not aware of.

COMMISSIONER GILINSKY: Since John has broken the ice on asking questions ---

(Laughter.)

COMMISSIONER GILINSKY: --- can I take you back one item.

MR. ZERBE: Yes.

COMMISSIONER GILINSKY: You urged a policy statement on the Commission. Is this something that really has an impact? What would a policy statement accomplish?

MR. ZERBE: Well, I think it would at least express to the people outside of the NRC that the Commissioners are 100 percent behind this emphasis on quality. Certainly people in the industry are going in that direction and I think it would be appropriate that what has happened so far as a result of the SECY paper here is that the EDO has taken a lot of steps and he has

put them into effect.

Now I think it would be appropriate that you people, even though maybe it is not needed, that you people say you are in favor of those steps so that it would give emphasis to the outside world, you know, that you continue to support the importance of QA.

Relative to the comments on INPO here we would propose, and I think that the staff plans to do this, that when INPO comes up with their plan on quality assurance that there be a memorandum of understanding between INPO and NRC concerning that so there is no misunderstanding.

COMMISSIONER GILINSKY: Are we clear on who is doing what?

MR. ZERBE: Yes. We make sure that we know what they are doing relative to what we are doing and vice versa.

COMMISSIONER GILINSKY: Do you have any thoughts about where the line ought to be drawn and what sort of things are properly in our camp and what sort of things are properly in INPO's camp?

MR. ZERBE: No, I don't have any thoughts on that right now.

Relative to these seminars that the staff was proposing for senior management from the utilities, we

thought it appropriate that you consider having a Commissioner or Commissioners attend those, and I would add to that maybe the top NRC operating manager in the QA area should probably attend, too. If you are going to have those people in you should show that you have an interest, too.

Relative to the long-term program, which we feel is important that the staff have that there, there are some things that we thought might be added that are identified they weren't. For instance, one could get the impression that all of the QA problems, and maybe most of them are, are only in the area of enforcement, but while one is looking at the long-term situation in QA they thought it appropriate that we also address licensing, research and standards. There are very likely things in those areas that could stand some polishing that haven't been identified.

The next items was to cover and consider the contractual aspects of the procurement process. In a recent ANS conference on quality they identified that that is an important area. Through the contract that a licensee has with a vendor he passes on QA requirements and whatever you pass on is what you are going to get. So attention should be given to that aspect of the whole QA activity.

Again I mentioned in the SECY paper that you are going to get a lot of feedback on lessons learned from reviewing all the lessons that are learned and we feel that should be factored into the ANSI standards if appropriate and I believe there is an intent by the staff to do that.

Then, lastly, on the total program in the schedule that is in the SECY paper, and it extends over several fiscal years, and we thought it was appropriate, and I suspect that maybe the staff has this in mind, to issue periodic progress reports on how things are going towards meeting those goals that are identified there just so everybody doesn't lose track of it as you move downstream.

CHAIRMAN PALLADINO: Well, I am sure the Commission has a number of questions. I have questions in four categories: general, reorganization, designated representatives and long-term review. Maybe I might start with a couple of my general questions and maybe one question on reorganization. Then I am sure others will have other questions as well.

Under general I was interested in knowing to what extent you had industry input on this program and whether you have industry comments that have helped you or industry comments that you think we ought to seek.

MR. DIRCKS: I don't think we have any formal industry input into this proposal. I think this has been generated principally from within the staff. I think we have had probably contacts by the industry in certain areas and I would have to let others describe what directions those comments were going.

I personally have had several meetings with Dennis Wilkinson on their efforts as well as you and that has been my principal input from what INPO is doing, but I haven't had any comment on this particular package of initiatives.

COMMISSIONER AHEARNE: Bill, should I interpret that those meetings, were those ones in which you were trying to understand what INPO was doing or were they ones in which you tried to keep INPO abreast of what you were proposing?

MR. DIRCKS: I think it is the former, trying to understand what they were doing.

Ed Jordan might want to talk about it.

MR. JORDAN: We have had discussions with INPO and with individuals from industry about the various initiatives which I am sure helped form the way they actually came out, but there was no formal comment, not a transmittal or a package requesting a formal response.

COMMISSIONER GILINSKY: Could I ask you, is a

fundamental assumption here that our requirements are basically sound and there is sufficient guidance on how to carry them out or what is needed is more attention?

MR. JORDAN: Up to the long-term review we were making that assumption and I personally believe that, that essentially the guidance is there and it is sound. Whether it is as good as it can be, I don't think it is. So it would be feeding the lessons we have learned out of this concentrated effort over the next year back into the standards.

COMMISSIONER GILINSKY: Is that the sense you get from the people that you deal with in the industry, that they feel, small differences aside, that the requirements are basically sound, because one hears a lot of complaints about the effort in carrying these requirements?

MR. JORDAN: We are feeding back the industry comments there that the requirements are wide and deep and oftentimes confusing in terms of what applies to a particular case and how one should interpret the requirement. So clarity can be lent in that kind of situation.

MR. DIRCKS: You know, one test, and you might get into this a little later on, is when INPO developed their criteria on which to base their evaluations of

quality about these plants, one thing we did get into in one meeting was did these criteria vary greatly from what we were requiring, because if industry and INPO generated a whole series of requirements and criteria completely away, going in another direction from our requirements, then we all should step back and worry a bit. Maybe we are asking for too much or maybe not the right items. But I think if you look at the criteria that have been developed, and Dennis could explain them later on, I don't think they have gone off too much in a different direction from what we are asking for.

CHAIRMAN PALLADINO: Well, I was thinking of the fact that we seem to be imposing a number of requirements that I think are going to be rather costly, and I am not saying that we shouldn't impose them, but we might get some enlightenment by discussion with industry people, and I was wondering to what extent you had gotten such enlightenment?

MR. DIRCKS: That might be the next step. If you talk about a policy paper or a policy statement, you might want to send it out for comment to see the reaction to it.

CHAIRMAN PALLADINO: Well, a related question. Some of this looks to me like significant backfitting and I think one place in your slides you

even used the word "backfitting."

COMMISSIONER GILINSKY: He said they weren't backfitting.

CHAIRMAN PALLADINO: I know, but I used it.

(Laughter.)

CHAIRMAN PALLADINO: My question is did this proposal or this series of initiatives go through the CRGR and, if not, why not?

MR. DIRCKS: Well, CRGR is an institution that I use to advise me on certain areas. I don't use it formally on everything. I certainly discuss these matters with my Deputy, Vic Stello, who has a relationship to the CRGR.

(Laughter.)

MR. DIRCKS: I really didn't look on these initiatives as formal regulatory requirements in the sense that some of the other requirements that the CRGR looks at.

CHAIRMAN PALLADINO: Yes, I agree, not everyone is in the same category.

MR. DIRCKS: I looked on these are more of an approach to a problem and to deal with reinforcing some of the gaps that we have had in our programs.

COMMISSIONER ROBERTS: Excuse me. This designated representative analogous to the system

employed by the FAA, that is certainly a potential regulation.

MR. DIRCKS: Now all that is in this initiative is an indication it is something we would like to take a look at. It certainly doesn't commit us to doing that.

COMMISSIONER GILINSKY: I thought you were asking for a green light to draft the issue.

MR. DIRCKS: No, I think it is more of a green light to get some more answers to more questions that are going to be developed. We are not proposing this as a let's go and do it type of thing, but let's gain more information.

COMMISSIONER ROBERTS: That is not the way I read it from Jack's paper. Sorry, different interpretation.

MR. DIRCKS: Well, it is. My view is that it is.

MR. ZERBE: We recognized that there was going to be a separate paper written on this subject. You know, there are some certain aspects of that approach that we might not be particularly careful, you know, but there was going to be another round of that through this separate paper.

MR. DIRCKS: I think what we are trying to do

is gather up a series of things here to get a reaction from the Commission to see whether we should pursue them. The FAA approach was ---

COMMISSIONER AHEARNE: Can I interrupt you just a moment?

MR. DIRCKS: Yes.

COMMISSIONER AHEARNE: Isn't it correct that the paper you sent up said here are a list of things I have already done for your information, plus here is something we are asking the Commission to act on, and that action is to tell you that, yes, you can look further into the designated representative?

MR. DIRCKS: Yes, right.

CHAIRMAN PALLADINO: Well, since a number of these items have been done and you are asking for actions such as independent design reviews, how have these been forwarded or imposed on the licensees, by letter or what?

MR. DIRCKS: There is a series of things. I think the NTOL area and then others. Let me ask Dick to go into that, Dick Vollmer.

COMMISSIONER GILINSKY: Could you just say what has been done and what there is to do?

MR. DIRCKS: In fact, there is a slide you may want to refer to.

COMMISSIONER GILINSKY: Well, we got denied the slide.

(Laughter.)

CHAIRMAN PALLADINO: No, I didn't deny the slides. I just tried to limit it to see if you could gives us a summary in 10 minutes.

MR. VOLLMER: Well, on slide 9, "Measures At Near-Term Operating License Facilities," we have asked licensees for their self-evaluations. Again, I think at the last committee meeting it was characterized as being a mechanism for getting the utility to attest to the quality of design and construction of his plant and to state that it is in accordance with the application. Whereas before that I think that burden was taken on more by the staff than the utility. It indicated we were looking for a mangement official, a CEO or whatever, to certify that the plant design and construction was in accordance with the application.

We have held so far NTOL meetings with applicants wherein they gave us a document and a discussion about why they felt that the management controls that they applied, the qualtity assurance and the quality control, was adequate to meet the Commission's regulations and assure that the facility was designed and constructed in accordance with the

application.

COMMISSIONER GILINSKY: Now is this a useful process?

MR. VOLLMER: Well, it started out to be a very useful process, but I think as it went on and more people understood perhaps what we wanted to hear and it became somewhat repetitious ---

COMMISSIONER GILINSKY: I will tell you why I ask. We have had management from some of the places that we have had the most problems with come in here and tell us that things were really pretty good. This is useful if it leads to some rethinking and people addressing their problems.

MR. VOLLMER: The regions were involved. We were aware of design problems that they had and we were aware of construction and implimentation problems from the regions. So we did probe these things at the meeting to try to get a feeling if they had taken good mangement response at all levels within the utility organization to deal with these. So it was a perception that we would have if they were on top of the QA initiatives.

COMMISSIONER AHEARNE: When you say that you have asked them to do a self-evaluation, was this in any way a structured evaluation or was it more a request to

them do an evaluation and then come back in and tell us whether or not you agree the plant was built correctly?

MR. VOLLMER: I think it is basically the latter, that we asked them to come in and try to give us the utility's rationale for feeling that the plant was designed and constructed correctly.

COMMISSIONER AHEARNE: I would guess that if I contrast that with at least what I have seen of the INPO self-evaluation, which is a much more structured requirement that the utility go through very specific steps and justify a number of items, I would offhand guess that this is not going to produce much in the way of useful input.

MR. DIRCKS: I think though you have got to look where we were before we started any of this, and I think if there was one complaint we heard was there was a lack of managment attention to the QA program. Many a firm would delegate this off to a contractor or to a supplier or to an architect engineer. There was a gap between the attention that the Chief Executive Officer was giving to the problem and what was actually happening out there.

This in itself probably will not be the answer to anything except it is a step to try to get the top management of the firm to commit themselves to the

problem. In and of itself I think it is a very small step. Again, if we are saying that there is a gap between what management should be doing and what they are actually doing, maybe this is an attempt to drag them into this.

COMMISSIONER AHEARNE: What have you done with the products? It says 11 were completed this month. Were there any products produced previously several months ago that you could look at and you could say what you have done them?

MR. VOLLMER: All of the products, at least on the plants, Susquehanna, San Onofre, La Salle and a couple of others have been reviewed by the staff, both by ourselves and the regions, NRR, the regions and I&E, and I think the conclusions were reflected in our safety evalation reports for those facilities. For whatever reasons that we had at the time, we feel that the plants have been adequately managed by the utility from a QA point of view in design and construction.

Now in these meetings it was clear from the beginning that few, if any, of the licensees had put any effort into looking at the procedural or technical design aspects. They all had QA programs and we know what the requirements are there, but getting into when we asked a question have you, yourself, done any design

verification or has all of your design verification been given to the cognizance of your contractors, your NSSS and your A/E, the answers were I think almost universally yes. That was their job and we gave them that delegated authority and we looked at it no further.

We felt that based on the problems that we had seen with certain plants that we were uncomfortable that the design authority was delegated without any independent look at it and I think from that grew our request to a number of plants that we feel we need some additional look, an independent look, if you will, by somebody who was technically qualified and had no particular dealings with the project itself, that would take a part of it and say we have looked at it procedurally, we have looked at the interfaces and we looked at it technically, and from what we have looked at we think the design process is acceptable, a third-party look, if you will.

We have had seven who have agreed to do third-party looks. We have had three utilities who have come in with third-party looks. They proposed them at the time of the management meeting. Two of those I would characterize as being independent design reviews of a selected portion of the facility.

CHAIRMAN PALLADINO: Incidentally, is that

what you mean by independent design review, a review of one of the selected systems?

MR. VOLLMER: I would characterize it in the broadest sense as a review of the procedural and technical adequacy of the design process by picking out a design example and looking at it. There have been some other things proposed. In one particular plant the licensee has proposed doing something which I would not characterize as an independent design review. In my own view, this particular utility we think has had a good record of quality assurance. He has a number of nuclear plants and it is my view we probably won't ask him to do any more than what he is proposing to do.

CHAIRMAN PALLADINO: Dick, how is this laid on the utility? Do they get a letter saying do a self-evaluation according to this and if you meet certain criteria you don't have to do an independent design review or if you don't pass you will have to do an independent design review? How is this all set forth to the utilities? Is it by letter or by order?

MR. VOLLMER: It is usually in something which summarizes the management meeting that we had with them. After the management meeting, as I indicated, which is usually attended by the NRR Division Directors, the NRR Office Director and top I&E regional

representatives ---

CHAIRMAN PALLADINO: But is there a formal follow-up?

MR. VOLLMER: There is a follow-up. Usually after that meeting we get down to discuss whether or not we think they have presented us in this package with enough information to gives us assurance of the design and construction process. Usually what is lacking is design. So we discuss how can we get more assurance that the design process is procedurally and technically adequate? So we get into, you know, what are you going to give us, if you will, and if you call that twisting their air, I guess then we twisted their arm.

CHAIRMAN PALLADINO: Really I am not finding fault with the initiatives. I am concerned about how we get them forth, are they requirements and are they set forth in a formal manner?

MR. VOLLMER: They are indeed set forth in formal manner. As a result of this meeting we then send them a letter usually in the context as a follow-up to that meeting saying we understand that there will be an independent design review of this particular area which we usually discuss, or are you going to propose one, and they will select ---

COMMISSIONER GILINSKY: At what level in our

organization is that done?

MR. VOLLMER: At Mr. Denton's level. He has been involved I think in all of these management meetings, perhaps with the exception of one. Sometimes at the meeting they come in and say for these reasons here is a design aspect which contained a lot of interfaces or there was a big design change made during the life of the project and this is an area which might have the highest potential to have design deficiencies. We will select that and take a look at it in the design process.

In some cases they say we will go on back and think about it, think about a contractor to do our work and then they would send in a proposal to us. We would review that, I&E and the regions would see it and we would write back our acceptance of that proposal. Then they would do the work, submit the review to us and it would be written up in the SER's. Now it has run quite a broad variety in terms of scope and depth of the reviews. I think the most detailed has been San Onofre and there have been some down to a rather modest selection of one very local design which covered interfaces dealing with the NSSS vendor and the architect engineer, but still adequate to show that interfaces, procedural and technical matters were dealt

with appropriately.

Again also whoever does this independent design review has been asked by the utility to make the statement that it is their view that the design process does meet the requirements of the application and things like that, again a third-party review, if you will.

CHAIRMAN PALLADINO: Well, I guess what I really was seeking is that there is some assurance that we were setting forth these requirements in a formal way and that we knew that they were set forth and the utility knew what it was that it was supposed to do. I was a little unsure on the independent design review because it is not clear to me that they were all required to do it and I am not clear on what the criteria are for when you do it and when you don't do it and how deeply you should go.

COMMISSIONER GILINSKY: Well, it sounds like they are exercising their judgment and that the senior people are deciding on the basis of the facts in the case.

MR. DIRCKS: I think design QA is already required under their regulations. What you are doing is trying to assure that they have met the regulations. Is that right?

MR. VOLLMER: Design QA is indeed required.

Whether or not the design process has met the requirements in terms of interface control and procedural controls is part of this exercise. Indeed, it is done and it has run the gamut. It is decided on a case-by-case basis and I guess it is decided and depends on our judgment of how we view the activities involvement in that, the experience with the NSSS and the A/E and so on. Is truly nothing that I could pull out a document and say this is what we are handing them all and go through it that way.

CHAIRMAN PALLADINO: No, but you are handing them something.

MR. VOLLMER: We do document the precise agreements and they come in with a precise program plan and we do acknowledge our agreement with that scope of work, the procedural controls that they wish to apply to that and that is all part of the record, yes, sir.

CHAIRMAN PALLADINO: Well, that covers my general questions. Maybe I ought to allow somebody else to question and I will piggyback on their questions with regard to other topics.

Vic, do you have specific questions you would like to address?

COMMISSIONER GILINSKY: Could you tell us how we assure ourselves in the course of reviewing a license

application that a utility has a satisfactory quality assurance program and why do we need to do more than our standard review?

MR. VOLLMER: I would have to speak to the programmatic aspects and then turn it over to I&E for the implementation aspects.

The programmatic review is not particularly sophisticated in that what we are looking for is a licensee commitment and explanation of how he will from a management point of view and from a procedural and organizational point of view implement the 18 criteria and how he will implement the industry standards which are subsets of the 18 criteria.

COMMISSIONER GILINSKY: And this is at what point?

MR. VOLLMER: This is at the application review on a CP or an OL. So we meet with their QA people and their licensing people. We read their commitments, their response, if you will, to the requirements of the standard review plan.

COMMISSIONER GILINSKY: Let's see, if I may interrupt you, at the OL stage they would have an organization in place presumably.

MR. VOLLMER: Well, yes. It depends. At the OL stage they have a different type of organization

because at the OL stage the licensee is responsible in large part for design, construction, operation and the whole bit. At the CP stage they usually delegate to the architect/engineer and NSSS the activities of dealing with designing and building the plant. So at the OL stage really the licensee is responsible for more activities under Appendix B because any modification they made and many maintenance that is safety related all would be under Appendix B requirements.

So again at the application stage we review how he will carry out these activities and what he has committed to in terms of regulatory guides and ANSI standards which are endorsed by those. At that point in time we have a program document which I&E then would look at to see that the implementing procedures at the facility either at operation or construction carry out the promises made by that program document.

COMMISSIONER GILINSKY: But somewhere that process broke down, and it seems to me if we understood better where it broke down we would understand better how to fix it up.

MR. VOLLMER: It is my view that the breakdown occurs primarily with the actual carrying out of the procedures that are developed based on the program document. In other words, there is a program document

and then you go out to a site and there is a QA manual that is rather large and voluminous but contains procedures telling how each work operation should be conducted, what the inspection points are, what the quality checks are and so on.

I think it is at that point that the lack of carrying out those procedural aspects is in large part where the breakdowns have occurred.

COMMISSIONER GILINSKY: But somehow we didn't detect the fact that in carrying out the system wasn't as good as it was supposed to be.

MR. VOLLMER: I don't like to pass the back, but that is not in my area here.

(Laughter.)

COMMISSIONER AHEARNE: You are saying as far as the NRR review -- (Simulaneous conversations - Inaudible).

COMMISSIONER GILINSKY: You don't have to blame it on anyone because there is enough blame for everybody here, and on this side of the table as well, but I think we need to understand.

MR. VOLLMER: I think if you look at the commitments that they have in the licensing documents, and I don't think, even looking back in retrospect, and we have had some studies and the Sandia study and so on,

that we can fault what they have committed to do, but doing it has been another thing.

COMMISSIONER GILINSKY: But still somehow they didn't carry away a sense of what they were supposed to do or a commitment to it or we didn't impart that. Something wasn't working.

MR. VOLLMER: It could be. Perhaps in some cases it was a paper exercise, that could be, without real commitment by the licensee.

MR. DIRCKS: I think you have hit on the problem. First of all, I think the difficulty to understand is why the management of the corporations have not been concerned about the quality of the workmanship they are getting in the plant. The second problem was did we have an adequate program to pick up where those deficiencies were occurring?

The difficulty is if you have a management that is overwhelmed by other priorities and is giving second shrift to the QA problem. As I said at the beginning, it is very difficult to regulate in good motivations.

COMMISSIONER GILINSKY: Well, I agree with that up to a point, and I am not one to let these guys get off the hook. But at the same time if we were standing there and saying, wait a minute, you don't get

by unless you have got a better program ---

COMMISSIONER AHEARNE: I think his description that the other parties were interfering doesn't just apply to the licensee.

COMMISSIONER ASSELSTINE: I think that is true.

COMMISSIONER GILINSKY: Well, what I am getting at here is the problem that we haven't been enforcing what we should be enforcing; in other words, we are looking for all these initiatives and seminars and talking to labor unions and a lot of other things. The fundamental problem that we have got a set of requirements that haven't been enforced.

CHAIRMAN PALLADINO: As a matter of fact, I gather, as you say in your paper, part of the problem is the failure of NRC programs to recognize the extent and the nature of the breakdowns.

MR. DIRCKS: And it is a varied pattern. I mean there are some facilities out there with management dedicated and you don't have these problems. Others where there is a different set of priorities will have massive problems. We have applied a program across the board and we haven't picked it up.

I think Ed could go into it further, but I think there is no question in anyone's mind that given the resources we have applied to it over the years and

given the massiveness of the activities out there, yes, we missed it.

COMMISSIONER GILINSKY: Let me push this a little further. When we inspect, what is it that we inspect for? In other words, how far do we go in checking out to make sure there really is an organization in place that can carry out a good quality assurance program and that can oversee the rest of the work and adequately audit it and so on? What is the nature of our inspection?

MR. JORDAN: The inspection program for a utility that had just gotten a construction permit, let's say, back a number of years ago was exactly that, to determine whether the utility had adequate personnel and had assigned personnel with the right qualifications to perform the tasks.

COMMISSIONER GILINSKY: Would they be in place at that point or their organization?

MR. JORDAN: It would be being developed at that point. So it is a process that grows and grows. I guess one would have to say that the numbers of people and the qualifications of people have steadily improved over the years. I guess one of the things we see right now in comparing the numbers of personnel at a given construction site that are specifically in the quality

assurance area is that the numbers are much larger today than they were two, five or seven years ago. So that the emphasis has increased and the NRC's view of what is adequate has perhaps changed in that same way.

COMMISSIONER GILINSKY: Do we have some standards or requirements or positions that at a certain stage in construction the organization has got to be up to some level for you to go on with your construction or is it less formal than that? I will tell you what I am getting to. I wonder whether we ought not to take a more formal approach toward qualifying the quality assurance organizations which we all seem to agree are the key to making sure that things get done right, set a whole set of procedures and administrative controls and so on, the purpose of which is to catch mistakes or, looking at it the other way, make sure things get done in accordance with the specifications?

MR. JORDAN: The staff understands that one of the basic problems was, and this is now retrospect, that in the contractual arrangements that were made by the utilities with their suppliers and with the architect/engineering firms they did not embody the quality assurance elements in them so that they were looking for a completed article but not for a high-quality completed article.

CHAIRMAN PALLADINO: There are steps being taken to change that situation.

MR. JORDAN: That is one of the elements within the set of initiatives, yes. The contracts are all in place now. There are no new contracts being signed for new plants being constructed, but in the quality improvement program that we are urging the utilities to adopt that would be one of the necessary ingredients for modifications, for instance, or subsequent work that the actual contract for that work would more strongly embody the quality assurance principles and that it be conveyed to the contractor and to the architect engineer.

COMMISSIONER GILINSKY: Well, to a large extent I think that was the sense of what Bill Dircks was saying. We depend on industry to check up on themselves. There just aren't enough people here to watch over all the projects in the country. Now it seems to me what we ought to be doing is making sure that that checking system is in place and is adequate to do the job.

Now do we say at any point that yes, this quality assurance system is adequate to proceed to the next stage of construction in a formal way, and, if we don't, it seems to me that we ought to if this is an

essential an element as we all say it is and I believe it is.

MR. JORDAN: Insofar as it being a hold point, I don't think we could say that that occurs.

COMMISSIONER GILINSKY: Well, perhaps we ought to be getting more formal about that. I mean that is the central element. There is a quality assurance organization that is there to check and double check to make sure that a plant is built in accordance with intentions.

MR. JORDAN: I am not arguing with you, but that is really the problem that we are faced with now. The plants are at various stages of construction already and the contracts are let. So now we are having to look at how do we pick up from here.

COMMISSIONER GILINSKY: I know, but, you know, that can be turned around. Your comments in one of the papers is that the key problem is mangement attention at the outset of the project. Well, it turns out we are passed the outset of the project in most of them.

MR. JORDAN: We get their attention.

CHAIRMAN PALLADINO: We had to get their attention in the Midland project.

MR. JORDAN: That is right.

MR. DIRCKS: I thought there was a requirement

to have a QA organization and you do inspect to see if it exists and the numbers of it and the reporting requirements and so on. Do you want to get into that aspect?

MR. VOLLMER: The answer to that is certainly yes. I think Commissioner Gilinsky asked do we look at numbers. We look at qualifications of inspectors and things like that, but we don't have criteria, to my knowledge.

COMMISSIONER ROBERTS: And I think that would be highly improper. The number of people means nothing. It is the quality.

COMMISSIONER GILINSKY: Who said numbers?

COMMISSIONER ROBERTS: You were mentioning numbers a minute ago.

COMMISSIONER GILINSKY: I wasn't mentioning numbers.

COMMISSIONER ROBERTS: I misinterpreted what you said. I am saying that the numbers of people are not significant.

COMMISSIONER GILINSKY: But I do think that there are a set of standards that an organization of this sort has got to meet and you have got to be assured that it is adequate to the job.

MR. DIRCKS: I think there has been a

recognition that there is a variation in the quality of the personnel that is out there. We have run across it in a couple of the bad example plants, and I think that is the basis for your proposal and your initiative in here to do something more about the qualification and certification of QA personnel.

COMMISSIONER AHEARNE: Could I ask Ed a little bit more about something that Vic was following on. What do you inspect against on the quality assurance? Let say you have a plant that is in the middle of construction. What would your inspectors be looking for with respect to the quality assurance organization? My sense from reading the reports is more that you question the quality assurance organization as a second step. When you find problems in the construction, then the NRC tends to ask well why were those problems not uncovered and why didn't the quality assurance organization catch it, and then it says in a secondary questioning that you turn to looking at the quality assurance organization. Is that incorrect?

MR. JORDAN: Maybe in degree. There are inspection procedures dealing with the quality assurance system itself and then inspection procedures dealing with the actions, the concrete pour and the weld from which one then derives whether the quality program is

working. So there are both pieces.

COMMISSIONER AHEARNE: Are the former though ones which tend to be in that 50 percent or so of inspection modules that aren't able to recover?

MR. JORDAN: In some cases they have not been. That is correct.

COMMISSIONER GILINSKY: Let me add a comment to my earlier one about what I thought our fundamental job was and what we ought to stick to principally. Some of this package deals with various kinds of exhortations regarding the mangements and the unions and workers and so on. It seems to me a lot of that is properly left to Admiral Wilkinson and INPO. That is something they are good at and I think can be left to them.

We ought to be concentrating on our basic responsibilities which is assuring that there is a certain standard that is met. If we are fairly firm about it, then they will be carrying out their self-evaluations and having seminars.

MR. DIRCKS: Well, I agree. I think that was one of the changes we made since the last memorable visit we had on this subject of QA. We have taken that whole mangement initiative and union meeting type thing and said the industry should be encouraged to do it. We are taking several steps back away from that issue and

just saying that if they do it we would be pleased and we would help them if they wanted to pursue it. You are right.

I think the greatest incentive to all this, and we are seeing it, and I think the industry is turning around because they are seeing what it costs them to have a major problem in QA, and if there is anything that is going to turn this thing around it is the dollars and cents and balance sheet evidence that comes in. A couple of examples of firms spending a couple of hundred million dollars to rework a plant is plenty of incentive to get a lot of attention out there to correct the problem.

COMMISSIONER GILINSKY: Let me just ask just to sum up, do you have any reaction to the notion of a more formal certification of a utility's quality assurance program?

COMMISSIONER AHEARNE: You mean at various stages.

COMMISSIONER GILINSKY: Well, it sounds like it would have to have various stages to it because the program grows the course of construction.

MR. DIRCKS: Well, we do have something here about the qualification of personnel. This is something that we have an initiative in here on getting sort of a

qualified personnel into the process. We have had problems in that area, as you know. I think lately we have been insisting more on a review of the QA organization and we have seen some changes there over the utilities.

COMMISSIONER GILINSKY: Don't feel you have to respond here.

COMMISSIONER ROBERTS: May I make a comment on that. I think Dick Vollmer said it absolutely accurately. It is not the program but it is the execution, and that is the whole brute of the problem. Now when you say "program," if you are all inclusive and include therefore execution, then fine.

COMMISSIONER GILINSKY: I would go beyond. He was distinguishing between what is on a piece of paper and then how the organization as opposed from that operates. It seems to me you have to qualify the organization and it has to go beyond a piece of paper.

CHAIRMAN PALLADINO: I think they have elements of that in their proposal.

MR. DIRCKS: We have the element of qualification of personnel according to some sort of an accepted standard. That is something we have and we can review that initiative.

COMMISSIONER ROBERTS: But isn't that already

in place with a level one, two and three?

MR. DIRCKS: I think there have been variations.

COMMISSIONER GILINSKY: You mean inspectors, don't you?

MR. VOLLMER: Yes, those are inspectors. There are specific qualifications for those. There is no qualification standard, if you will, for a quality assurance manager or any professionals in that sense that deal with how he carries out his functions.

COMMISSIONER AHEARNE: Could you say a few more words about that? There was some of material in your paper and then in the OPE paper and let me just address a couple of sentences out of OPE's paper which gets to the qualification issue.

They say that with respect to qualification certification of QA/QC personnel, the staff states, and that is you I guess, has been a significant and prevalent problem, that some utilities have waived the education experience requirements for such personnel and the NRC has not sufficiently enforced these requirements.

COMMISSIONER AHEARNE: I guess I wasn't aware that we had requirements. There were ANSI standards.

MR. VOLLMER: ANSI standards which in many cases the utility commits to following, but many of

these, like some of our other qualification requirements, will give an educational requirement, if you will, or equivalent experience or something like that, and I think some people feel the waiving of that is a problem.

COMMISSIONER AHEARNE: But to follow what I thought the thrust of what Commissioner Gilinsky was laying out, it wasn't clear to me from the material that I could find in looking through our reg guides, standard review plans, et cetera, that we had what would say here are the requirements for the QA personnel.

MR. VOLLMER: I think you are right. I am not aware of any.

CHAIRMAN PALLADINO: John, do you want to proceed?

COMMISSIONER AHEARNE: I was just trying to piggyback Vic's question.

CHAIRMAN PALLADINO: I think he is finished for the moment.

COMMISSIONER AHEARNE: Let me ask a question on the organization of QA within the NRC and let me start with a statement that Jack Zerbe had mentioned. He used a quote of the top NRC Operating Manager in the QA area. Who is that person?

MR. DIRCKS: Well, the office official that we

look to have QA management responsibility is Dick DeYoung.

CHAIRMAN PALLADINO: Is who?

MR. DIRCKS: Dick DeYoung.

COMMISSIONER AHEARNE: Jack, you were mentioned that at these meetings that the top QA ---

MR. ZERBE: Well, it ought to be the top personnel, whoever that might be.

COMMISSIONER AHEARNE: Is that clear to you that that is Dick DeYoung?

MR. ZERBE: No, I guess I could say it isn't because the people in the field don't report to him and the people in NRR don't report to him.

MR. DIRCKS: It is as if we said who is our top safeguards expert in the agency, and my answer would be John Davis who is Director of NMSS, or who is our top official in charge of pressure vessel fracture integrity, and I would say Harold Denton.

COMMISSIONER AHEARNE: Now as I understand it the regional people are supposed to be working under the policy guidance of the Office Director.

MR. DIRCKS: Right.

COMMISSIONER AHEARNE: Can you sort of explain to me then how the interface is going to be made in the QA area? For example, go through of the rationale of

why NRR's QA people weren't transferred over to I&E and then also the interface of how the regional people are going to be working under the policy guidance I guess of Dick DeYoung in QA.

MR. DIRCKS: Let me start off by saying I would look eventually to having the resources consolidated in I&E because I think that is the principle that we start off with.

COMMISSIONER AHEARNE: Perhaps you will get why that eventuality isn't now.

MR. DIRCKS: Yes, but that is why I wanted to start off answering your question using the first sentence. The second sentence is going to follow. Having looked at what is going on in the agency in real terms, I made a judgment, a proposal that for the time being, and we are talking about two or three staff years in NRR, that we keep those personnel in NRR while we get through this licensing process, the plants in the pipeline.

COMMISSIONER AHEARNE: Why?

MR. DIRCKS: Because in very practical terms I am looking to see what is happening in Diablo Canyon. I don't want to disrupt that process. NRR is deeply involved in that and working very closely on the verification program. If we made an abrupt change,

sure, they could be working in I&E, but at the same time I think we could cause some disruption and I don't think it is worth the pain.

COMMISSIONER AHEARNE: You used Diablo Canyon as the example. Where are the people in QA in NRR?

MR. DIRCKS: They are working for Dick Vollmer.

CHAIRMAN PALLADINO: How many are there?

MR. DIRCKS: I think two.

CHAIRMAN PALLADINO: Is that all?

MR. DIRCKS: Two or three.

MR. VOLLMER: Two professionals.

COMMISSIONER AHEARNE: My impression from reading countless numbers of Diablo Canyon transcripts is that there are a heck of a lot of people from NRR involved and many of them don't seem to be those two nor Dick Vollmer. So my impression is that taking those two and moving them to I&E wouldn't have really disrupted Diablo Canyon.

MR. DIRCKS: Well, it is a matter of judgment I think. I tried to call it in the best way I could. If at your level you think those two people are more beneficial out of the 3,000 people in the agency to put them over in I&E we will put them over there.

COMMISSIONER AHEARNE: I am really asking the functional question because in the rationale that has

been presented over the last, what is it, eight months since Joe wrote the memo in November there seemed to be a constant thrust that there was a real advantage to coalesce. Yet, when this final coalescing appeared it seemed to be that NRR was kept separate and I am just having real difficulty grasping your rationale.

CHAIRMAN PALLADINO: I also get the impression, and I guess John alluded to it, that there are far more people than just these two that get involved from NRR.

COMMISSIONER AHEARNE: Exactly.

CHAIRMAN PALLADINO: But perhaps these two are supposed to perform a coordinating function which I gather they could do just as well in I&E as they could do in NRR.

MR. DIRCKS: I would say they possibly could do it. I am also saying there has to be some pretty overriding reasons why they should be doing it and why not let them essentially over the next year finish up the work that they are doing in NRR and then move some people. You are right, there are a lot of people in NRR who are working on these problems. When we have these design verification problems come in, sure there will be a task leader and then they will have people in the Mechanical Engineering Branch take a look at something

and a lot of people in the Design and the Seismic Branch do it. It is a matter of just assuring that we don't disrupt the process.

Now from the point of organizational theory, yes, let's move them over, and I would be saying let's move them. But on the other hand, if we can save ourselves a little disruption, why not save ourselves that disruption.

COMMISSIONER AHEARNE: But it seems to me Bill that part of the whole theory that has to underlie this paper you sent up is that the current process wasn't working very well. So you are disrupting the process. You are essentially saying that there has to be some new initiatives I guess is the term that you have thrown in there. That has inheritly the concept that you are disrupting, that you are changing the previous way of doing things. So I would guess that the disruption is what is what you are looking for.

MR. DIRCKS: I don't think it is worth making much of an issue of. If the Commission thinks they should go over there, then we can survive them going on.

COMMISSIONER AHEARNE: I am just trying to understand the argument why are ---

COMMISSIONER GILINSKY: How many people would be over under Dick DeYoung?

MR. DIRCKS: Fourteen.

MR. DeYOUNG: Eleven.

MR. DIRCKS: Eleven.

COMMISSIONER GILINSKY: That is before the 5th or after the 5th?

MR. DeYOUNG: After the shift 11 reserch people.

COMMISSIONER GILINSKY: And how many research people were there?

MR. DeYOUNG: Three.

I might add a point that might, you know, reflect that Ed Jordon will have the task of running the show with Terry Harpster without the NRR responsibilities. They have a full plate with these initiatives that they have.

COMMISSIONER GILINSKY: What are these people going to do?

COMMISSIONER GILINSKY: The 14 or the 11.

MR. DeYOUNG: All of the initiatives. They are going to develop a program, all of these things that you have before you.

COMMISSIONER GILINSKY: What are they doing right now?

MR. DeYOUNG: That is what they are doing. Bill said do it.

COMMISSIONER GILINSKY: What were they doing before you said to do it?

MR. DIRCKS: Terry.

MR. HARPSTER: We are doing it now.

MR. DIRCKS: Well, why don't you go through sort of a functional description of the branch and what you are doing now.

MR. HARPSTER: What I am doing right now is borrowing people from everywhere to get these things done.

COMMISSIONER AHEARNE: Terry, could you use the mike.

COMMISSIONER GILINSKY: Well, I am just trying to get a sense for what our QA organization was before we got into these improvements. How big an organization did we have and what were people doing?

MR. HARPSTER: What people were doing was looking at the existing inspection program, what we do, how well we do it and what we can do to improve that. As we develop the initiatives we start bringing more people in from different places in the organization that help us see how we can make the recommendations we have now.

COMMISSIONER GILINSKY: Are they looking at the entire inspection program or the QA aspects of it,

because it seems to me, you know, that we go out and we inspect and find things wrong and that tells you ---

MR. DIRCKS: Why don't you go through and itemize. You are writing the inspection manual, you are reviewing the inspection manual, you are appraising the regions on how they are carrying out, you are acting as the point of contact for regions. Don't you go through that description.

COMMISSIONER GILINSKY: Well, that's it.

(Laughter.)

COMMISSIONER GILINSKY: We don't have to go through it again.

(Laughter.)

MR. DIRCKS: I think that is what you are looking for.

(Laughter.)

MR. HARPSTER: We are involved in developing all of the QA related inspection program concepts. It is not just the QA programmatic area but we interface with the Division of Programs also and almost all of our inspection program has some aspects that are QA related.

COMMISSIONER GILINSKY: Let me ask it this way. At an early stage the two fellows that work for Dick Vollmer say yes, the plans look okay and you can get your license. Now from then on it sounds like some

people have got to gather together and decide things aren't going well out there in that plant and maybe we have to do something. There are no further approvals that are required from the NRC. So you just go along unless the NRC decides things are so bad that we call a halt. Is that about right?

MR. DIRCKS: Maybe Ed can help.

COMMISSIONER GILINSKY: So I mean at no point do we say yes, this thing is being implemented right.

MR. JORDAN: Maybe I can help by saying the problems that we have identified in the earlier discussions were the problems that we felt that industry didn't control well, that industry didn't find at the right time and that the NRC didn't detect as quickly as we should have. There are a lot of success stories where the programs did work and where problems are identified and are being fixed.

What we are trying to change is change the inspection program so that the things that the utility doesn't find we are able to find more quickly and then further to affect the industry and the utility so that things don't get out of control. The idea would be that the quality assurance inspection program would find that the utilities have an appropriate organization and the organization is working in finding the problems before

the NRC gets involved. That has got to be the goal.

MR. DIRCKS: Well, moreover, I think Jim Keppler at one time came in to talk to the Commission on the issue and he said we were finding and treating symptoms and we weren't trying to uncover the root cause of the problem, what was the sickness before we can prescribe the medicine. I think that was the basic problem of the whole effort. We were two steps ahead maybe or two steps behind finding a particular defect in the construction program.

I think that we failed to do was to put together sort of a systematic look at the defects we were finding and to trace it back to some underlying floor in the whole process. That I would imagine is the key answer to this whole problem. I guess if we have a theory it is the fact that there was insufficient management attention brought to it, and at what level I think we have to identify.

COMMISSIONER GILINSKY: Okay, we all agree that there has got to be management attention given to it, but the management has also got to know what to do.

MR. DIRCKS: Yes.

COMMISSIONER GILINSKY: It seems to me that is where we have just got to say that you have to have a satisfactory quality assurance system operating and we

got to say yes, that system is operating satisfactorily for construction to proceed beyond a certain point. If we insist on that we are going to get management attention.

MR. DeYOUNG: Let me add a point. We had no QA Branch in I&E until January of this year. There was no QA Branch in headquarters of I&E. There was a Reactor Construction Division that treated everything, but there as no QA Branch until we formed one. After your speech we began to think about it.

We had all those problems at some of the plants and we recognized that we had to have a special group of people pulled aside looking at QA alone. That is when Terry took the branch last January.

CHAIRMAN PALLADINO: Dick, let me ask you a question. You know when we go to industry and say, boy, you ought to have that QA operation reporting at the highest level of management you possibly can.

MR. DeYOUNG: Yes.

CHAIRMAN PALLADINO: And, yet, I am not sure we are following that advice if we are saying QA is down here in a branch which is part of a division which is part of a director's office. If this the right level or should we put more emphasis?

COMMISSIONER GILINSKY: Yes.

CHAIRMAN PALLADINO: What led you to say the branch level is the right level?

MR. DeYOUNG: Well, the branch level, we take a look at the size of the group. The group is only 10 people. It is not a division. We like to think a division is like oh 60 or 70 or 80 people. That is a division. A branch we think is something on the order of 10 to 20 to 25 people.

CHAIRMAN PALLADINO: Suppose the industry felt that way and they said, well, this QA isn't as major.

MR. DeYOUNG: But they have quite a number of people. They have learned from experience that they need hundreds of people in their QA orgagnization. They have a large organization.

CHAIRMAN PALLADINO: But I remember this being a major issue ten years ago and even longer than that a little bit and yet those organizations were small and we said, boy, he is reporting to this guy where he ought to be reporting up here.

MR. DeYOUNG: I don't think we have the same problem that they have. They have a problem of seeing the plant constructed on time and going on line on time. We don't have that problem of conflicting responsibilties. I talk to Ed Jordan, for example, every day. I never miss him. He never misses me.

Sometimes early about 2 or 3 o'clock in the morning we have discussions on some things. We often talk. It is not that we are separated.

COMMISSIONER AHEARNE: But, Dick, Ed isn't the person in charge of QA.

MR. DeYOUNG: He only has the three groups under him and he talks constantly. He is deeply involved with them. He is not separated from them with other responsibilities. Terry only has ten people. Special problems come up in QA. They come from Ed Jordan mostly. He has an Engineering Branch and he uses them to supplement Terry Harpster's branch.

COMMISSIONER AHEARNE: I am not sure I disagree with your argument, but I would just point out that the linkage that you talk to Ed every day and Ed talks to Terry every day sounds an awful lot like what we heard from some of the licensees. I can remember a particular utility sitting across the table from us here in this room and we asked well who is in charge of this and the answer was well it was so and so, and we asked well why isn't that at a higher level and the answer was well I talk to "X" every day and "X" talks to "Y" every day and "Y" talks to so and so every day. So the linkage is really there.

COMMISSIONER ROBERTS: Well, I think you make

a good point though. I don't think there are the same conflicts within NRC that there might be in a corporate entity.

COMMISSIONER GILINSKY: There are conflicting pressures here, too. I don't think we ought to kid anybody.

MR. DeYOUNG: Not of the same magnitude.

COMMISSIONER ROBERTS: I didn't hear the end of what you said. There are conflicting pressures what?

COMMISSIONER GILINSKY: There are conflicting pressures here, too.

MR. DeYOUNG: There are, but not of the same magnitude.

COMMISSIONER ROBERTS: I think not of the same magnitude at all.

MR. DIRCKS: There are different concepts.

CHAIRMAN PALLADINO: Well, I am not so sure. That is why it was last November we felt things were out of hand so much in quality assurance that we felt we needed a real focus on it and called for it. So there was a balance of pressures that was getting distorted enough so that we didn't think enough of the pressure was going on QA. So I am not sure. I am not saying it has to be a Division, but it does stike me that it seems to be buried down in the organization the way QA used to

be in most of the utility line-ups. That is just an observation.

MR. DeYOUNG: It is a consideration. You know, when we talk about the enforcement group, they report to me and all these little groups are very important.

COMMISSIONER GILINSKY: Isn't that the most important thing that our inspectors have to do is to make sure that that quality assurance system in each facility at each site is operating properly?

MR. DeYOUNG: In the broad sense yes. If that is working right we have got a safe plant and a well constructed plant. In a broad sense it is.

MR. DIRCKS: We have people on site who are directly inspecting the construction of the facility. We have the divisions within the regional offices with their construction specialists relating back to the residents. The QA office in headquarters is not the only office that deals with the construction program. The QA people here are developing appraisals and they are developing manuals. They are not actually out there on site reviewing construction. When you say, or I think somebody pointed out that we have insisted on utilities having a separate office of QA. That is to counterbalance the construction bosses, and you wouldn't

want the QA people working for the construction superintendent. That is why we have that separation.

We have a lot of high priority efforts in the agency that always come up. It is QA today and licensing last year and we have steam generators next week. We just can't have them all reporting directly to whatever management is around.

CHAIRMAN PALLADINO: Do you want to proceed with more questions?

COMMISSIONER AHEARNE: I am sorry I had to step out and perhaps you have answered the question. In your paper you list NRC staff resources are about 25 staff-years per year new effort associated with these programs. One of the items you have is the integrated design inspection idea, which I gather would involve NRR, the region and I&E.

On the one hand you have a relatively small branch and on the other hand you have a large description of a lot of efforts. I guess I am concerned are you really going to make successes out of all of these initiatives and have you seriously looked at how big an effort it is that you are initiating? It is almost as though you have got a policy paper and some policies laid out, but it is not obvious to me that you have allocated the resources to carry through on all of

those. Another way of saying it is perhaps you have bitten off more than you can chew and you ought to have focused on a fewer set of ideas.

MR. DIRCKS: Some of these are phasing out. The NTOL effort in NRR has a date when they will be out of existence and others are coming in. But I think your point is valid, do we have the right mix of resources here.

COMMISSIONER AHEARNE: You have got a large number of reports that will be coming in.

MR. DIRCKS: Yes.

COMMISSIONER AHEARNE: The staff has had a problem in the past, and not necessarily the I&E staff, but the staff in general of asking for a lot more material than it can usefully absorb and respond to, and I am wondering whether you aren't following that same pattern.

MR. DIRCKS: It could be. We have a lot of initiatives and a lot of activities. When we went over this I tried to get from the staff whether we have the right amount of resources going into it. I have been told we do and I have been relying on that. As it develops and as we get reports in, do we have the right number of people to handle it.

COMMISSIONER AHEARNE: For example, you have

commitments out of NRR. Does I&E have commitments out of NRR and the regions to commit the people that you are going to need?

MR. HARPSTER: Yes.

COMMISSIONER AHEARNE: A commitment in the sense of allocated spaces or ---

MR. HARPSTER: We have some of those people working with us now. I have people from different divisions within I&E, for instance, working on the design initiative.

COMMISSIONER AHEARNE: I am sure you can get the I&E people. It is the NRR and the regional people that I am questioning. It is just an unease that I have and I guess I will probably put it in writing, but that is a concern.

I guess the last set of questions I had related to the designated representative proposal. Bill, I guess what confused me was you were asking for approval of something and it wasn't clear to me that the idea had been fleshed out far enough to be asking for approval of anything. I gave a set of questions such as what are the criteria for selection, what would you pay them, who would supervise them, what was the overlap of the certification concept and what has been the FAA experience. Is that all material that you have or is

that part of what you are developing?

MR. DIRCKS: We have some of it, but I do want to stress that I have got many questions on the whole thing myself. What we wanted to do was to get it before the Commission pretty soon so you would know what we are doing. As soon as we start talking with FAA and word leaks out what we might be thinking, we didn't want this to come in and surprise the Commission from some other source.

CHAIRMAN PALLADINO: Then you are really asking for our endorsement of your proceeding to develop a proposal.

MR. DIRCKS: Should we pursue the concept. The concept may be so new and novel and so filled with questions that you may tell us to forget it.

COMMISSIONER AHEARNE: I guess for myself I wouldn't say give approval to develop the proposal. I would say to explore the proposal.

CHAIRMAN PALLADINO: To what?

COMMISSIONER AHEARNE: To explore the proposal because there are a number of questions.

MR. DIRCKS: I agree. I think there are lots of questions and we have been throwing those questions around ourselves. We just wanted to at least surface the idea and let you know that we are thinking of it.

We could tell you what the results are thus far. I guess there have been conversations with FAA and their initial contacts I guess. Ed, I guess, he has pursued these conversations with the Federal Aviation Administration.

COMMISSIONER AHEARNE: What I do need is more information.

CHAIRMAN PALLADINO: I have a bunch of questions also on this designated representative, but I wonder how formal we need to get in our concurrence to proceed further on this. I think more research is needed and I think you agree on that. There are a number of questions that have to be answered. If things look like they can work for us, then a proposal could be developed.

COMMISSIONER AHEARNE: I think you really have to talk with some of the industry, too.

MR. DIRCKS: Oh, yes.

CHAIRMAN PALLADINO: I think industry input on this would be particularly important. They are going to get involved and they are going to ask the same kind of questions we are asking except they will ask them with more intensity.

COMMISSIONER AHEARNE: There is another point. I am not sure where you would go for the

additional view, but there probably is a question of do we and the FAA share the same kind of certification responsibility. I think somewhere in your paper you said that the use of this, or maybe it was in Jack's paper, but the use of it would help us increase the confidence when we certify. I am not clear at the moment to what extent we can transfer our resposibility for certification. You know the great debates we have had about to what extent can we rely on FEMA and other federal agencies.

COMMISSIONER GILINSKY: Well, if you are talking about a change in the law. If you change the law you can do anything you want.

CHAIRMAN PALLADINO: The law would have to be changed to be more comparable to the FAA.

COMMISSIONER ROBERTS: What is the meaning on slide 17, this is under "Designated Representatives - Implementation." "Preliminary study of FAA system - 3/82." What does that consist of? Is that informal?

MR. DIRCKS: It was informal contacts with FAA, and that is about all.

COMMISSIONER ROBERTS: I was just asking.

MR. DIRCKS: I don't think we have anything formal to present to you, but I think the questions that have been raised by you are the very questions we would

want to see some answers to before we move very much further. But we didn't want to move very much further until we let you know what we are doing.

COMMISSIONER AHEARNE: But it seems to me that you have already begun to talk about proposed rulemaking.

MR. DIRCKS: Only the schedule. It is only some milestones there, and if we didn't have those we would have anything ---

COMMISSIONER AHEARNE: Vic had just said that legislation would be needed. You have down further "Prepare rule and legislation." By identifying the ELD and OGC representative for proposed rulemaking have you reached a tentative conclusion that you don't need legislation?

MR. DIRCKS: I think it is so up in the air that we could go either way, if we go at all. It is really pretty undefined right now.

MR. CUNNINGHAM: I think our tentative conclusion, and in fact it is probably more than tentative, is that we would need legislation.

COMMISSIONER AHEARNE: Let me say on this you are six months away from starting a pilot program.

MR. CUNNINGHAM: Well, I have some question about that slide.

(Laughter.)

MR. CUNNINGHAM: But I don't think if you need legislation for the program that the pilot program can go all the way without that legislation.

MR. DeYOUNG: I like the thought of a progress report on each of these about every three months. We would not just go ahead and do something and then come with a completed package. I think a report to you on each of the initiatives would be useful.

There is another strong point when you look at all of the initiatives there, there is a critical one that we have no control over, and that is INPO. If they do not do what we expect them to do, then we have to step back and do a lot more.

COMMISSIONER AHEARNE: Is the converse true that if they do what has been described that they are going to be doing that you will then do a lot less?

MR. DeYOUNG: I don't think so, not at this time, not until we are sure what they are doing as we had in the operating plants.

COMMISSIONER AHEARNE: So are you saying that from your view this program that you have laid out is what is required to mesh with a fully successful INPO program?

MR. DeYOUNG: Yes.

COMMISSIONER GILINSKY: Could you pursue that

a little more? It troubles me a little. With all due respect to INPO, it seems to me we have got certain responsibilities and we have got to carry them out. Now how is what you plan to do affected by what INPO does?

MR. DeYOUNG: We have only so many resources that have been made available. We have experience with the INPO group with their review of the PAT type of program. Not too long ago we had some 20-some people in our PAT program. We need them for CAT and we needed them for the other programs. We took a look at what we knew about the INPO program and we were encouraged. We were impressed with what they were doing.

We thought we could spend less resources doing the PAT type of reviews and we came to the Commission with it and told the Commission what INPO had been doing and what our review of that had indicated and we stepped back. We told you we could reduce the resources by about 50 percent and use those resources some place else.

Knowing what the organization can do, we are almost convinced that if they do the program that we think they might do, we think if we monitor those programs, monitor the programs they have for the operating reactors, we don't have to do as much work. We are resting on the experience we have with their performance in the operating reactor program.

CHAIRMAN PALLADINO: I think there is an important point that is related to this. I think in any society policing is only a reasonable possibility if most of the people obey the law. Here what we are talking about is an organization to help self-police the industry so that when we go in we find fewer things wrong, not that they are not tryig to obey the law, but the law is so complicated that some organization discipline is needed to get compliance.

Before we leave the designated representative, let me ask the Commission if they would like to express at this point a desire to ask the staff to explore this matter further and then come back with better research and a better considered proposal on this so we don't have to take a formal vote unless you want to.

COMMISSIONER GILINSKY: Well, we asked them to do that on February 10th?

CHAIRMAN PALLADINO: Did we?

COMMISSIONER GILINSKY: Yes.

CHAIRMAN PALLADINO: What, in a staff requirement?

COMMISSIONER GILINSKY: It says the Commission requested that the staff examine the quality control program used by FAA, which I take it includes this.

CHAIRMAN PALLADINO: They asked us.

COMMISSIONER AHEARNE: Well, no, we are still asking them. We asked them on February 10th.

(Laughter.)

CHAIRMAN PALLADINO: But now we are asking them to explore in more detail a proposal.

COMMISSIONER GILINSKY: We forgot about it so now we are asking them again.

(Laughter.)

CHAIRMAN PALLADINO: Six months have gone by.

COMMISSIONER AHEARNE: They haven't quite done what we asked them to do.

COMMISSIONER GILINSKY: The thing I wanted to ask is did this seem like a promising notion?

MR. DIRCKS: I thought we were doing what you asked us to do.

CHAIRMAN PALLADINO: No, but you asked now for approval to proceed, and we are saying okay, we are giving you approval to proceed, but come back with a more considered package.

COMMISSIONER GILINSKY: Does this seem like a promising idea on the basis of a quick look?

MR. DeYOUNG: I am convinced it is.

MR. DIRCKS: Well, there are pros and cons like everything else.

(Laughter.)

MR. DIRCKS: It seems to be working in the aircraft industry, not only from the point of view of the FAA, which is very high on this concept, but it seems to be working not to the displeasure of the industry itself. It seems to be functioning in an appropriate way. It is an extension of resources and, God knows, we need to extend our resources to the extent we can.

But there are other questions. Are we dealing here with a completely different industry? There you have a factory plant environment and you can do this sort of thing is a disciplined way in a closed environment, so to speak. That is different from what we are facing. What would we get out of it more than what we have now? We have company QA officials by anointing them or by giving them an arm band or something like that. What do we gain out of it? I think that is what we want to explore among ourselves. What sort of complications does this add to the already complicated process we have onhand? I don't think we have come up with those answers.

If you look at it first blush, I think Dick would say it has some potential. If you look at the other side, it has potential for problems. That is what we want to pursue. It is controversial.

You asked earlier has industry reacted to anything we have talked about in this meeting. If they have reacted in any way, they have reacted adversely to this proposal.

(Laughter.)

CHAIRMAN PALLADINO: Do you each want to go back and fill out your own voting sheet on this question?

COMMISSIONER AHEARNE: Yes.

COMMISSIONER ROBERTS: (Nodding affirmatively.)

COMMISSIONER GILINSKY: (Nodding affirmatively.)

COMMISSIONER AHEARNE: (Nodding affirmatively.)

COMMISSIONER AHEARNE: Could I ask one other question on the FAA matter. I noticed the FAA has just published in the Federal Register what they describe as a sweeping change in the approach that they are taking in regulation going to what they call regulation by objective as opposed to detailed regulation. Do you know whether that is intended to have any modification of the FAA program?

MR. DIRCKS: I haven't seen it.

COMMISSIONER GILINSKY: A version of regulatory reform.

(Laughter.)

COMMISSIONER GILINSKY: Actually, I don't know

whether you are closing at this point.

CHAIRMAN PALLADINO: No, I wanted to give Tom and Jim a chance. That was why I was trying to close this issue.

COMMISSIONER GILINSKY: I suppose they have five minutes each.

(Laughter.)

COMMISSIONER ROBERTS: I will give you part of mine if you want it.

(Laughter.)

CHAIRMAN PALLADINO: He has already had part of yours.

(Laughter.)

CHAIRMAN PALLADINO: Go ahead.

COMMISSIONER ROBERTS: Well, most of my questions have been asked by others. I am a little initially skeptical of a designated representative. I do not have a closed mind and I think it is appropriate for the staff to provide us some more information, but I don't think we ought to be expending a lot of money and resources at this point. I think we can get enough information to see whether we want to pursue it further.

CHAIRMAN PALLADINO: Jim.

COMMISSIONER ASSELSTINE: I had a couple.

Now that INPO is beginning to start its own

self-evaluation program, what thought have you given to whether you want to continue our self-evaluations or whether you want to tailor them more to the more structured approach that INPO is following or whether you want to continue them just the way they are?

MR. VOLLMER: I think that we would want to tailor up on those or drop them. If we felt that the INPO work in combination with the integrated design review initiative proposed here were successful initiatives, I think we would use those to take the place and they would be well defined, structured and we would be getting out of the ad hoc-ishness of the current independent design review process. So I would see those as taking over from that.

MR. DeYOUNG: The INPO review that they did the self-evaluation, they knew they could not establish the standards that they have while they did every plant. They said we can't do any of the plants for the next year. So we have to do them. They did not do them yet. So we came in with an unstructured program that depended on a lot of judgment that Dick and his people used. But once it is in place and once we see that it has been effective, I think we would begin to phase out ours.

COMMISSIONER ASSELSTINE: On the independent

design reviews, I was a little but unclear as to how you about making a decision and the extent to which you try and influence the utility's decision on whether they go for a more expanded third-party audit like the San Onofre review or a much more limited audit say like the La Salle review was. To what extent do you try and encourage a particular plant to go one way or the other, and what kind of factors do you take into account in that management meeting you have in deciding which way you want to try and push them?

MR. VOLLMER: Our encouragement so far has been trying to meet what we saw as a deficiency in the design review or an independent look at the design process itself. I don't recall that we encouraged anybody to take a very broad look. I think in many cases the companies did have broad looks at QA initiated by other parties as a part of their overall QA program within the utility. So I think those that came in with broad programs came in because they felt they wanted that assurance. Palo Verde did and San Onofre did, excluding Diablo Canyon as a special case. The others are fairly narrow in extent and looking basically at the procedural and technical design process.

COMMISSIONER GILINSKY: Didn't they basically volunteer those programs and we agree that that was

satisfactory?

MR. VOLLMER: Yes, they did. We could hardly turn them down. They were very attractive looking programs. But we didn't try to jawbone anybody else into programs of that extent.

COMMISSIONER ASSELSTINE: I guess what I am wondering is are there factors that you looked at in, for example, trying to decide whether you wanted to jawbone somebody into a more expanded program if they came in with a very narrowly defined one?

MR. VOLLMER: Well, speaking for NRR, I think it was the joint collective wisdom of ourselves and the I&E organization and the regions that the overall program needed another scrutiny, and I hope that that would have been part of the overall process as we went through the construction of the plant, then I guess one would say you would try that.

The second possibility is if the independent design review uncovered some generic flaws in their design process, we would want them to look further and this could expand into a more programmatic QA look.

COMMISSIONER ASSELSTINE: On the procedural changes, particularly the revisions to the inspection effort, could you briefly describe for me now how the distribution is made of the inspection effort now?

Depending upon the stage of construction, for example, is most of the inspection effort now allocated to plants that are fairly well along and in the latter stages of construction and a relatively limited effort in the early stages? Then could you tell me how you are going to distribute the increased inspection effort that has already been projected for '83 and '84?

MR. DIRCKS: Ed.

MR. JORDAN: As far as the distribution is a function of completion, it is more distributed in terms of the rate of completion than it is the degree of completion and it is by the stage. In the early stages there is no electrical work at all. So the people who are there are looking at the concrete placement and the steel placement, the erection of steel. So it is different skill levels and it is proportional to the rate of construction, and the quality assurance aspect of it would be depending on what contractor is there. Each contractor goes into the construction site in a given area and then is particular quality assurance program and personnel are examined and then on to the next one.

So it is a very structured program in that kind of a respect. For instance, our manpower figures are based on the percent of completion and rate.

COMMISSIONER ASSELSTINE: How about the increases, are they going to be fairly well distributed, the increased effort?

MR. JORDAN: The increased effort I would say right now is simply distributed informally. I don't think we could say that we have shifted it, but the inspection program itself is being revised as one of the slide indicates so that we are emphasizing the actual work rather than the paper record of the work and then looking at the quality assurance.

COMMISSIONER ASSELSTINE: I wanted to ask you, too, if that indicates some tentative judgment that that was part of the problem in our inability to identify some of the QA breakdowns in the past, that we are focusing too much on paperwork review and not on an observation of actual work, or that we weren't putting enough emphasis on design or design changes?

MR. JORDAN: Certainly we feel that we weren't putting enough work on design and design changes and that our program did not emphasize that area sufficiently.

In terms of the actual work, part of it is effectiveness. If you find a problem at a site during an inspection and you find it in terms of the records aren't well maintained or somebody didn't sign a box,

you don't get the utility's attention very well as compared to when you look at a component and you find a physical defect, a concrete placement isn't being controlled adequately or the slump isn't correct, and then show that the procedure didn't have sufficient controls on it.

So you have to have a mix. Simply looking at the papers is inadequate and simply looking at the work in progress is not very efficient. You can't cover an awful lot that way. So it is a good mix that we are looking for.

COMMISSIONER ASSELSTINE: On the allocation of resources, particularly Table 1 in the SECY paper, for management programs it appears that that is where the vast bulk of the industry effort is, 270 out of the 280 man-years are in management programming. Is that the INPO effort or is that these management workshops, or what is that that the industry is going to be doing?

MR. JORDAN: That is based on the management workshops. That is the meetings with staff.

MR. DeYOUNG: By staff they mean the people on site, the 3,000 people. If they meet for a half a day that is a lot of man-years.

COMMISSIONER ASSELSTINE: I had a couple of questions then on the long-term review. Is the

timetable that you have for the long-term review realistic, that is you can wrap it up by the end of '83?

MR. HARPSTER: That is really based on the proposed authorizing legislation. We have set a schedule backing up from that.

COMMISSIONER ASSELSTINE: One thing that you mentioned, Bill, about the information on cost, would it be possible as part of a long-term review to at least collect information on what the costs have been that have been incurred at some of the problem sites? I know that gets a little bit far afield from what we are supposed to be worrying about, but I also suspect that you are probably right that when the cost figures come out for some of the sites at which the QA breakdowns have occurred that that more than anything else is going to be a strong incentive to encourage a strong management commitment.

MR. DIRCKS: I think in these management seminars we would hope that some of this could be brought out. When you figure costs, some of these plants are going to ask for reverification programs. The costs are really tremendous. When you shut down a project for several weeks or a couple of months, again the costs get astronomical. If we can get some feel it will be gross estimates and I think we will try to push

for something like that.

COMMISSIONER ASSELSTINE: That is all I had, Joe.

CHAIRMAN PALLADINO: I wonder if I might make a couple of remarks. This is a subject that is of continuing interest to the Commission. I think the initiatives do represent a significant step forward. I still have a number of questions in certain areas. I am particularly interested in the relationship to the regional inspection program and how will I&E consolidation interaction with the regions. I think other Commissioners have concerns as well.

With regard to the designated representative, I think we will have to seek responses on notation vote from each of the Commissioners. I would suggest that we revisit this subject in the not too distant future to see how we are making out and what sort of reactions you do get from industry as the program proceeds.

Any other comments?

COMMISSIONER GILINSKY: Yes. I would very much like to have this idea pursued of a more formal certification of quality assurance programs as a prerequisite for going beyond certain hold points. In other words, you have to be up to a certain level and get beyond a certain point of construction and up to a

higher level and be able to deal with a larger variety of equipment to go beyond a further level and so on.

MR. DIRCKS: I think we have to look at it because I am really unsure of what we are doing right now. I think what we have to do is take stock of what we actually do right now. I think what we should do is provide, first of all, a pretty concise summary to the Commission of what we do right now.

COMMISSIONER GILINSKY: Well, I would certainly appreciate that, too.

CHAIRMAN PALLADINO: But I think important to such an effort would be how well is that quality assurance team working because it could look good on paper and it might have numbers that you think are appropriate. You have got to have people whose credentials seem to fit the requirements of the organization.

MR. DIRCKS: Let's see if we can put something together in terms of types of structures we have now and what we know about qualifications of personnel and perhaps relate it to our experience with the QA program.

COMMISSIONER GILINSKY: I am talking about reviewing an organization in being as opposed to some of the reviews you have conducted which are reviews of plants.

MR. DIRCKS: I think it would be interesting to take a snapshot of this thing and then we can see where we go from there.

CHAIRMAN PALLADINO: Anything further we should take up at this time?

(No response.)

CHAIRMAN PALLADINO: Well, thank you very much. We will stand adjourned.

(Whereupon, at 5:00 p.m., the meeting adjourned.)

* * *

NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the

COMMISSION MEETING

in the matter of: Briefing on Quality Assurance - SECY-82-352
PUBLIC MEETING

Date of Proceeding: September 29, 1982

Docket Number:

Place of Proceeding: Washington, D. C.

were held as herein appears, and that this is the original transcript thereof for the file of the Commission.

Mary C. Simons

Official Reporter (Typed)

Mary C Simons

Official Reporter (Signature)

SLIDES FOR

COMMISSION BRIEFING

ON

QUALITY ASSURANCE INITIATIVES

SEPTEMBER 29, 1982

ANALYSIS OF THE EXPERIENCE AT PROBLEM SITES HAS RESULTED IN THE CLASSIFICATION OF THREE PRIMARY PROBLEM AREAS:

- FAILURE OF THE OWNER'S PROJECT MANAGEMENT TEAM TO PROVIDE ADEQUATE MANAGEMENT CONTROLS TO PREVENT A SIGNIFICANT BREAKDOWN IN QUALITY FROM OCCURRING;

- FAILURE OF THE OWNER'S QUALITY ASSURANCE PROGRAM TO DETECT THE BREAKDOWN IN A TIMELY MANNER AND TO OBTAIN APPROPRIATE CORRECTIVE ACTION;

- FAILURE OF THE NRC'S PROGRAMS TO RECOGNIZE THE EXTENT AND NATURE OF THE BREAKDOWNS.

THE FIRST TWO PROBLEM AREAS ARE FUNDAMENTALLY DERIVED FROM A LACK OF TOTAL MANAGEMENT COMMITMENT TO QUALITY AT THE NUCLEAR PROJECT'S INCEPTION.

LACK OF COMMITMENT HAS BEEN EXACERBATED BY:

- LACK OF TOTAL UNDERSTANDING OF THE ROLE OF QUALITY ASSURANCE IN PROJECT MANAGEMENT;

- LACK OF TOTAL UNDERSTANDING OF WHAT IS REQUIRED BY PERSONNEL AT ALL LEVELS OF THE PROCESS.

THE THIRD PROBLEM AREA IS TWO-FOLD IN DERIVATION:

- FIRST, THE NRC'S LICENSING AND INSPECTION PROGRAMS HAVE NOT SUFFICIENTLY EXAMINED THE PROJECT MANAGEMENT CONTROLS AT SITES UNDER CONSTRUCTION

  ORIENTED TOWARDS ESTABLISHING ADEQUACY WITHIN MAJOR TECHNICAL AND FUNCTIONAL AREAS, E.G.. CONCRETE, ELECTRICAL, ETC.

  SYSTEMATIC ASSESSMENT OF MANAGEMENT PERFORMANCE AND EVALUATION OF ALL OTHER AVAILABLE INFORMATION HAVE NOT RECEIVED THE SAME LEVEL OF EFFORT AS OPERATING SITES.

- SECOND, PREVIOUS NRC PROGRAMS HAVE NOT ADDRESSED DESIGN QUALITY AS SPECIFICALLY AND EXTENSIVELY AS OTHER AREAS.

IN SUM, THE FUNDAMENTAL ISSUES CAN BEST BE CHARACTERIZED AS:

- LACK OF TOTAL MANAGEMENT COMMITMENT TO QUALITY

- THE UNCERTAINTY IN INDUSTRY'S AND NRC'S ABILITY TO DETECT AND CORRECT THE RESULTING DEFICIENCIES.

STAFF HAS DEVELOPED INITIATIVES THAT SHOULD LEAD TO EFFECTIVE IMPROVEMENTS IN QUALITY AND QUALITY ASSURANCE PROGRAMS.

UNDERLYING PRINCIPLE IN THEIR DEVELOPMENT HAS BEEN THAT THE ULTIMATE RESPONSIBILITY FOR QUALITY AND SAFETY REMAINS WITH THE NUCLEAR INDUSTRY, AND NONE OF THE INITIATIVES ARE INTENDED TO TRANSFER THIS RESPONSIBILITY TO THE NRC.

INITIATIVES ARE DESIGNED TO:

- ESTABLISH ADDITIONAL CONFIDENCE IN THE QUALITY OF DESIGN, PROCUREMENT, CONSTRUCTION, AND TESTING ACTIVITIES

- IMPROVE THE MANAGEMENT CONTROL OF QUALITY

- IMPROVE THE NRC CAPABILITY TO EVALUATE THE IMPLEMENTATION OF LICENSEE PROGRAMS.

- SATISFY THE DIRECTION PROVIDED THE NRC IN AN AMENDMENT ACCEPTED BY THE HOUSE AND SENATE CONFEREES IN THEIR JOINT CONSIDERATION OF THE NRC'S FY 82-83 AUTHORIZATION BILL.

SOME OF THE ACTIONS CONSIDERED AND ENDORSED BY THE STAFF ARE ASSOCIATED WITH EXISTING AGENCY PROGRAMS.

- FOLLOWUP OF ALLEGATIONS IS AN ESSENTIAL PART OF THE NRC's INSPECTION PROGRAM, AND IS AN EFFECTIVE EXTENSION OF INSPECTION RESOURCES.

- NRC HAS SUFFICIENT AUTHORITY TO TAKE APPROPRIATE ENFORCEMENT ACTION FOR INADEQUATE QUALITY ASSURANCE.

- RULEMAKING ACTION IS CURRENTLY IN PROGRESS WHICH WILL CLARIFY THE NRC STAFF POSITION REGARDING THE TYPES OF CHANGES THAT CAN BE MADE TO QUALITY ASSURANCE PROGRAM DESCRIPTIONS WITHOUT INFORMING THE NRC AND CLARIFY, IN THE REGULATIONS, THE REQUIREMENT TO IMPLEMENT THE ACCEPTED QUALITY ASSURANCE PROGRAM DESCRIPTION.

- ACTIONS HAVE BEEN INITIATED AT NEAR-TERM OPERATING LICENSE FACILITIES TO IMPROVE STAFF CONFIDENCE IN THE QUALITY OF DESIGN AND CONSTRUCTION ACTIVITIES. THESE ACTIONS INCLUDE:

  SELF EVALUATIONS BY LICENSEES

  INDEPENDENT DESIGN REVIEWS

  REGIONAL EVALUATIONS

INITIATIVES IN THIS PAPER ARE DIRECTED TOWARD REACTOR FACILITIES NOT YET LICENSED FOR OPERATION.

BASIS FOR NOT BACKFITTING THESE INITIATIVES TO OPERATING REACTORS:

- PREVIOUS REVIEWS OF THE FACILITIES
- FACILITY OPERATING HISTORY
- EXTENSIVE STARTUP TEST PROGRAMS
- REVIEWS AND UPGRADES IN RESPONSE TO TMI AND BULLETIN ACTIONS.

QA INITIATIVES

A. MEASURES AT NEAR-TERM OPERATING LICENSE FACILITIES

1. SELF-EVALUATIONS

- APPLICANT REVIEWS QA PROGRAM FOR DESIGN AND CONSTRUCTION
- NRC STAFF REVIEWS LICENSEE'S SELF-EVALUATION
- ADDITIONAL ACTION MAY BE REQUIRED
- CEO OR DESIGNEE CERTIFIES PLANT DESIGN, CONSTRUCTION AND TESTING MEETS FSAR AND OTHER LICENSING COMMITMENTS

IMPLEMENTATION

° STARTED	12/81
° ELEVEN PLANTS COMPLETED	9/82
° COMPLETE NTOL EVALUATIONS	11/82
° DECISION ON CONTINUATION	12/82

2. REGIONAL EVALUATIONS

- NRC STAFF CONSIDERS NEED FOR ADDITIONAL INSPECTIONS
- PROJECT INSPECTION AND ENFORCEMENT HISTORY IS EVALUATED
- SALP REPORTS ARE REVIEWED

IMPLEMENTATION

° STARTED	12/81
° EIGHT PLANTS COMPLETED	9/82
° DEVELOP PROCEDURE TO FORMALIZE EVALUATIONS	12/82
° ISSUE AND IMPLEMENT PROCEDURE FOR QA SUMMARY REPORTS	2/83

3. INDEPENDENT DESIGN REVIEWS

- APPLICANT FOR OL MAY BE REQUESTED TO CONDUCT
- PROVIDES AN INDEPENDENT EVALUATION OF THE QUALITY OF DESIGN
- ADDRESSES PROGRAMMATIC AREAS (i.e., INTERFACE CONTROL, VERIFICATION RECORDS, CLASSIFICATION OF SYSTEMS, AUDIT FINDING AND CORRECTIVE ACTIONS)
- CHECKS SPECIFIC DESIGN FEATURES BY INDEPENDENT CALCULATIONS
- COMPARES INSTALLATION AGAINST AS-BUILT DRAWINGS
- NRC STAFF REVIEWS THE PLAN, IMPLEMENTATION AND AUDITS WORK IN PROGRESS

IMPLEMENTATION

- TWO REVIEWS COMPLETED 9/82
- NINE REVIEWS IN PROGRESS
- COMPLETE REVIEWS 1/83
- DECISION ON CONTINUATION 1/83

B. INDUSTRY INITIATIVE (INPO)

- EVALUATE QUALITY IN DESIGN CONTROL AND CONSTRUCTION
- INPO CRITERIA BASED ON "BEST PRACTICE"
- LICENSEES WILL USE CRITERIA FOR SELF-INITIATED EVALUATIONS

IMPLEMENTATION

° EVALUATION CRITERIA DEVELOPED	4/82
° THREE TRIAL INSPECTIONS COMPLETED	7/82
- VOGTLE	
- HARRIS	
- HOPE CREEK	
° INSPECTION CRITERIA REVISED	8/82
° WORKSHOPS CONDUCTED ON EVALUATION CRITERIA	9/82
° UTILITIES PERFORM SELF-INITIATED EVALUATIONS	9/82-12/82
° ASSESS OVERALL PROGRAM AND FORMULATE PLANS FOR UTILITY IMPLEMENTATION	1/83

C. CONSTRUCTION INSPECTION PROGRAM DEVELOPMENTS

1. PROCEDURAL CHANGES

° PROGRAM HAS CHANGED OVER YEARS (MOSTLY ADDITIONS)

° CONSTRUCTION ENHANCEMENT PROGRAM 1979-1980

° CONSTRUCTION ASSESSMENT TEAM INSPECTIONS (TRIAL) 1981

° MAJOR REVISION IN PROGRESS TO MATCH PROGRAM TO AVAILABLE RESOURCES

- FY 83-84 NRC BUDGET ALLOCATES AN ADDITIONAL 0.3 (FY 83) AND 0.2 (FY 84) STAFF YEARS INSPECTION EFFORT PER CONSTRUCTION UNIT
- INCREASE EMPHASIS ON OBSERVATION OF WORK
- DECREASE RECORDS REVIEW
- INCREASE EMPHASIS ON INSPECTION OF DESIGN AND DESIGN CHANGES

° RESIDENT INSPECTOR NOW AT ALL SITES $\geq$ 15% COMPLETE

IMPLEMENTATION

° STARTED INSPECTION PROCEDURE REVIEW & REVISIONS 10/81

° MECHANICAL INSPECTION PROCEDURES ISSUED 8/82

° INSPECTION PROCEDURE REVISIONS APPROXIMATELY 45% COMPLETE

° COMPLETE PROCEDURE REVIEW & REVISIONS 10/83

2. CONSTRUCTION ASSESSMENT TEAM INSPECTION

- PAT TYPE INSPECTIONS AT SELECTED CONSTRUCTION SITES
- COMPREHENSIVE LOOK AT LICENSEE MANAGEMENT
- INDEPENDENT REVIEW OF REGIONS
- INDEPENDENT REVIEW OF INPO

IMPLEMENTATION

° STARTED CAT PROGRAM	7/82
° INSPECTION CRITERIA DEVELOPED	8/82
° TEAM SELECTED	8/82
° FIRST CAT INSPECTION AT BELLEFONTE	9/82
° CONDUCT FOUR CAT INSPECTIONS DURING 1983	
° CONDUCT FOUR CAT INSPECTIONS DURING 1984	
° DECISION TO CONTINUE CAT INSPECTIONS	1/85

3. INTEGRATED DESIGN INSPECTION

- REVIEW SELECTED SYSTEM AND/OR STRUCTURE
- REVIEW DESIGN INTERFACES
- SAMPLE CALCULATION CHECKS
- AS-BUILT VERIFICATION
- INTEROFFICE AND CONTRACTOR PARTICIPATION

IMPLEMENTATION

° TRIAL PROCEDURE DEVELOPED	7/82
° SELECT TEAM & CONTRACTOR	9/82
° CONDUCT FIRST INSPECTION	11/82
° CONDUCT SECOND INSPECTION	2/83
° FINALIZE DESIGN INSPECTION PROCEDURE	4/83

4. EVALUATION OF REPORTED INFORMATION

- IMPROVED SYSTEMATIC REVIEW OF 50.55(E) AND PART 21 REPORTS
- IMPROVED REVIEW OF ALLEGATIONS

IMPLEMENTATION

- CURRENTLY DATA REVIEW OF 50.55(E) AND PART 21 REPORTS DONE MANUALLY
- DEVELOP COMPUTERIZED TRACKING OF REPORTED EVENTS 2/83
- INPUT AND EVALUATE EVENTS 6/83

D. DESIGNATED REPRESENTATIVES

- ALLOWS FOR INCREASED INSPECTION EFFORT OF KEY AREAS AT SPECIFIC TIMES WITHOUT A CORRESPONDING INCREASE IN NRC STAFFING LEVELS

- WOULD SIGNIFICANTLY RAISE NRC'S CONFIDENCE LEVEL OF QA IN NUCLEAR POWER PLANTS

- PROVIDES AN INCREASED AVAILABILITY OF INSPECTORS FOR SPECIALIZED INSPECTION AREAS.

- WILL REQUIRE STATUATORY CHANGES TO IMPLEMENT

IMPLEMENTATION

° PRELIMINARY STUDY OF FAA SYSTEM	3/82
° IDENTIFY ELD AND OGC REPRESENTATIVE FOR PROPOSED RULEMAKING	10/82
° INITIATE PILOT PROGRAM AT CONSTRUCTION AND OPERATING SITES	3/83
° PREPARE RULE AND LEGISLATION	8/83
° FINALIZE PROPOSED RULE	11/83
° RECOMMENDATION TO COMMISSION	12/83

E. MANAGEMENT OF QUALITY

1. MANAGEMENT WORKSHOPS AND LICENSEE QUALITY IMPROVEMENT PROGRAMS

- COMMUNICATE COSTS OF BREAKDOWNS
- IMPROVE ATTITUDE AND PERFORMANCE
- PERSONAL COMMITMENT OF SENIOR MANAGERS
- CONTINUING SERIES OF WORKSHOPS
- PROVIDE FEEDBACK ON ACHIEVEMENTS
- UPGRADE QUALITY AND CERTIFICATION OF QA/QC PERSONNEL

IMPLEMENTATION

° COORDINATE DEVELOPMENT OF QUALITY MANAGEMENT WORKSHOPS WITH INDUSTRY	1/83
° COORDINATE DEVELOPMENT OF QUALITY IMPROVEMENT PROGRAMS WITH INDUSTRY	3/83
° CONDUCT QUALITY MANAGEMENT WORKSHOPS	5/83
° INITIATE QUALITY IMPROVEMENT PROGRAMS	6/83

2. QUALIFICATION & CERTIFICATION OF QA/QC PERSONNEL

- ENFORCE EXISTING STANDARDS FOR QUALIFICATION OF QA/QC PERSONNEL

- STUDY ESTABLISHMENT OF QUALIFICATION AND CERTIFICATION SYSTEM AS PART OF LONG-TERM REVIEW

- DEVELOP QUALIFICATION SYSTEM FOR NDE PERSONNEL

IMPLEMENTATION

° MEETINGS HELD WITH INDUSTRY ON NDE PERSONNEL QUALIFICATION	5/82
° EPRI NDE COMMITTEE PROPOSED PLAN FOR NDE PERSONNEL	7/82
° TEMPORARY INSPECTION INSTRUCTION ISSUED TO ENFORCE EXISTING QA/QC QUALIFICATION STANDARDS	1/83
° EPRI NDE COMMITTEE TO DEVELOP DRAFT CERTIFICATION PROGRAM	1/83
° FINAL CERTIFICATION PROGRAM TO NRC	1/83
° NRC STAFF TO REVIEW AND ADOPT PROGRAM	6/83
° NRC TO DEVELOP RULE FOR NDE CERTIFICATION	8/83
° START QUALIFICATION & CERTIFICATION PROCESS FOR NDE PERSONNEL	10/83
° MAINTAIN REGISTRY OF LEVEL III NDE PERSONNEL	10/83

3. CRAFTSMANSHIP

- DISCUSS QA IMPROVEMENTS WITH MAJOR TRADE UNIONS
- QA/QC ACTIVITIES MUST REACH THE CRAFTSMAN
- ASSURE GOOD CRAFTSMANSHIP

IMPLEMENTATION

° MEETING HELD WITH TRADE UNIONS	7/82
° MEETING HELD WITH NUCLEAR STABILIZATION COMMITTEE	9/82
° CONTINUE DISCUSSION WITH LABOR & MANAGEMENT AS PART OF LONG-TERM REVIEW	11/82

F. LONG-TERM REVIEW

° COMPREHENSIVE NRC STAFF STUDY TO
  - DETERMINE ROOT CAUSES OF QUALITY BREAKDOWNS AT PLANTS WITH IDENTIFIED DEFICIENCIES
  - DETERMINE UNDERLYING CHARACTERISTICS OF SUCCESSFUL QA PROGRAMS
  - DEVELOP RECOMMENDATIONS FOR CHANGES/IMPROVEMENTS IN NRC AND INDUSTRY QA PROGRAMS

° EXAMINATION OF EXISTING PROGRAMS AND PAST PROBLEMS WILL INCLUDE
  - REVIEW OF EXISTING DOCUMENTATION
  - VISITS/DISCUSSIONS WITH REGIONS AND RESIDENTS
  - VISITS TO PLANT SITES AND CORPORATE OFFICES
  - BOTH OPERATING AND CONSTRUCTION SITES

° EXAMINE NRC QA PROGRAM AND POLICIES AS WELL AS LICENSEES/VENDORS/CONTRACTORS
  - OUTSIDE QA PROGRAMS (NON-NUCLEAR AND FOREIGN NUCLEAR)

° EMPHASIS ON GENERIC IMPLICATIONS

° COST/BENEFIT OF VARIOUS ALTERNATIVES

° RESPONSIVE TO FORD AMENDMENT

° PLAN TO ESTABLISH ADVISORY PANEL

F. LONG-TERM REVIEW (Cont'd)

IMPLEMENTATION

° SELECT CONTRACTORS FOR SITE VISITS	9/82
° INITIATE SITE VISITS	10/82
° INITIATE STUDY OF NRC PROGRAMS, ANALYSIS OF FORD AMENDMENT ALTERNATIVES, PILOT PROGRAMS AND OUTSIDE PROGRAMS	11/82
° INITIATE STUDY OF CERTIFICATION AND QUALIFICATION OF QA/QC PERSONNEL	12/82
° CONTINUE STUDIES, ANALYZE FINDINGS, PROPOSE SOLUTIONS AND COST/BENEFIT ANALYSIS	1/83-9/83
° FINAL REPORT TO COMMISSION AND CONGRESS	12/83

August 20, 1982

SECY-82-352

POLICY ISSUE

(Notation Vote)

For: The Commission

From: William J. Dircks
Executive Director for Operations

Subject: ASSURANCE OF QUALITY

Purpose: To inform the Commission of staff initiatives approved within the authority of the Executive Director for Operations, to improve the assurance of quality in the design and construction of nuclear projects; and to obtain Commission approval to pursue revision of the NRC's statutory authority to allow implementation of a system of designated representatives analogous to the system employed by the Federal Aviation Administration.

Discussion: The complexity and extent of problems that have been identified in the past few years at 5 of the 32 units now under active construction have caused concern regarding the quality of the design and construction of nuclear projects. These problems include nonconforming structural steel welds at Zimmer, seismic design errors at Diablo Canyon, inadequate soil compaction at Midland, voids in concrete structures at Marble Hill and design deficiencies at South Texas. Enclosure 3 summarizes recent experience at each of these 5 projects.

Analysis of the experience at problem sites has resulted in the classification of three primary problem areas: failure of the project management team to provide adequate management controls to prevent a significant breakdown in quality from occurring; failure of the owner's quality assurance program to detect the breakdown in a timely manner and to obtain the appropriate corrective action; and failure of the NRC's programs to recognize the true extent and nature of the problems.

The first two problem areas are fundamentally derived from a lack of total management commitment to quality at the nuclear projects inception. This lack of commitment has been exacerbated by the lack of understanding of the role of quality assurance in project management and the lack of total understanding of what is required by personnel at all levels of the process.

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The third problem area is two-fold in derivation. Historically, the NRC's licensing and construction inspection programs have not sufficiently examined the project management controls at sites under construction, but have been oriented towards establishing adequacy within major technical and functional areas, e.g., concrete, electrical, etc. The systematic assessment of management performance and evaluation of all other available information have not received the same level of effort as operating sites. Second, previous NRC programs have not addressed design quality as specifically and extensively as other areas.

In response to the breakdowns in quality and quality assurance, the Chairman in a November 27, 1981 memorandum directed the staff to determine various approaches that could be taken to strengthen quality assurance, and to provide the Commission a preliminary evaluation of the approaches that appear most promising. On January 29, 1982 the staff briefed the Commission on initiatives that appeared to merit further consideration. Industry representatives from the Institute for Nuclear Power Operations (INPO) met with the Commission on February 4, 1982 to present their plans for improving the assurance of quality at plants under construction. On July 15, 1982 the staff again briefed the Commission on the actions taken to date and the initiatives under consideration.

The staff has developed initiatives that should lead to effective improvements in quality and quality assurance programs. While many of these initiatives require NRC actions, the underlying principle in their development has been that the ultimate responsibility for quality and safety remains with the nuclear industry, and none of the initiatives are intended to transfer this responsibility to the NRC. The initiatives are designed to establish additional confidence in the quality of design and construction activities and improve the management control of quality. The initiatives are also designed to improve the NRC capability to evaluate the implementation of licensee programs. Compliance with NRC requirements for the quality assurance program and its implementation is a major consideration in establishing this confidence.

Although a resident inspector is now assigned to every site at which construction is more than 15 percent complete, the NRC is limited in its ability to assure compliance with all NRC requirements because of the limited inspection resources. The staff recommends implementation of a system of designated NRC representatives (analogous to the FAA system) to extend its inspection resources.

During the development of the initiatives presented in this paper, several additional actions were considered. Where we were not able to establish an adequate basis to initiate additional actions at this time, further study is warranted. A long-term review will be conducted, utilizing knowledge within and outside NRC to evaluate the merits of additional actions, monitor the outcome of ongoing industry and NRC initiatives and initiate changes in program direction as appropriate. This review will satisfy the direction provided the NRC in an amendment accepted by the House and Senate conferees in their joint consideration of the NRC's FY 82-83 authorization bill.

Some of the actions considered and endorsed by the staff are associated with existing agency programs. The followup of allegations is an essential part of the NRC's inspection program, and is an effective extension of inspection resources. Allegations provide an opportunity for non-NRC personnel to enter potential problems into the NRC's problem correction chain. The principal objective of the resultant NRC inspection effort is to obtain sufficient information through independent in-depth examinations to establish the significance of the particular allegation and to effect corrective action commensurate with it's significance. To encourage and provide personnel an opportunity to make an allegation, NRC inspectors wear hard hats that uniquely identify them. The resident inspector's office has a telephone answering device for 24-hour response to callers, and the telephone numbers of the resident inspector and NRC regional office are listed in the local telephone directory. Effective October 12, 1982 NRC postings at the site will identify the legal protection afforded people who provide allegations.

With respect to enforcement, the NRC has sufficient authority to take appropriate enforcement action for inadequate quality assurance. The options extend over a broad range from meeting with a licensee, notices of violation and civil penalties to issuance of orders for modification, suspension or revocation of licenses. The staff intends to continue to take strong actions in response to significant quality assurance breakdowns and has expressed this intention in the enforcement policy.

Current rules are not specific on whether or not a licensee or permit holder is required to notify the NRC of changes to the quality assurance program description previously accepted by the NRC in the Safety Analysis Report (SAR). Additionally, current regulations do not explicitly require licensees or permit holders to implement the accepted NRC SAR quality assurance

program description. Rulemaking action is currently in progress which will clarify the NRC staff position regarding the types of changes to the licensees' and applicants' quality assurance program descriptions that can be made without informing the NRC and clarify, in the regulations, the requirement to implement the accepted quality assurance program description.

Actions have been initiated at near-term operating license facilities to improve staff confidence in the quality of design and construction activities. These actions include self evaluations by licensees, and in most cases, an independent design review. The limited experience to date with the independent design reviews conducted at LaSalle and San Onofre (Enclosure 4) includes the identification of numerous deficiencies (nonconformances with the original specifications), which have required reanalysis. Relatively few of these deficiencies have required hardware changes, and to date, none of the deficiencies identified would have prevented safety-related components, systems, or structures from performing their intended function.

The initiatives in this paper are directed toward reactor facilities not yet licensed for operation. At this time, the staff concludes a reasonable basis for not backfitting these initiatives to operating reactors is provided by previous reviews of the facilities, their operating history, extensive startup test programs, and the reviews and upgrades in response to TMI and Bulletin actions. Further consideration will be given to operating reactors as part of the long-term review.

The initiatives summarized below have been approved within the authority of the Executive Director for Operations. The staff will continue those actions that are already underway and implement the remainder of the initiatives as soon as practicable. Each initiative is described further in Enclosure 1.

° Measures at Near-Term Operating License Facilities

The NRC will continue to employ the measures currently in use to establish confidence in the quality and effectiveness of utility quality assurance programs at near-term operating license facilities until other NRC or industry programs are capable of providing this confidence. These measures include applicant self evaluation, independent design review and regional evaluations.

° Industry Initiatives

The NRC will continue to interact with INPO in its development of industry initiatives, measure their effectiveness and adjust the corresponding NRC actions to provide for effective use of both industry and NRC resources.

° Construction Programs

The NRC will increase the resources allocated to the inspection of reactors under construction by an additional 0.3 (FY 83) and 0.5 (FY 84) staff years per unit under construction.

The NRC will complete development and implement planned revisions to enhance the effectiveness of its construction inspection procedures.

The NRC will complete development and implement its program for construction assessment team inspections at selected facilities to provide a basis for evaluation of the management performance essential to quality construction.

The NRC will complete development and implement the integrated design inspection process to assess the quality of design activities including examination of as-built configuration at near-term operating licensee facilities.

The NRC will expand its capability to identify generic design and construction deficiencies by computerized analysis of information reported by vendors, construction permit holders and NRC inspectors.

° Management

Quality management seminars for top level managers with facilities under design and construction should be sponsored by industry. The seminars would focus recent experience of selected managers and recognized experts in the design and construction of nuclear projects.

The NRC will request that each utility with a facility under construction reevaluate its quality assurance program and implement improvements in areas where the evaluations identify a need.

The NRC will take actions to improve the enforcement of existing standards for qualification of quality assurance and quality control personnel and pursue establishment of a system of third party qualification and certification for such personnel.

The NRC will continue to explore with labor and other organizations, potential methods and incentives to assure quality in design and construction related production activities.

° Long-Term Review

The NRC will commence a long-term review for continuing evaluation of quality and quality assurance problems related to design, construction, testing and operations, and potential solutions to those problems and their impact on the adequacy of NRC quality assurance policies and programs.

° Quality Assurance Planning and Evaluation

The NRC will make organizational realignments to combine within a single organization the functions of research, standards development and inspection program development for quality assurance at reactors. The licensing function will remain in NRR until the current backlog of licensing actions is completed.

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The Office of Inspection and Enforcement is designated lead office with responsibility for development of NRC policies and programs for quality assurance and for implementation of the quality assurance initiatives.

The following staff recommendation is provided for Commission consideration and approval.

° Designated Representatives

The NRC should pursue revision of its statutory authority to allow implementation of a system of designated representatives analogous to the system employed by the Federal Aviation Administration.

The staff has developed resource estimates and implementation schedules for the new initiatives. The resource estimates, implementation schedules, and staff responsibilities for implementation are discussed in Enclosure 2. The staff responsibilities are assigned consistent with the organizational realignment. The resource estimates to implement the initiatives are consistent with the NRC FY 83-84 budget. The NRC resource estimates are summarized below.

1. Estimated NRC Staff Resources

   25 staff years new effort in FY 83
   24 staff years new effort in FY 84

2. Estimated NRC Contractor Resources

   $2.2 million new effort in FY 83
   $1.4 million new effort in FY 84

Recommendation: That the Commission approve the staff proposal as summarized above.

William J. Dircks
Executive Director for Operations

Enclosures:
1. Initiatives
2. Resources, Schedules and Staff Responsibilities
3. Examples of Recent Quality Assurance Problems
4. Independent Design Review for Near-Term Operating License Facilities

Commissioners' comments should be provided directly to the Office of the Secretary by c.o.b. Wednesday, September 8, 1982.

Commission staff office comments, if any, should be submitted to the Commissioners NLT Tuesday, August 31, 1982, with an information copy to the Office of the Secretary. If the paper is of such a nature that it requires additional time for analytical review and comment, the Commissioners and the Secretariat should be apprised of when comments may be expected.

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ENCLOSURE 1

Enclosure 1

INITIATIVES

I. Introduction

The Commission has considered quality assurance to be a key factor in the design, construction and operation of nuclear power plants for many years. Proposed versions of the General Design Criteria used in 1967 recognized the interest in quality assurance. Appendix B to 10 CFR 50, published in June 1970, described mandatory criteria for acceptable quality assurance programs for safety-related features.* Subsequently, a number of national standards and regulatory guides providing additional guidance have been issued to upgrade quality assurance programs. In the 1973 time frame, the Atomic Energy Commission expended major effort to communicate to industry the framework, e.g., plans, procedures, organization, of a quality assurance program that would be acceptable to AEC. This framework is reflected in current quality assurance programs that have been approved by NRC.

II. Problem Statement

Examination of the problems that have been identified recently indicates that the fundamental cause of most design and construction deficiencies is the lack of total management commitment to quality. This lack of commitment has been intensified by the lack of understanding of the role of quality assurance in project management and the lack of total understanding of what is required of personnel at all levels of the process.

The owner's project management team is responsible for the overall planning and management of the design, construction, and testing of the nuclear power plant. If the senior management has a strong commitment to quality, and if that commitment is imbued in a capable project management team, then the subsequent actions of this team will communicate that commitment to all involved parties. The project management team communicates and

*As used in this paper and defined in Appendix B, quality assurance comprises all those planned and systematic actions necessary to provide adequate confidence that a structure, system, or component will perform satisfactorily in service. Quality assurance includes quality control, which comprises those quality assurance actions related to the physical characteristics of a material, structure, component, or system which provide a means to control the quality of the material, structure, component, or system to predetermined requirements.

obtains through contractural and procedural arrangements with the designers, fabricators, and constructors a level of quality commensurate with the owner's commitment. The commitment to cost and schedule must be properly balanced with quality through these contractual and procedural arrangements. For example, if the constructor earns contractual credit strictly with the schedule of physical installation, the message from project management is production. On the other hand, if earned credit is commensurate with the schedule of owner accepted, adequately documented installation, the message is quality production. The latter case provides the proper incentive for getting work accomplished right the first time. This is then reflected in the policy and procedural direction to the various organization sub-tiers.

Similarly, the role of quality assurance in the project management team is determined by the senior management's commitment to quality. Proper implementation of the quality assurance criteria is an important element in successful project management. However, quality assurance programs cannot substitute for poor project management or a lack of commitment to quality. Quality assurance must be an integral part of all of the project planning and management activities from the projects inception, and its role must be communicated and fully understood by all participants in the design and construction process (from senior management to the craftsman). For example, if the inspection function is planned and conducted as an integral part of physical installation activities, then early detection and correction of procedural or other inadequacies will result in enhancing quality, cost, and schedule. All participants must be adequately trained to understand and obtain these benefits.

Weaknesses in the existing approach to assuring quality are apparent. They are evidenced by the frequency and severity of design and construction deficiencies, and by the failure or delay of industry and NRC recognition of the extent and nature of the breakdowns.

Previous efforts by the NRC to assure program content and structure have not been balanced with comparable efforts to assure successful program implementation. The NRC's licensing and inspection programs have not sufficiently examined the project management controls at sites under construction, but have been oriented towards assuring the adequacy within major technical and functional areas, e.g., concrete, electrical, etc. The systematic assessment of management performance and evaluation of all available information at construction facilities did not receive the same level of effort as operating sites. Previous NRC programs have not addressed design quality as specifically and extensively as other areas.

In sum the fundamental issues can best be characterized as the lack of total management commitment to quality and the uncertainty in industry's and NRC's ability to detect and correct the resulting deficiencies. The need to resolve these issues is the basis for the following initiatives.

III. Initiatives

A. Measures at Near-Term Operating License Facilities

For those plants in the Near-Term Operating License (NTOL) status, the NRC has implemented three interim measures to provide additional confidence that required quality assurance programs have been successfully implemented and completed during the design and construction of the nuclear facility. These measures will be continued until replaced by adequate industry programs or permanent changes in the present NRC program.

1. Self Evaluation

An applicant for an operating license will perform a comprehensive self evaluation of the effectiveness of the quality assurance program for design and construction. This requires an overall description of the project's quality assurance program for design and construction. The self evaluation is a survey of the overall quality assurance program. The survey will describe the development and history of the program; management involvement, audits, reviews, significant problems and corrective actions. The NRC staff reviews the self evaluation and provides the results of its review to the licensee. Additional work, such as corrective actions or further audits, may be required in particular areas. In addition, the Chief Executive Officer or his designee is required to certify that the facility has been designed, constructed, and tested in accordance with the Final Safety Analysis Report and other licensing commitments.

2. Regional Evaluation

On each new operating license, the NRC staff considers whether there is a need for additional inspections of selected areas based on an evaluation of the project's inspection and enforcement history. This assures consideration of the need for a better assessment of performance in potentially weak areas. The project's inspection and enforcement history is evaluated with particular attention to the significant problems that have been noted at other construction sites. Other information considered includes known problem areas, results of NRC inspections and the Systematic Assessment of Licensee Performance program, and problems noted elsewhere with the same contractors. Additional inspections are performed as warranted in potentially weak areas.

3. Independent Design Review

Based upon results of the self evaluation and regional evaluation, an applicant for an operating license may be requested to have an independent design review conducted. The criteria for determining which facility, and the scope and extent of the design review also include the combined nuclear experience of the licensee, architect-engineer, and contractors. The review provides an evaluation of the quality of design based on a detailed examination of a small sample. The staff specifies a sample area appropriate to the particular project. For LaSalle, the mechanical and structural loads on the residual heat removal system under blowdown and operating basis earthquake conditions were specified. The independent review addresses programmatic areas, e.g., classification of systems and components, design and verification records, interface control and interdisciplinary review, consistency with FSAR, nonconformances and corrective actions, and audit findings and resolutions. The review includes verification of specific design features by independent calculations and comparison of installations against as-built drawings. The NRC staff reviews the selection of the independent review organization and the plan before implementation, audits the work in progress, and reviews the results.

B. Industry Initiative

The industry initiative is not an NRC staff proposal, but a program that the industry is presently developing. The NRC staff is monitoring this program in order to take best advantage of the industry efforts.

The Institute for Nuclear Power Operations (INPO) is developing criteria which will be used to evaluate quality assurance for design and construction. As with the existing INPO criteria for plant operation, they will be based on "best practice," rather than minimum standards of acceptability. Licensees will use the criteria for self-initiated evaluations (which can be performed either by an independent group within the utility or a contractor). The self-initiated evaluations will be submitted to INPO by the end of 1982. During this trial process, the NRC staff will be involved by reviewing the criteria and observing some of the evaluations. Details of the staff involvement have not yet been developed.

The industry will decide, by early 1983, on the direction of a continuing program. At present, the primary alternatives appear to be: INPO will either begin conducting quality assurance evaluations at individual construction facilities, or a form of self-initiated evaluation will continue.

INPO is also conducting management workshops (May 1980, September 1981 and October 1982) with utility chief executive officers and plant managers in an effort to strengthen the utility commitment to safe operation. NRC will coordinate its quality management seminars (Enclosure 1, Section D.1) with the industry efforts.

C. Construction Inspection Program

1. Procedure Changes

The NRC does not have sufficient inspection resources to fully implement all of the existing procedures in the reactor construction inspection program. The FY 83-84 NRC budget allocates an additional 0.3 (FY 83) and 0.5 (FY 84) staff years per construction project to execute the construction inspection procedures. The staff is presently revising the individual inspection procedures for the various technical disciplines to better match the budgeted resources. The main goals of the procedure revision are: (1) to facilitate performance of the procedures by resident inspectors with reduced input from regional-specialist inspectors; (2) eliminate redundancie in the procedures; (3) reexamine scope or frequency of some inspections based on limitations on inspector resources; and (4) shift emphasis of inspection from record review to observation of work. This staff effort is continuing. The first series of revised procedures which cover inspection of mechanical systems are in the final stages of issuance.

2. Construction Assessment Team Inspections

This initiative will extend the concept of the NRC's Performance Appraisal Team (PAT) inspection program for operating reactors to about four selected plants under construction per year. This initiative was directed by the Commission in response to SECY 82-150 dated April 8, 1982, "The Performance Appraisal Team (PAT) Inspection Program."

The procedures for performing management control inspections at nuclear construction sites were revised by the staff in 1981. The procedures covered licensee management performance in the following construction areas: Quality Assurance, Design Controls, Project Management, Construction Controls, and Procurement Controls. During 1981, eight trial inspections were performed by regional-based inspectors using the revised procedures. These inspections were effective in identifying management control problems not identified by the routine inspection program. The manpower demand in these eight inspections caused the Regional Administrators to defer further performance of this type of inspection.

which plants; what operating experience since then? Fewer QA deficiencies?

The Construction Assessment Team inspections to be initiated by the IE staff would be similar to the construction inspections performed previously by the Regional Offices. A team of approximately six individuals with skills in the various areas to be inspected, including contractor personnel with appropriate backgrounds, will visit the selected construction site for two to three weeks. Additional site visits will be scheduled if necessary to collect additional information or clarify initial observations. The first site inspection has been tentatively scheduled for Bellefonte in September/October 1982.

The construction assessment will complement the integrated design inspection. The latter is focused on a narrow area of technical inspection, while the construction assessment is designed to assess the broader programmatic controls. Like the integrated design inspection, the scope of construction assessments will be modified to be responsive to unique conditions at a particular facility.

3. Integrated Design Inspections

The objective of this initiative is to expand NRC examination of quality assurance into the design process. The staff is developing an inspection approach which provides a comprehensive examination of the design development and implementation for a selected system and structure on a given project. This evaluation will encompass the total design process from the formulation of principal design and architectural criteria through the development and translation of the design and its revisions. It will conclude with onsite verification on a sampling basis, of the design of the installed system and structure. This inspection will integrate and augment selected activities of NRR, IE, the vendor inspection program, and the regional office. Following development of the evaluation methodology, the staff will conduct a trial inspection with contractor assistance. Subsequent inspections will be performed with a substantial amount of contractor assistance. The results will be provided to the appropriate regional and headquarters offices to be used as input to the overall NRC assessment prior to issuance of the operating license.

The evaluation will be a multi-disciplined review that will address areas such as mechanical, electrical, structural, instrumentation and control. The evaluation will include checking sample calculations, however, the emphasis will be on the systematic management of the total design process. The procedures to implement this approach are presently under development. A discussion of the conceptual logic necessary to evaluate the design process follows.

The evaluation will start with development of a logic or flow network of the design process. Each functional entity within the design organization will be identified. For each of these entities, internal and external design interfaces which involve transmittal of design information will be specified. From this network, critical design areas or areas with the least tolerance for error will be identified. Within each of the design entities, the specific procedures for the verification and transmittal of design information will be reviewed for conformance with the overall quality assurance program, and to identify specific weaknesses in the design process. Based on the results of the procedure review and the identification of critical design areas, a specific sample of the system and structure will be audited. Criteria will be preestablished for expanding or terminating the audit when problem areas are identified.

In examining a system or structure and its specifications, the review will focus on topics such as:

(a) Validity of design inputs and assumptions.
(b) Validity of design specifications.
(c) Validity of analyses.
(d) Identification of system interface requirements.
(e) Potential synergistic effects of changes.
(f) Proper component classification.
(g) Revision control.
(h) Documentation control.
(i) Verification of as-built condition.

The scope of the evaluation can be modified to be responsive to unique conditions for a particular facility, or known or suspected generic problems. This approach will examine all facets of the design management process for a limited sample.

4. Evaluation of Reported Information

Improvements are planned in the current program for systematic review of information pertaining to design and construction quality that is now reported pursuant to 10 CFR 21, "Reporting of Defects and Noncompliances," and 10 CFR 50.55(e), "Construction Deficiency Reports." This program would have objectives similar to those of the Office for Analysis and Evaluation of Operational Data (AEOD) for nuclear power plant operations. Computerized diagnosis would be used to enhance identification of relationships that may not be evident in the manual screening that is done now. No expansion of reporting requirements is currently planned but revisions are expected to facilitate computer input of key information.

D. Designated Representatives

Federal Aviation Regulations (14 CFR 183) prescribe the requirements for the issuance of designations to private persons to act in the capacity of FAA representatives in the examination, inspection and testing necessary for the issuance of aircraft certificates by the Administrator. Nominees meeting the requirements for appointment are authorized to represent the FAA in determining the compliance of aircraft, aircraft components, and their repair or alterations with the requirements of the Federal Aviation Regulations. They serve as direct representatives of the FAA in the performance of duties and are guided by the same requirements, instructions, procedures and interpretations as FAA employees in the performance of those duties. These programs include the Designated Manufacturing Inspection Representative (DMIR) and the Designated Engineering Representative (DER). The DER represents the FAA in helping to determine that the aircraft design complies with the relevant requirements of the regulations and the DMIR represents the FAA in certifying certain product and manufacturing functions. These designations are effective for one year but may be renewed for additional periods of one year.

A similar technique of using the designated representatives would be useful to the NRC inspection effort. It would increase the number of inspectors available to implement the inspection program by providing an immediate source of qualified experienced personnel. Using designated NRC representatives to check key aspects of the design, fabrication and construction of a plant at the specific time increased inspection effort is warranted, would significantly raise the NRC's confidence level of quality assurance in nuclear power plants. For example, during the preoperational and startup testing phases of a plant, designated representatives could provide the additional inspection effort so that all tests are monitored rather than a selected few. Increased inspection effort could also be applied at problem construction sites without having to reduce the routine level of inspection effort at other construction sites. Under a statutory regime and regulations like those of the FAA, NRC could ensure that the designated representative would not be subjected to harassment as he would be under the same protection as NRC employees.

The aviation industry uses holdpoints in the manufacturing process that require inspection and certification by an FAA inspector before the process can continue. The designated representative, provided by the aviation industry and acting for FAA, can provide that certification when required, which allows the process to continue without delays. It is therefore an advantage to the aviation industry to provide designated representatives and prevent costly delays in their manufacturing process. There is no analogous situation to that process at nuclear plants. There are no

preestablished holdpoints (other than CP and OL issuance) in the construction or operation of a nuclear plant that require NRC approval before the process can continue. Therefore, for the designated representative program to be successful for the NRC, program incentives would have to be developed to encourage the utilities to support the program.

Under the Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974, as amended, as well as other pieces of legislation, the Commission does not have the authority to designate licensee personnel as inspectors in a manner similar to the Federal Aviation Administration's authority under its legislation and regulations (see 49 U.S.C. 1355, 31 U.S.C. 483a, and 14 CFR 183). The FAA has the authority to issue designations to provide persons to act in the capacity of FAA representatives while remaining in their original employee status as far as receiving pay. To act in a similar way the NRC would have to have the Atomic Energy Act amended and would have to promulgate regulations based on this amendment.

The staff proposes to pursue the statutory changes necessary to implement a designated representative program and to continue development of program specifics.

E. Management

1. Management and Quality Improvement Programs

The objective of this initiative is to improve attitude and performance throughout all levels of licensee and contractor organizations. The problems that have arisen at construction sites are closely associated with management attitudes and practices. Quality in design and construction is invariably associated with the highest level of management being totally committed to quality. Senior managers are personally committed and are unrelenting in their demands on their staffs and contractors for a similar commitment.

The NRC will cooperate with industry in sponsoring a continuing series of seminars in which top level nuclear managers can communicate the advantages that can be gained through strong management involvement in their own QA programs. The seminars will be conducted with assistance from independent quality professional, utility and contractor representatives and the NRC. The seminars will be highlighted by the participation of managers from utilities which have experienced serious quality

assurance problems and those which have managed highly successful programs. The independent quality professionals will convey the improvement principles and techniques of implementation. The utility and contractor representatives will identify incentives for defect prevention based on direct experiences. The expected outcomes of these seminars will be recognition on the part of licensee and contractor management that positive incentives and benefits are achievable through enthusiastic implementation of aggressive quality assurance programs. While this initiative is directed to facilities under construction, participation by facilities in testing and operation will be strongly encouraged.

10 CFR 50, Appendix B, Criterion II requires each utility to regularly review the status and adequacy of its quality assurance program. The extent and nature of the recent breakdowns in quality assurance programs have indicated that this review has not been effective in maintaining an adequate quality assurance program at several facilities under construction.

Each utility with a facility under construction will be requested to reevaluate its quality assurance program, and to implement improvements in areas where the evaluations identify a need. Each utility should identify a senior executive with overall responsibility for the evaluation and implementation of the necessary improvements. The NRC will monitor the evaluation and implementation of the necessary improvements. It is expected that improvements in the quality assurance program will incorporate actions such as those listed below.

(a) Conduct training sessons for its personnel involved in design and construction. These sessions should emphasize the importance of each individual's contribution to ensuring quality and the enhancement to the cost and schedule goals which can be achieved with a positive program. The result of these sessions would be to get supervisors and employees in the habit of talking positively about quality.

(b) Provide better evaluation on a routine basis of status reports to detect both trends and current nonconformance problems. Based on this information, meaningful corrective actions can be promptly taken to prevent recurrence of both the specific problems and the root cause. The result would be defect prevention as a routine part of the operation.

(c) Provide feedback on the achievements of the quality assurance program, emphasizing the improvements from all involved in the program to maintain the concern and enthusiasm on the project toward ensuring quality.

(d) Establish a system through which all parties are encouraged to communicate to management the situations that make it difficult for the employee to perform quality work. This information will be included in the system for taking corrective actions. The result of this system would be that employees know that their problems can be heard and addressed.

2. Qualification and Certification of QA/QC Personnel

A significant and prevalent problem in the construction of nuclear power plants is the qualification status of personnel working in the quality control and quality assurance areas. Some utilities have waived, without suitable bases, the education and experience requirements for these people. The NRC has not sufficiently enforced these requirements through its inspection efforts.

Currently, various standards exist for the qualification of QA/QC personnel, for example:

(a) ANSI N45.2.6, Qualification of Testing & Inspection Personnel
(b) ANSI N45.2.23, Qualification of QA Audit Personnel
(c) ANSI N626.3 (Draft), Qualification & Duties of Personnel Engaged in ASME Boiler & Pressure Vessel Code, Section III, Division 1 & 2 Certifying Activities
(d) ASME Section III, Division 2, Appendix VII Qualification of Concrete Inspection Personnel
(e) ASNT, Certification of Level III Nondestructive Testing Personnel
(f) AWS QCI-82, Qualification & Certification of Welding Inspectors

NRC will direct more attention to the enforcement of the existing standards for the qualification of QA/QC personnel.

Certification of personnel engaged in QA/QC inspections would provide a cadre of industry personnel that have been qualified to minimum standards and certified to have demonstrated inspection capabilities.

A program for third party certification of Nondestructive Testing (NDT) personnel is currently underway with coordination between the Electric Power Research Institute (EPRI), member utilities, American Society of Nondestructive Testing (ASNT) and NRC. The program includes developing a standard written practice for the qualifications of the level III NDT inspectors as well as administering basic and method examinations and specific and practical examinations in the respective areas of nondestructive testing. A registry of personnel holding the required qualifications and certification would be maintained by the third party organization. Unsatisfactory performance would result in removal from the registry through an established procedure. Programs similar to this could be established in other areas such as welding, inspectors, QA auditing, concrete inspectors, and laboratory testing personnel.

Formal certification of various levels of QA/QC personnel will be considered as part of the long-term review (Enclosure 1, Section III.F).

3. Craftsmanship

The staff has initiated discussions with labor unions involved in nuclear construction in an effort to explore the potential methods and incentives to enhance the crafts role in assuring the quality of construction activities.

Feedback from the labor unions included the following points:

(a) Craftsmen are not well informed of their role in the QA/QC process.

(b) Continuous rework as a result of changes has a demoralizing effect on craftsmen and effects the quality of the final work.

(c) Utilities and contractors have not provided adequate training to craftsmen regarding quality.

(d) Utilities are not convinced that quality assurance is a cost effective approach to construction. Labor perceived the utilities to think QA/QC was a "high cost" item rather than a "cost saving" tool.

(e) Improved front-end engineering and procurement would reduce the amount of change and rework.

(f) A Nuclear Stabilization Committee has been established with representatives from labor, utilities and contractors to improve relations between labor and management.

The staff proposes to continue these discussions as part of the long-term review.

F. Long-Term Review

Long-term NRC quality assurance policies and programs will be based on a review which assesses existing agency and industry quality assurance activities in a broad manner and then recommends an integrated long-term agency plan for quality assurance. Additionally, the review will focus the viewpoints of various sectors of the public and the regulated community. The review will be conducted by the NRC staff and will include representatives from headquarters, the regional offices, and consultants to the NRC.

The primary function of the long-term effort will be to conduct a thorough review of continuing quality and quality assurance problems, and to propose solutions to improve the quality assurance programs for design, construction, testing and operation. This review will include a detailed assessment of the problems that developed at facilities such as Diablo Canyon, South Texas, Midland, Marble Hill, and Zimmer. The object of this assessment will be to identify, as concisely as possible, specific problems that have occurred and their root causes, particularly in the area of programmatic deficiencies. Additionally, the review will evaluate existing programs at facilities which have programs that are functioning properly in order to identify the positive aspects of those programs that should be applied generically. Both this review and the review of programs at problem facilities will involve site visits by the personnel performing the review.

Proposed solutions to generic and plant-specific quality and quality assurance problems will be reviewed critically to determine whether the recommended actions would actually resolve the identified problems. The review will develop estimates of the qualitative and quantitative value/benefit and impact/cost of proposed solutions, and ways in which they should be implemented for operating plants, plants presently under construction, or for plants to be constructed in the future.

The House and Senate in their current joint consideration of the NRC's FY 82-83 authorization bill have accepted in conference an amendment which directs the NRC to study ways to improve quality assurance programs. Implementation of this review is consistent with that direction.

G. Quality Assurance Planning and Evaluation

The recommendation to form a single organizational unit dedicated to the various aspects of quality assurance was made in a report prepared for the NRC by Sandia Labs in August 1977, entitled "A Study of the Nuclear Regulatory Commission Quality Assurance Program."* The centralization of quality assurance functions has been one of continual interest and now more than ever needs to be achieved.

The NRC presently views responsibility for quality assurance as threefold: first, to determine the adequacy of the licensee's quality assurance program description contained in the safety analysis report; second, to ascertain that the licensee has established and adequately implemented the approved quality assurance program and to verify compliance with NRC regulations; and third, to develop the regulations, standards and guides addressing QA in the design, construction and operation of nuclear facilities.

The responsibility for these three functions is currently divided among three separate offices, NRR, IE and RES, with execution of the inspection function from five regional offices. These three functional areas are not separate and discrete areas but are highly interrelated, requiring continual interface. For example, the inspection experience needs to be continually factored into the licensing effort, inspection program development and development of regulations and standards. In addition, recent quality assurance issues (e.g., Diablo Canyon, Marble Hill, South Texas) have been highly reactive and have required rapid NRC management attention and response from the three separate offices for their various quality assurance functional areas.

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*Page 60, "A Study of the Nuclear Regulatory Commission Quality Assurance Program," NUREG-0321

The functional quality assurance areas need to be realigned for the following reasons:

(a) To more effectively utilize the limited staff resources and expertise in quality assurance engineering.

(b) To establish a more discernible policy and position on quality assurance issues.

(c) To establish unity of control and to provide both information and coordination with industry.

(d) To bring together the licensing, inspection and standards functions on interrelated issues.

(e) To provide industry a signal that NRC management considers quality a leading part of the NRC operation and of sufficient importance to depart from the existing organizational structure.

It is recognized that most NRC activities are quality assurance related and that the NRC review process is an interdisciplinary function involving many organizational components. NRC headquarters activities which relate to the development of NRC policy, rules, standards and guides, and review and evaluation of the implementation of licensee's QA programs are to be consolidated at this time. The consolidation will occur in the Office of Inspection and Enforcement. The licensing function will remain in NRR until the current backlog of licensing actions is completed.

ENCLOSURE 2

Enclosure 2

Resources, Schedules and Staff Responsibilities

The nuclear industry currently expends substantial resources for quality assurance at power reactors. For example, about 7500 positions are currently devoted to quality control and quality assurance on construction projects.

The NRC Regional Offices devote about 130 positions to inspection of power reactors under construction and vendors. These inspections are concerned, to a great degree, with the effectiveness of the quality assurance programs in the various areas that are being inspected. This effort, which provides a measure of the overall effectiveness of the quality assurance programs, is the largest segment of the NRC's efforts related to quality assurance at construction projects. A smaller part of this inspection effort (about 28 positions) is narrowly directed towards inspecting the quality assurance programs.

In a broad sense, the headquarters offices also devote considerable efforts to quality assurance. In the narrow sense, they devote about 16 positions to direct professional work on quality assurance programs as follows: 4 positions licensing; 7 positions inspection program (QA related) development and development of QA initiatives; 5 positions research and standards development. Much of this effort can be considered applicable to construction projects.

NRC contractor work has previously been at a level of about $400,000 per year for research/standards development in quality assurance.

The estimated resources for the initiatives discussed in this paper are provided in Tables 1 and 2. These estimates are consistent with the NRC FY 83-84 budget. They can be summarized as follows:

1. Estimated Industry Resources

   (a) In FY 83
       (i) 280 man years new effort
       (ii) 420 man years altogether

   (b) In FY 84
       (i) 310 man years new effort
       (ii) 390 man years altogether

2. Estimated NRC Staff Resources

   (a) In FY 83
       (i) 25 staff years new effort
       (ii) 46 staff years altogether

   (b) In FY 84
       (i) 24 staff years new effort
       (ii) 34 staff years altogether

3. Estimated NRC Contractor Resources

(a) In FY 83
(i) $2.2 million new effort
(ii) $2.2 million altogether

(b) In FY 84
(i) $1.4 million new effort
(ii) $1.4 million altogether

New efforts correspond to the new initiatives developed by the staff, i.e., those that are not already underway and well established.

Generally, additional efforts are not large in comparison to the resources already devoted to QA. The improvements will come mostly from redirection of existing resources. NRC staff and contractor resources can be redirected as necessary to accomplish the initiatives without dropping any planned accomplishments although the depth and schedule of some planned accomplishments will necessarily be affected. NRC staff responsibilities with respect to development and implementation of the initiatives are indicated in Table 3. The schedules for accomplishing the initiatives are provided in Figure 1.

Table 1 - Estimated Resources for QA Initiatives (New Efforts)

QA INITIATIVES	FY 83[1] INDUSTRY (MAN YR)	FY 83[1] NRC STAFF (STAFF YR)	FY 83[1] NRC CONTRACT ($ THOU.)	FY 84[1] INDUSTRY (MAN YR)	FY 84[1] NRC STAFF (STAFF YR)	FY 84[1] NRC CONTRACT ($ THOU.)
NIOL - Self Evaluation[2]						
NIOL - Regional Evaluation[2]						
NIOL - Independent Design Review[2]						
Industry Initiative						
Inspection Program Changes[4]		10.0			13.0	
Construction Assessment ... Inspections	0.6	6.0	300	0.6	6.0	600
Integrated Design Inspections	2.3	3.5	800	0.9	1.4	320
Evaluation of Reported Information		0.2	250		0.2	350
Designated Representatives		0.5		84	2.0	
Management ... Programs	270	1.4	100	290	0.8	
Qualification ... Personnel	2.7	0.8		20	0.8	
Craftsmanship		0.4				
Long Term Review		1.8	750		0.1	100
Quality Assurance ... Evaluation						
TOTALS:[3]	280	25	2200	310	24	1400

NOTES:

(1) Resource estimates for initiatives related to licensing peak sharply in FY 83 and drop sharply in FY 84. Construction delays may reduce this variation.
(2) NIOL programs may be reduced beginning in mid FY 83 as other NRC and Industry initiatives take effect.
(3) Totals are rounded to two significant figures.
(4) FY 83-84 NRC budget allocates an additional 0.3 (FY 83) and 0.5 (FY 84) staff years inspection effort per construction unit.

Table 2 - Estimated Resources for QA Initiatives (Altogether)

QA INITIATIVES	FY 83[1] INDUSTRY (MAN YR)	FY 83[1] NRC STAFF (STAFF YR)	FY 83[1] NRC CONTRACT ($ THOU.)	FY 84[1] INDUSTRY (MAN YR)	FY 84[1] NRC STAFF (STAFF YR)	FY 84[1] NRC CONTRACT ($ THOU.)
NTOL - Self Evaluation[2]	10	2.5		3.6	0.9	
NTOL - Regional Evaluation[2]	0.8	8.5		0.3	3.0	
NTOL - Independent Design Review[2]	63	5.0		23	1.8	
Industry Initiative	74	2.6		54	1.3	
Inspection Program Changes		13.9			16.0	
Construction Assessment ... Inspections	0.6	6.0	300	0.6	6.0	600
Integrated Design Inspections	2.3	3.5	800	0.9	1.4	320
Evaluation of Reported Information		0.2	250		0.2	350
Designated Representatives		0.5		84	2.0	
Management ... Programs	270	1.4	100	200	0.8	
Qualification ... Personnel	2.7	0.8		20	0.8	
Craftsmanship		0.4				
Long Term Review		1.8	750		0.1	100
Quality Assurance ... Evaluation						
TOTALS:[3]	420	46	2200	390	34	1400

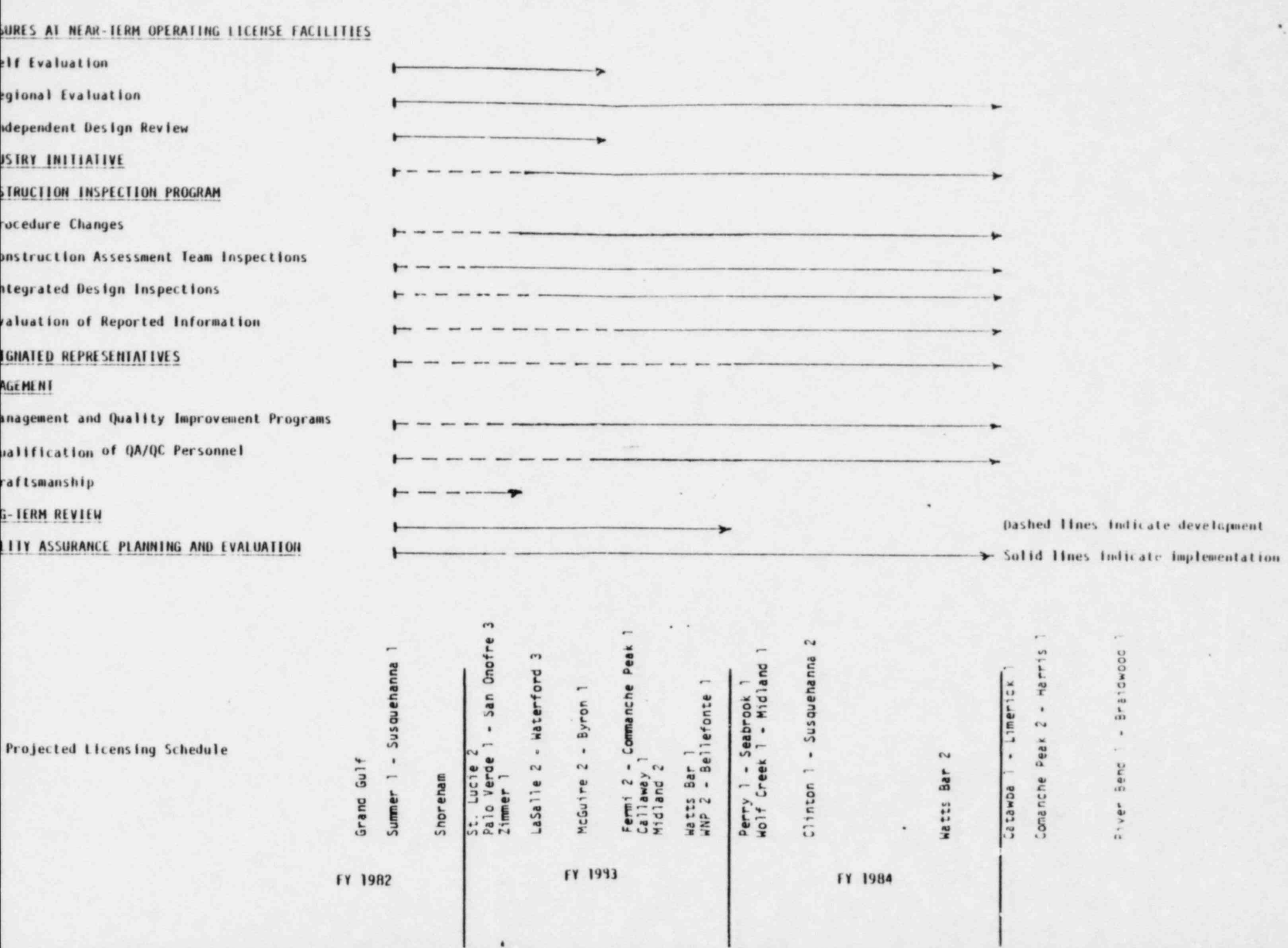
NOTES:

(1) Resource estimates for initiatives related to licensing peak sharply in FY 83 and drop sharply in FY 84. Construction delays may reduce this variation.
(2) NTOL programs may be reduced beginning in mid FY 83 as other NRC and industry initiatives take effect.
(3) Totals are rounded to two significant figures.

Table 3 - Staff Responsibilities for QA Initiatives

QA INITIATIVES	REGION	OIE	NRR	AEOD
NIOL - Self Evaluation	ASSIST		LEAD-REVIEW	
NIOL - Regional Evaluation	LEAD-PERFORM	PROCEDURES		
NIOL - Independent Design Review	ASSIST		LEAD-REVIEW	
Industry Initiative	MONITOR	LEAD-REVIEW	REVIEW	
Inspection Program Changes	IMPLEMENT	DEVELOP-ISSUE		
Construction Assessment ... Inspections		PERFORM		
Integrated Design Inspections	ASSIST	LEAD-DEVELOP	ASSIST	
Evaluation of Reported Information		LEAD-DEVELOP		ASSIST
Designated Representatives	IMPLEMENT	LEAD-DEVELOP		
Management ... Programs	MONITOR	LEAD-DEVELOP		
Qualification ... Personnel	INSPECT	LEAD-DEVELOP		
Craftsmanship		PERFORM		
Long Term Review	ADVISE	LEAD-PERFORM	ASSIST	
Quality Assurance ... Evaluation		LEAD-IMPLEMENT		

Figure 1 - Schedule for Quality Assurance Initiatives



ENCLOSURE 3

Enclosure 3

Examples of Recent Quality Assurance Problems

During the past few years, there have been serious quality assurance problems at nuclear power plants. Some examples are listed below:

1. Marble Hill

In June and July 1979, NRC confirmed allegations of improperly repaired concrete imperfections at Marble Hill. The imperfections were generally identified as concrete consolidation problems (honeycomb and voids), and improper repair (patching) of these imperfections.

NRC inspections confirmed that:

a. An excessive amount of honeycomb and air voids had occurred. Approximately 4000 concrete patches existed.

b. In many instances these imperfections were improperly repaired, and/or unacceptable materials were used for the repair.

c. Quality control records traceable to the repairs were either nonexistent or inadequate.

d. Personnel responsible for such repairs were inadequately trained and supervised.

e. The licensee was not in control nor sufficiently aware of the above circumstances.

These events led to a halting of all safety-related work at the site in August 1979. Work was not permitted by NRC to resume until December 1980, when the utility's quality assurance program and that of its contractors, had been substantially upgraded and the adequacy of completed construction work had been verified.

2. Midland

Excessive settlement of the diesel generator building was observed in 1978. The unexpected settling was subsequently attributed to inadequate and poorly compacted soil under the building. Other safety-related systems and structures were affected. NRC's investigation determined that design and construction specifications had not been followed during placement of the soil fill materials and that there was a lack of control and supervision of the soil placement activities by the utility and its contractors. Extensive rework has begun, and the operating license application is currently being litigated before an NRC Hearing Board.

3. Zimmer

Allegations received in January 1981 prompted an NRC investigation of quality assurance problems at the Zimmer site. The investigation has identified a large number of quality assurance related problems. The majority of the problems identified focus on the ineffectiveness of controls implemented by the licensee and its contractors for assuring the quality of work performed. In that regard, numerous deficiencies have been found concerning traceability of materials, handling of nonconformance, interface between construction and quality control, quality records, and the licensee's overview of ongoing work.

An extensive review of the as-built plant is being performed. Limited independent measurements were performed by the NRC in selected areas of concern in an attempt to characterize the actual safety significance of these deficiencies. Although a few problems requiring corrective action were identified, the majority of the tests and examinations disclosed no hardware problems. The licensee will perform a comprehensive quality confirmation program and resolve identified problems before an operating license is issued.

4. South Texas

In response to allegations that QC inspectors were being threatened if they reported unacceptable items during concrete placements, the NRC initiated an investigation through its Region IV Office in July 1977. Ten investigations of allegations were performed during the period July 1977 to November 1979.

The results of these investigations established that the allegations of harassment, intimidation and lack of support of QC inspectors were substantiated. The investigation demonstrated shortcomings in the management and that the implementation of the QA/QC program at the South Texas Project did not meet the standards required to assure that the facility will be constructed to NRC requirements. Safety-related work was stopped in 1980. NRC allowed restart in designated areas only after QA for that area was upgraded and verified by the NRC.

In January 1981, the licensee initiated a design review of those portions of the engineering design work performed by Brown and Root, Inc. The Quadrex Corporation assisted the licensee in this review. Briefly, the Quadrex report found that Brown and Root failed to properly implement an overall design consistent with the needs of a nuclear power plant. The licensee replaced Brown and Root with Bechtel Power Corpration as architect-engineer in September 1981. NRC is monitoring the performance of Bechtel as they resolve the problems identified in the Quadrex report.

5. Diablo Canyon

At Diablo Canyon, the Pacific Gas & Electric Company (PG&E) provided incorrect information to an expert consultant, who used the information in developing the seismic response spectra for the design of certain seismic piping and equipment restraints. NRC investigators have found that there was a lack of rigor and formality in the procedures used for verifying the accuracy of information transferred by PG&E to its consultants. These procedures did not comply with NRC requirements calling for verification of design information at each stage of the process by an independent person qualified in the pertinent disciplines. Proper quality assurance controls were not employed in technical and procurement communications with service-type contractors. Nor were document controls adequate to assure that those involved in design had ready access to the most recent information available.

Following discovery of these errors in seismic design, the recently issued operating license for Unit 1 was suspended in late 1981. Prior to the NRC's reinstatement of the operating license the licensee will be required to complete an extensive design reverification program for those areas in question.

ENCLOSURE 4

Enclosure 4

Independent Design Review For Near-Term Operating License Facilities

In order to provide further staff confidence in the quality of design and construction at near-term operating license applicants, licensees have been requested to conduct an independent verification of selected design and construction activities. The independent verification would be performed by an independent contractor with qualifications acceptable to the NRC. Independent verification efforts have been completed at LaSalle Unit 1 and 2 and San Onofre Unit 2 and 3. Reviews are presently in process at Grand Gulf, Susquehanna, Shoreham, Watts Bar, Palo Verde, Summer and St. Lucie.

At LaSalle, the licensee hired an independent contractor, approved by NRC, to perform a review of the mechanical and structural design of loop C residual heat removal system excluding all branch piping less than 3 inches, in the functioning mode of the low pressure injection system using loads resulting from the actuation of the automatic depressurization system in conjunction with the operating basis earthquake to verify that this system has been designed and constructed in accordance with the application and that the NRC requirements have been satisfied. Commonwealth Edison contracted the Teledyne Engineering Services (Teledyne) to perform this review with NRC approval.

The preliminary findings by Teledyne resulted in 21 Error/Deviation and 31 open-items reports which were transmitted to the licensee and the NRC staff. Upon submittal of all Teledyne's preliminary findings, the licensee transmitted it responses to Teledyne and the NRC staff and, in addition, the licensee received permission from the NRC staff to establish a dialogue between Teledyne and its Architect-Engineer (Sargent & Lundy) to discuss the potential errors found in the Teledyne review. Of these 52 reports which involved various problems in the design area and none in quality assurance, 39 were closed by Teledyne based on the acquisition of additional information and/or clarification of existing information. The 13 remaining reports were reviewed by Teledyne's Project Review Internal Committee. This committee, composed of three senior level Teledyne engineers who together had the expertise to resolve the technical issues, and the Teledyne Project Manager concurred that none of these reports have the potential for significant safety impact.

The NRC staff reviewed those open-items and error-deviations reports submitted to the Project Review Committee and concluded that these reports can be categorized as not having a significant safety impact on LaSalle. In addition, the NRC staff feels that Teledyne has performed an in-depth review of the analytical procedures and design calculations used in the piping, equipment, and component support design to assure the adequacy of the design bases, the adequacy of the design implementation, and the consistency between the design documents and the Final Safety Analysis Report commitments.

The independent design verification program conducted by Teledyne on the loop C residual heat removal system indicated that the quality assurance control and implementation, design process, procedures and Final Safety Analysis Report commitments are acceptable except in the area of response spectra, which was reviewed by NRC staff. The results of the limited review provide increased assurance that the quality assurance program established and implemented by the licensee and its principal contractors did effectively control the overall program and construction activities for the LaSalle County Station. While several design deficiencies were identified, the overall design and construction activities were adequately performed so that no adverse impact on safety was found.

At San Onofre the licensee contracted with Torrey Pines Technology, a subsidiary of the General Atomic Company (GA), to perform an independent evaluation of the seismic design and quality assurance program for San Onofre 2 and 3.

The design verification encompassed a review of the seismic design of San Onofre 2 and 3 to:

a. verify that the design process converted the seismic design basis specified in the San Onofre 2 and 3 Final Safety Analysis Report (FSAR) into the design documents that are transmitted to the constructor or fabricator, and

b. evaluate the SCE quality assurance (QA) audit plan and its implementation at the construction site and the fabricator's shops.

The design process performed by the equipment fabricators was not part of this review program.

The work was divided into eight major tasks:

Task A. Design Procedure Review
Task B. Design Procedure Implementation Review
Task C. Seismic Design Technical Review
Task D. Audit Plan Review
Task E. Processing of Findings
Task F. Reports
Task G. Pipe Segment Walkdown
Task H. Independent Calculations

The review was conducted by individual GA reviewers investigating each area covered by Tasks A through D, G, and H. When a reviewer found a deficiency that might have safety significance, it was documented in a "Potential Finding Report."

After the Potential Finding Report (PFR) was written, it was sent to the "original design organization" that was responsible for the area covered by the PFR. The original design organization (ODO) then investigated the PFR and responded in writing. The PFR and the ODO response was then reviewed by a GA committee, and the PFR was classified as (1) Out of scope, (2) Invalid, (3) Observation, or (4) Finding.

Out of scope items are those which are beyond the original scope of the review. For example, the review was oriented towards design verification. Procurement items are considered out of scope. Invalid Findings are the result of apparent deviations, uncovered in the course of the independent verification, that are resolved to the satisfaction of project personnel, usually during the Potential Finding review by the Original Design Organizations. Observations are valid deviations that are judged not to have the potential for significant impact on the seismic design adequacy of San Onofre Units 2 and 3. Findings are valid deviations that could have potential for significant impact on the seismic design adequacy.

Of the total of 170 PFRs that were initiated, 77 were determined to be invalid after additional information was reviewed. Of the 93 PFRs that were determined to be valid, 7 were classified as findings and 86 as observations. The numbers of findings and observations for each of the various tasks are as follows:

Task	Findings	Observations
A	3	2
B	1	35
C	1	41
D	2	5
G	0	2
H	0	1
Total	7	86

The staff has concluded, based on its review of the results of the design verification program, that the GA design verification program has not discovered anything that would cause the staff to change their previous conclusions that the San Onofre 2 and 3 quality assurance and seismic design programs are acceptable, and provides additional assurance that plant design and construction have been appropriately accomplished.

12/81

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C&R (Natalie)

Attached are copies of a Commission meeting transcript/s/ and related meeting document/s/. They are being forwarded for entry on the Daily Accession List and placement in the Public Document Room. No other distribution is requested or required. Existing DCS identification numbers are listed on the individual documents wherever known.

Meeting Title: Briefing on Quality Assurance

MEETING DATE: 9/29/82 Open ✓ Closed ___

ITEM DESCRIPTION:	Copies Advanced To PDR:	DCS COPIES: (1 of each Checked) Original Document	May be Dup*	Duplicate Copy*
1. Transcript (w/viewgraphs attached)	1	1		
2. SECY 82-352	2			1
3.				
4.				
5.				

*Verify if in DCS, and change to "PDR available."

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