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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

In the Matter of:

BECHTEL POWER CORPORATION, CLINTON IDR
(Open Meeting)

Location: Washington, D. C.

Date: June 28, 1984 Pages: 1 - 131

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

PRESENTATION, BECHTEL POWER CORPORATION, CLINTON TDR

OPEN MEETING

Nuclear Regulatory Commission
1717 H Street, N.W.
Room 1130
Washington, D.C.

June 28, 1984

The Commission met, pursuant to notice, at 10:00 a.m.

LIST OF ATTENDEES:

J. Milhoan, NRC
G. Lewis, NRC
R. Knap, NRC
B. Siegel, NRC
R. Goddard, NRC
J. Partlow, NRC
R. Parkhill, NRC
H. Wang, NRC
D. Norkin, NRC
J. Gilray, NRC
J. Grace, NRC
D. Danielson, NRC
J. Amaral, Bechtel
R. Powell, Bechtel
P. Karpa, Bechtel
C. Dick, Bechtel
L. Shipley, Bechtel
D. Herborn, Illinois Power
D. Hall, Illinois Power
J. Geier, Illinois Power
C. Fox, Attorney, Shiff & Hardin
P. Willman, Assistant Attorney General, Illinois
H. Taylor, Sargent & Lundy
S. Zabel, Attorney, Schiff & Hardin
M. Axelrad, Attorney, Newman & Holtzinger

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PROCEEDINGS

MR. SIEGER: I am Byron Siegel, and I am the Clinton project manager. In the a way of background, this meeting was initiated by Illinois Power on May 31, by a letter referring to independent design verification review, and requesting a meeting with the staff.

The staff, in a June 22 letter, responded to Illinois Power, set up and included in that letter a meeting agenda and some other documented information related to what we conceive as being constituting independent design verification review.

Because of my lack of knowledge of this and experience with these reviews, I think I won't go any further on what we'll do.

Jim Milhoan, who is going to be responsible for coordinating the independent design verification review for NRC. Go ahead, Jim.

MR. MILHOAN: Thank you, Byron.

MR. SIEGEL: Excuse me. Does everybody want to go around and introduce themselves first, or you don't think that would be necessary?

MR. MILHOAN: I think it would be very good if we went around the room to do that.

MR. LEWIS: I'll start off. I'm Gladstone Lewis,

go by Lou. I work in the Division of Quality Assurance, Safeguards, Inspections Programs, Quality Assurance Branch, Licensing Section, and work for Jim as section chief. I'll be NRC project manager for this IDR.

MR. MILHOAN: I'm Jim Milhoan. I'm chief of the licensing section of quality assurance branch, Office of Inspection and Enforcement.

MR. GODDARD: Dick Goddard, Office of the Executive Legal Director, NRC.

MR. PARKHILL: Jim Parkhill, Deputy Division Director, Office of Inspection and Enforcement.

MR. PARTLOW: Peter Karpa, Manager of Engineering, Bechtel Power Corp.

MR. DICK: I am Charles Dick. I'll be programs manager for this and other IDRs.

MR. HALL: I'm Donald Hall, vice president, Illinois Power Company.

MR. Geier: Julius Geier, assistant to vice president, Illinois Power Company.

MR. AXELRAD: I'm Maurice Axelrad, I'm with Newman & Holtzinger, Washington representative, assisting Illinois Power on the IDR.

MR. ZABEL: My name is Sheldon Zabel. I'm with the Chicago law firm of Schiff, Hardin & Way, representing

Illinois Power.

MR. FOX: Charles Fox, attorney for Schiff, Hardin, & Way, Chicago.

MR. POWELL: My name is Robert Powell, I'm a principal engineer with Bechtel Power Corporation.

MR. AMARAL: I'm John Amaral, I'm manager of quality assurance with Bechtel Power Corporation.

MR. SHIPLEY: Larry Shipley, I'm the assistant chief design engineer, Bechtel Power Corporation.

: Ian Williams, NRC III branch.

MR. PARKHILL: Ronald Parkhill, Quality Assurance branch, NRC, and I am involved with the I & E.

MR. KNAP: I'm Dick Knap, project section chief, Region III.

MR. DANIELSON: Duane Danielson, I'm an engineering section chief in Region III.

MR. HERBORN: Dan Herborn, director of nuclear licensing, Illinois Power Company.

MR. WILLMAN: Phil Willman, assistant Attorney General with the State of Illinois.

MR. GRACE: Nelson Grace, director of the Division of Quality Assurance, Safeguards, and Inspection Programs.

UNIDENTIFIED SPEAKER: (Inaudible response.)

MR. MILHOAN: Thank you. I think we can proceed

into the meeting. As we indicated in the agenda, the purpose of the meeting is for Illinois Power to present their planned approach to the performance of the independent design verification program--as you call it, the Independent Design Review, the IDR. The terms are synonymous.

At Clinton power station, we have sent a copy of a suggested agenda to Bechtel and to Illinois Power of the items that we would like to cover on today.

We recognize that it was a suggested agenda. If you have any changes in the agenda that you wish to make, we'll be pleased to discuss them at this time.

MR. HALL: After I start my remarks, I'll introduce an agenda. We took it right from yours, but we just changed the order of it.

MR. MILHOAN: Good.

MR. HALL: So it would be easier for everybody to work from it.

UNIDENTIFIED: Would you identify? I know, I hate to remind you, but --

MR. HALL: I'm Donald Hall.

UNIDENTIFIED: Would everybody identify themselves.

MR. HALL: I'm Donald Hall, vice president, Illinois Power Company.

MR. MILHOAN: Please proceed.

MR. HALL: As I said, I'm Donald Hall, vice president, Illinois Power Company, with responsibility for nuclear power.

We come here today, as you said, to discuss what we class as the Independent Design Review for our Clinton station.

My assistant for technical matters, Julius Geier, is here, as well as several other representatives. Bechtel Power Company, Corporation, has been proposed in our May 31 letter as the independent reviewer and is represented by the team headed by Mr. Peter Karpa and Mr. Charles Dick.

Illinois Power Company proposed this independent review in order to provide an additional independent determination that there is adequate confidence that the design of the Clinton station satisfies the requirements of the final safety analysis report, the safety evaluation report, and the supplements.

The Clinton station's power source is a 950 megawatt General Electric boiling water reactor, BWR 6, with a Mark 3 containment.

This basic General Electric design has been reviewed in detail during the 30 years of its development, production, and operation at many other sites.

In applying this plant design to Clinton, it has been the policy of Illinois Power Company management to ensure that the design and construction is being carried out in a manner which guarantees both the public safety and plant reliability.

The architect engineer, Sargent and Lundy, has supported this policy. In this regard, the Clinton station design will be tested, using industry-proven techniques for check-out and initial operational tests, followed by pre-operational, acceptance, and integrated testing.

The test data will be evaluated to confirm that the design goals have been successfully achieved.

In our letter of May 31, we addressed various design reviews of Sargent and Lundy, which are applicable to Clinton.

These past reviews were either Clinton-specific or associated with the design and construction of other nuclear plants.

They were performed by diverse organizations, including Illinois Power, other architect engineers, the Institute of Nuclear Power Operations and the NRC.

I consider that these reviews, combined with the results of the pre-operational Clinton test programs, will provide adequate confidence in the Clinton design.

However, to provide additional confidence, the 31st of May letter proposed an independent review to evaluate selected elements of the plant design.

We'd like to emphasize that we are designing a sound plant and it will be thoroughly tested to prove that design.

In your letter of June 22, you provided this agenda. Our approach to the agenda was to follow it, but we did divide up the elements between Illinois Power and Bechtel, because in this, several of them are the sole province of the independent reviewer.

I'd like to pass this out now. Sheldon, will you help, please?

MR. MILHOAN: I think that's consistent with our agenda. We indicated on the agenda, we indicated Illinois Power and Bechtel as appropriate, so that is certainly consistent with what we had in mind.

MR. HALL: Now, we have revised the order of the agenda slightly. I will address the items for Illinois Power, and then we'll turn the meeting over to Mr. Dick.

As you know, some of the subjects as you pointed out just now, will come up in both presentations because there is definitely overlap.

Later in the presentation, in my presentation, in

response to a specific NRC comment, I will discuss our view that the Independent Design Review can be limited to a review of the design work of Sargent and Lundy alone.

The Independent Design Review proposed by Illinois Power will follow current practice as we view it in the industry of having a horizontal and a vertical component.

The horizontal component, we propose, is based on comparison of information from reviews of other Sargent and Lundy design programs with the Sargent and Lundy efforts at Clinton.

Specifically, this review will include the following. The scope of review of the Fermi power station, the Teledyne review of the south, and the NRC and Bechtel reviews of the Byron station.

Sargent and Lundy operates from a project organization. However, a common design approach is used in many of the people and design methods used by the different projects are the same, with commonality.

I will discuss in more detail later, in response to a specific question in your June 22 letter, Sargent and Lundy's design efforts on these other projects, and particularly at Byron and LaSalle.

They are quite comparable to Sargent and Lundy's

design effort at Clinton. Thus, we concluded that these past reviews provide a satisfactory basis for the horizontal evaluation of Sargent and Lundy's overall design process that they used at Clinton.

The product of Bechtel's horizontal review of this material will be a comparison of the issues which impact or could impact the Clinton design, and the manner in which this has been or will be accommodated in Clinton design.

The entire effort is intended to examine the fundamental aspects of any issues identified. That is, the root causes, and to determine the adequacy of the corrective actions that Sargent and Lundy initiated relative to the Clinton design.

The vertical component of the Independent Design Review proposed in our May 31 letter was to consist of examining two systems, the high pressure core spray system and the standby liquid control system.

For continuity purposes, I will briefly cover our rationale for selection of these systems.

The high pressure spray system is designed to ensure that the reactor core is cooled during transients and accidents.

The system takes a suction from enlarged storage tank and alternatively from the suppression pool. It

can be either manually or automatically initiated. The standby liquid control system is designed to ensure that the reactor can be shut down in the event that the control rods cannot be inserted.

It does this by pumping neutron-absorbing solution of sodium pentaborate into the reactor vessel. This is a manually initiated system.

The combination of these two systems satisfied in our mind the following five criteria.

The system design requires multi-engineering disciplines. To ensure that all engineering disciplines are functioning and interfacing properly, the systems selected should involve mechanical, fluid, electrical, instrumentation control, and civil structural design efforts.

Second, the systems require design interfacing between the architect engineer and the reactor vendor. To assure that Sargent and Lundy had programs in place to control design information from outside sources, the system selected should involve design information supplied by General Electric.

Third, the systems selected are important to plant safety. This provides the additional assurance that the plant is safe to operate.

Fourth, the systems selected should have different

purposes. This was satisfied because the high pressure core spray system provides core cooling. The standby liquid control system is a reactivity addition control system.

And fifth, the system design should be substantially complete. This allowed the review to be as thorough and informative as possible.

We believe that the two proposed systems satisfied those five criteria and thus were appropriate for the Independent Design Review.

Although we nominated those two systems, there are several other systems in the Clinton plant that could also meet those criteria, and we were fully aware of that.

In this regard, Bechtel, in their role as the Independent design reviewer for Clinton, advised Illinois Power that in their opinion, a more appropriate review could be performed if the plant AC electrical system were reviewed, rather than the standby liquid control system.

Illinois Power has no objections to this substitution, subject to the concurrence of the NRC.

The comments contained in the NRC letter of June 22 asked the extent to which the vertical review would include on-site verification on a sampling basis.

As we indicated in the description of the Independent Design Review, we believe that the construction verification was not required, although the reviewer could do it if he felt it was necessary.

Accordingly, the Independent Design Review might suitably include a field verification for the purpose of determining if the systems under review are configured in a manner consistent with the design.

Such review would be limited to design verification and need not include such aspects as materiel selection, fabrication, examination, inspections, etc.

In your letter, you asked some specific questions. You requested an explanation of our statement, as there was no significant balance of plant and design work performed by a subcontractor, the Independent Design Review will concentrate on Sargent and Lundy activities.

I'd like to discuss the design roles of four typical contractors and subcontractors which supported the Sargent and Lundy effort.

First, Dames and Moore provided soils exploration, seismology, hydrology, and geology services in support of preliminary safety analysis and environmental reports.

These expert services contributed to the structural

design and the dynamic input for CPS equipment designs. The data produced by Dames and Moore that is important to the safe operation of the plant has been reviewed and analyzed by members of the NRC staff, as well as Sargent and Lundy.

Wisk, Janni, Eltzner and Associates provided expert services for the Clinton concrete mix designs and the concrete instrumentation design.

The validity of the concrete mix design is confirmed by the concrete sampling test results produced on a sampling basis during the structural construction period.

The concrete instrumentation design work performed was limited to instrumentation for the dry well integrity test.

Reactor Controls, Inc., is under contract to design the control rod drive insert and withdrawal line and supports.

They also participate in piping and supports associated with the control rod drive and traversing in-core probe systems. Its design effort has been reviewed by Sargent and Lundy and Illinois Power.

Stone and Webster Engineering Corporation provided the design for support clamps for the control rod drive insert and withdrawal hydrolic lines.

The design was originally produced for River Bend, and Illinois Power contracted with Stone and Webster to use the design at Clinton.

By comparison to these four typical support contractors, Sargent and Lundy's scope included design responsibility for site development, excavating and backfill, the emergency operating facility, rebar, concrete, structural steel, gallery steel, masonary walls, architectural details, balance of civil, large bore pipe, large bore pipe hangers, small bore pipe, small bore pipe hangers, instrument piping, cable trays, cable tray hangers, conduits, hangers, lighting, communications, balance of plant heating ventilation and air-condition, and balance of plant waste.

When you look at the weight of that and compare it with the subcontractor effort, we considered that all of these designs, the design efforts by contractors and subcontractors, other than Sargent and Lundy, are of limited scope and had been adequately reviewed.

Accordingly, they have not been included in our proposal for the Independent Design Review.

Your letter also asked us to compare the Sargent and Lundy scope of work at Clinton with its cope at Fermi, LaSalle, and Byron.

We examined the similarities and differences in

Sargent and Lundy's work scope, based on the contractual design responsibilities assigned to Sargent and Lundy by the utilities.

For LaSalle and Byron, Sargent and Lundy had design responsibility quite similar to those at Clinton, including almost all of the same areas, in other words, the bulk of the plant.

At Fermi, Sargent and Lundy's design responsibility was more limited but still involved in a large proportion of the same elements.

Thus, we believe that the scope of work at those projects was sufficiently similar to Clinton, that findings from such reviews should be evaluated in the Clinton Independent Design Review.

The final specific question raised in your letter relates to our use of the term "Clinton unique" in the discussion of equipment qualifications.

In retrospect, I would have selected some other descriptive phrase. The word "unique" simply referred to qualification testing performed solely for Clinton.

Most Clinton equipment is environmentally qualified when it is received, by virtue of the contract specifications.

Qualification of some equipment is achieved by tests performed in concert with other utilities. Other

qualification are achieved by several combined efforts, for example, owners groups.

And finally, where none of these qualification routes is achieveable, where necessary, Illinois Power provides for an independent qualification.

We chose to identify equipment qualified in that manner as Clinton-unique.

Our letter to you of June 19 proposed a protocol for the Independent Design Review that is essentially similar to the one approved by the NRC for review conducted at Zimmer nuclear power station.

We have instructed Bechtel to comply with this protocol in the preparation of the program plan.

Your letter of June 22 states that this protocol is acceptable, pending further NRC review, with the understanding that the director, Division of Licensing, Office of Nuclear Reactor Regulation will be substituted for the regional administrator. We have implemented that change.

We would be pleased to provide any other additional information you may want on the subject of the protocol and its use.

Exhibit 1 of our proposed Independent Design Review provided the independence criteria that we proposed to use.

Although these are generally similar to the criteria in Enclosure 2 of your June 22 letter, we would use the Independent Design Review in this Independent Design Review the precise criteria that you prescribed.

Your letter asked us also to explain the phrase "minimal or insignificant contacts," which would not necessarily disqualify individuals.

With respect to financial interest, we believe that an individual should not necessarily be disqualified if he has a stock interest in the licensee which does not exceed 5% of the family annual income.

And the licensee in this context is defined as you defined it in your letter to us.

By and large, however, a subjective judgment is required in these cases, such that all the criteria will be considered, and that information on all the individuals will be maintained in record files and can be reviewed by the NRC if they desire.

At this point, I'd like to ask Mr. Charles Dick of Bechtel to address the remaining agenda items from the aspect of the independent design reviewer, and after his presentation, I'd like to come back and talk about some other items.

MR. MILHOAN: Would you at this time like to

entertain questions on your agenda items, or would you rather --

MR. HALL: I'd be happy to, whatever you prefer, but I think it probably would be more profitable if we got the Bechtel presentation in because there is overlap.

MR. MILHOAN: In the Bechtel presentation, do you want us to save questions during your presentation, or handle them --

MR. DICK: No, we would be pleased to handle them as you go along. And if it appears that we will cover those items, we will so state at the time and suggest they be deferred, and then we can take care of them if we aren't planning to cover them.

MR. MILHOAN: During the presentation, I have some members of my staff in the audience who are in the discipline areas, so you may hear individual questions from members of the audience. They will identify themselves. They're my staff.

MR. DICK: Fine. We welcome a discussion. Mr. Milhoan, let me just comment here on the sequence in which we will make our presentation.

In the interest of putting the subjects together in an order which we felt would flow most logically, we have taken the liberty of rearranging some of these

items and we therefore will ask Mr. Peter Karpa to lead off the presentation and set the framework.

Mr. Karpa is our senior management sponsor for this effort.

MR. KARPA: Okay. Good morning, ladies and gentlemen. As Charlie said, I'm Peter Karpa. I'm manager of Bechtel Power Corporation, and I will explain why I'm involved.

I'm really not a divisional person, nor a project person. I think what was intended here is to get as far away from the relationships that might have existed in the Midwest.

Just briefly, to introduce our Bechtel players, this is Charlie Dick, who talked this morning, John Amaral, who talks about QA and the likes.

Powell and Larry Shipley will also get involved with the program.

MR. LEWIS: Mr. Karpa, Mr. Lewis from NRC. Do you have copies of the new drafts you're going to present for us?

MR. KARPA: Yes, sir. As I mentioned, just look briefly at Bechtel Power Corporation organizationally. It's divided into four divisions, starting with San Francisco Power Division, Los Angeles, and there are area offices for that division, Gaithersburg, and there

is an office in Memphis, Tennessee, and Ann Arbor, which is, of course, physically closest to Clinton but on purpose did not--let me back up a little bit.

The contract is, in fact, with Ann Arbor Division, but the work will not be done in Ann Arbor offices. It will be done in San Francisco, so that we get the greatest physical distance and avoid any possibility of closeness with Clinton work.

Just a glance at our chart again, showing the same divisions, San Francisco, L.A., Gaithersburg, Ann Arbor, I'd like to talk about this little group here which is called Bechtel Power Management Group under John Morowski.

It contains four departments or four groups, subdivisions--engineering, construction, Q.A., and Mr. Amaral comes out of that group, so that gives you a little feel of how we relate to the Clinton work.

Then we have a number of consultants as necessary to support this group, our board of divisions, likewise.

The point I would like to address specifically is the corporate experience, or collective experience of work we have done in years past or months past.

Here are some of the Independent Design Reviews conducted by Bechtel and by others on Bechtel, so we

happen to be in a role of reviewee rather than a reviewer. I draw that distinction.

Now here are some of the projects like Susquehanna, 1982, by Teledyne Engineering, selected system was feedwater system.

It's just a single one, but it's quite a distinctive one.

Diablo Canyon was a number of years under continuing review, and Charlie Dick was personally associated with this work.

The review was done by TES, that's Stone and Webster, on three systems. Charlie may answer some questions on that.

There were some other consultants involved--Cloud Associates and F. R. Reedy in the seismic area and, of course, as you know, Diablo seismic questions are quite important to Diablo Canyon.

Another one was done by Torrey Pines in San Onofre, again selected critical systems and components. And lastly, the Midland review by TERA, where three systems were reviewed in a vertical manner similar to . Any questions?

Okay. Now, let's look at the continuation. Again, reviews performed by other agencies than Bechtel. On Callaway, I guess that was done on IDIs by NRC.

And I guess some of you gentlemen have some knowledge as to what happened here.

South Texas by Stone and Webster, ongoing design review, of again, selected systems and components.

CYGNA did one on Grand Gulf in 1982. Palo Verde, again, by Torrey Pines. They happen to be close in the neighborhood out in San Diego.

And one out of the country in Maanshan in Taiwan by NUS Corporation.

So these are the projects that Bechtel happened to be the equivalent of Sargent and Lundy in Clinton. And I guess we belong to essentially the same fraternity, I guess.

When this happens, as, in fact, it kind of takes a thief to catch a thief, and there is no negative context in here, but what you want to hear is you pick an IAE that has an all-inclusive knowledge of a nuclear power station design so that really a complete in-depth and thorough review can be perfor

Here we have acted as the reviewer. Again, at Midland--and that happened to be our own project--but we selected people out of the Ann Arbor office for the project which was really designed and some of the Bechtel Power management people were involved with that review.

And we brought people from other offices like Los Angeles or Houston, to help with the review. Vogtle, again, that again was a Bechtel project.

That was done horizontally and vertically on some important systems.

South Texas, I guess the review is still continuing. There were some preliminary hearing reports issued.

Again, that's a project that was started, designed in the beginning by Brown and Root, and Bechtel was called in later, and then an independent designer who was done.

Diablo Canyon is still continuing in the review of the seismic design and other safety related areas. We acted like a reviewer and reviewee, as you recall. Diablo was mentioned on the earlier list as well.

Zimmer, we were involved with that project until the project was converted over to coal-burn.

And Byron was the most recent one we were called in to do on three key systems, again a vertical review, and I think this lengthened review will be patterned quite a bit after Byron.

But there are some differences that we will discuss later.

MR. LEWIS: Mr. Karpa, just a fast question.

MR. KARPA: Yes, sir.

MR. LEWIS: Mr. Lewis, NRC. During your presentation or the Bechtel presentation, are you going to give a fairly detailed explanation of what you mean by horizontal review, vis-a-vis the vertical review as it's going to apply to Clinton?

MR. KARPA: Certainly. I think Charlie Dick will get into that.

MR. LEWIS: Okay.

MR. KARPA: I guess he likes to call it a T-shape review, the horizontal bar meaing the horizontal and then the stem of the T being the vertical. I think Charlie and others will get into this.

MR. HALL: That's correct.

MR. KARPA: Some of the points I'd like to make while I'm still up here and have your attention is that we believe that we can conduct a thoroughly unbiased and independent investigation here.

We have really no prior connection, and the people we have selected--and there is a number like roughly 30--we have very carefully reviewed their resumes and their involvement with either Sargent and Lundy or Illinois Power or any relationship whatsoever.

So I think we can safely say that we are completely independent from that point of view. We can't talk

about anybody's stockholdings here, but I don't think that's a problem.

We, of course, will follow the protocol provisions that was mentioned by Mr. Hall earlier, and we see no difficulty in living up to their requirements. So that isn't any problem.

Also we will be responsive to NRC requirements and interests and desires to the extent we are aware of those, and I think these have been communicated to us recently.

It so happened, I think one of the references was to following Seabrook, reference as a sample and about five minutes before I walked out the door yesterday, I received the documents. We will read it. We have not read it yet.

So we were, I think, selected for the reason that we had done some of the reviews earlier and some of the people we have assigned to the review team have performed these reviews before.

And most, if not all of the people that will be connected with Clinton review will have come from the Byron design review.

So they will use the same methodology, are familiar with it. So I think there are some benefits and efficiencies that have resulted from that.

Of course, the architect engineer at Sargent and Lundy is the same one, so we have talked with some of their people, we are familiar with their methodologies, which is somewhat different from Bechtel's, but there is any number of ways to design these plants.

As long as the results are adequate, this is really what we're looking for.

We would like to encourage to the extent possible within the protocol requirements, an open, frank communication link.

So we have to be mindful, of course, that we don't violate what is required by the protocol and that we document everything properly.

This, indeed, will be done. Again, when we report on results, as I understand it, we'll do so in a public forum such as this here.

We'll have more or less a simultaneous communication with NRC being wired in what we communicate about.

So with that introduction, we'd like to make one other statement. I'm sure Charlie will make it, but I would like to be sure I get that into the record.

We brought an outline of our own with us, and maybe we would distribute that as well. The items on it are quite the same but they're not exactly in the

same sequence. So if you can associate which item goes with what, I think the words are similar, and there shouldn't be any problem.

All of the items you've suggested will, indeed, be covered during the presentations. Charlie?

MR. MILHOAN: Mr. Karpa, before Mr. Dick begins his presentation, in the Bechtel review of Byron, one of the questions that was asked was whether there was any problem with handling of proprietary information by Bechtel with respect to Sargent and Lundy information.

We were assured there was no problem with use of proprietary information in the Bechtel review. Does that same situation hold true for Clinton?

MR. KARPA: Absolutely. We do have some proprietary documents in our possession, but we will not make any unauthorized use of them.

I'm sure the same thing will happen on Clinton. There shouldn't be any problem.

MR. MILHOAN: Okay.

MR. DICK: Good morning. I am Charles Dick. I've been identified as programs manager for this and other reviews which are in progress.

This morning I would like to address the subject of the program as we presently visualize it. And at the same time, I would like to respond to certain of your

related questions. I propose to organize my comments to you along the lines, first of all, of a description of the program, and then to the extent I haven't already done so, to address your questions directly.

And primarily the question raised here by Mr. Gladstone is to how we propose to go about the horizontal or the design process aspect of this.

First of all, just to establish a frame of reference, the basis of our proposed IDR program is listed here, and I think most of you are familiar with that.

Our starting point was a letter of May 31 from Mr. Hall, Mr. Kepler, Region III. In addition, there will be other review programs that we propose to look at. I will get to that in a moment.

We've also noted various comments that the NRC has made on some of these other programs, most recently that of Byron.

We anticipate being mindful and intend to be mindful of those.

Next, there is the letter of June 19 from Mr. Karpa, which encloses the protocol agreement and the several separations of agreements by our personnel.

Now, let me, if I may, pause for a moment here to discuss the status of where we are right now. As of

this point in time, we have had a preliminary meeting with Illinois Power Company on June 1, in which we simply became acquainted.

We were handed the May 31 letter and toured the plant. Subsequently, on June 6, we had a meeting with Illinois Power and Sargent and Lundy in the Sargent and Lundy offices, in which we discussed essentially administrative matters, how we were going to transmit and admit information back and forth, and which we made certain commitments to being to gather information and to put together our program.

In the meantime, we have proceeded to develop a draft program and in the meantime, also, we have been developing the various arrangements by which we can communicate with each other, primarily arriving at a protocol agreement, which I believe is now in place.

As of this point in time, we have satisfied essentially our agreement to put together our draft program plan.

We anticipate being in a position to release that for comment by all concerned within perhaps a week. I should say certainly by the end of next week.

That's our target. We have held back on that a little bit because we would like to incorporate whatever feedback we're able to obtain from this

meeting. And further, we've gotten some additional refinements brought to our attention that we'd like to incorporate these internally.

Now given that, we anticipate, I should ssy, moving ahead with the information-gathering, and, of course, we hope to get that program plan approved as rapidly as possible so we can proceed with assurance, which leads me to the point of the schedule upon which we are planning to operate.

Taking June 15 as a nominal starting point for the IDR, we anticipate targeting on December 15 as the completion date.

I should add that this is hopefully an outside limit. We would hope to proceed more expeditiously to come up with a meaningful response.

And when I say completion date, I'm referring to the date upon which we issue the final report. Between those two dates, we would also anticipate issuing an interim report. That would be issued prior to the end of September.

So those are our three major milestones, and within that framework, we will develop appropriate work plans and intermediate milestones.

So to repeat, we have begun on June 15, we will issue an interim report prior to the end of September,

and the final report by December 15.

MR. LEWIS: Would you intend that interim report to be analogous to the one that you have submitted on Byron?

MR. DICK: Yes, sir. Yes. I would--for the benefit of those who may not be familiar with the content of the Byron interim report, let me make a brief description of that.

That was a report which, in effect, described our work to a certain point in time, which was roughly halfway through the program.

It was a date to which we held quite firmly, and we simply established a cutoff and took a snapshot of our work to that point in time, and reported accordingly.

I might add that the in-date is not so much controlled by a hard and fixed commitment to an in-date, but rather it is a target date, and we would anticipate trying to meet that target.

But the thing which really controls it is the point at which we can become satisfied that we have been able to arrive at a meaningful conclusion.

Very well. Now just to give you some outline--or idea, rather, of what we would put in our program plan, the VU-graph here illustrates the Table of Contents.

I don't believe you will see anything unusual there

except possibly these several four task descriptions. I will go into those in more detail as I proceed.

There is a separate section which describes how we will process our observations and how we will report back as a result, and so forth.

I believe this is in content responsive to the interest you described, as well as precedence which have been established, both in other reviews than the ones we are now conducting for Byron.

Now I would like to discuss with you something of what we anticipate putting in that program.

Naturally, we start with our objective. The objective is as stated, to obtain an added level of confidence in the Sargent and Lundy design of the Clinton station.

Our approach. Our approach here is to review the two plant systems described just recently by Mr. Hall, as well as to review other reviews.

In the process, we will access the compliance with licensing commitments, design adequacy, the design process, and broader conclusions.

For reasons you will see later, we have turned the collection of items which we would expect to look at, including generic implications under a broader category. This will be discussed separately.

And finally, we would approach this from performing a review and not a reverification in the sense of something of the order of the Diablo Canyon reverification.

MR. MILHOAN: Before we go on to the next slide. Jim Milhoan. With respect to the other reviews, Mr. Hall mentioned a number of the other reviews in his May 31 letter to us.

Is that the other--is that consistent with your concept of other reviews?

MR. DICK: Yes, sir.

MR. MILHOAN: I mean, for example, the problem with INPO reviews. Would that be part of your other reviews?

MR. DICK: It would. And if you will permit me to expand upon that later, I have a VU-graph which describes that in more detail.

MR. MILHOAN: I'll hold my question.

MR. DICK: Any other questions? Mr. Hall indicated we have suggested a scope which varied slightly from the original one, in which we retain the high-pressure core spray system, which was originally proposed, and substituted a Class 1-E electrical power system.

And we have retained the concept of looking at other relevant reviews and inspections. The

justification --

MR. LEWIS: One question on that one. Mr. Lewis. Just grossly, from beginning to end, what weighing of effort are there among those three bullets?

In other words, in your concept, what percentage of the total review is going to be eaten up by bullet number three, for example?

MR. DICK: We haven't completed our planning on this, Mr. Lewis, but I think there is a multiple answer on that, which I will--which you will see in a moment.

But to answer this thing, strictly speaking, I'm sure that the great weight will be in the two systems here.

But the review of the other reviews and inspections will overlap to some extent similar work, which is done in the course of the system.

Now, that may seem a little confusing, and if you'll permit me to get to a VU-graph where I'll describe that later.

MR. LEWIS: Did you say that that third bullet is a relatively small part of the program effort-wise?

MR. DICK: Without being pinned down to an exact percentage, I would say it would be relevantly smaller than either of the other two, yes.

MR. MILHOAN: Milhoan. Mr. hall described four areas of subcontracted design. In your review of the program, will you make an evaluation of the subcontracted designs and assure yourself that you do not have to go into that area of review to satisfy yourself on the overall conclusion about the adequacy of the design process?

MR. DICK: To the extent that we are able to determine from our review of the Sargent and Lundy work, and where they interface with those subcontractors--I presume that's what you're describing--yes.

We would not anticipate going into the subcontractor design, but we would see it from that side.

MR. MILHOAN: To give you a specific example, Mr. Hall mentioned RCI work. We would not get into RCI work by reviewing these particular systems, but yet it's an area of subcontracting design.

MR. DICK: That's correct.

MR. MILHOAN: It would certainly be applicable to the total design process, other subcontractor design work, in arriving at the overall conclusion on the adequacy of the design process.

It appears that in arriving at that, you would have

to take into consideration the other subcontracting design work to see whether or not you needed to review it.

MR. DICK: Certainly. If it were a--if the thrust of our IDR were to look at the total design, then that would certainly be the case.

It's our concept that the thrust, however, is to focus on the Sargent and Lundy design. Now if there is thinking that that should be reoriented, then we will, of course, have to change somewhat.

But at present, we are focusing on the Sargent and Lundy design and would look at the subcontractor design from the standpoint of how they interface with the Sargent and Lundy.

And in some cases, I might add, it might be appropriate to go over into the subcontractor shop and look at it back the other way. We'd have to determine that when we get there.

MR. PARTLOW: A question on scope. Ron Parkhill, NRC. Are you using PNID for the boundary systems that you're looking at?

Does that preclude the interfaces with other supporting systems like cooling water, possibly HVAC?

MR. DICK: To the extent that we will look at system interaction type of--what am I trying to say--to

the extent that we look at system interactions, the answer would be yes.

I should expand upon that comment, though, to add that as we look at, say, the HPCS system, we will also be reviewing the facilities which directly couple with the supports, the instrumentation control and so forth.

I believe--excuse me. I believe Mr. Powell in his presentation will expand upon that, however, in somewhat greater detail.

And if you will permit us to postpone anything more on that until Mr. Powell makes his presentation, perhaps we can come back to it.

This is simply an expansion upon the four tasks which were identified earlier, the first being to assure the licensing commitments are met for each, and to identify where we will look for those licensing commitments.

The major document controlling, if you please, will be the FSAR. In addition to that, however, we would look at the SER and in response to the FSAR or in special reports which have been submitted such as the fire protection report.

Second, review design adequacy, and we will do essentially what this says we will do. It will be directed at whether or not the design of those systems

is technically adequate. And we will include the use of standard methods, and we will also be looking at the judgments which are made in arriving at the design.

Third--and I'll expand upon this in a moment--we will examine the design process. Sometimes, as you recall, we call that the design system.

We will look very hard at such elements as the interfaces.

Fourth and finally, we draw these broader conclusions that I mentioned earlier, which we will try to fully discuss later. Yes, sir?

UNIDENTIFIED: Included in the item two, will you validate design inputs?

MR. DICK: Yes, sir. To the extent it's appropriate. There will be some, of course, which are essentially given, codes and standards or something of that nature.

But we will look at design inputs and we will validate those to the extent that it's necessary to assure ourselves the output of that.

Now here is just a brief overview of the cycle, to put the whole thing in a little better perspective. We talked earlier about, in the response to your earlier question, about how we identify the boundaries and that, of course, is the first we will do, having

identified the systems. Second, we will review all of the procedures.

And I might add this goes on somewhat concurrently with some of the other activities. Third, the commitments, and I discussed where we'd be looking for those.

Fourth, we'll look at each system and we'll weigh the commitments against what the design set out to do. We'll go through the usual cycle, looking at the input and input criteria.

We look at the process, we look at the adequacy of the actual design, the process of the first verification.

MR. LEWIS: Question.

MR. DICK: Yes, sir?

MR. LEWIS: This probably will come later. Again, in the input and criteria section, where, for example, you have design input to HPCS and some of those would be the result of detailed calculations, based on assumptions and what not, will you be reviewing those to see that indeed both the assumptions are valid for the input?

And at least on a sampling basis, that the numbers of the calculation method and numerology hold water, such that you have correct in or out.

I'm trying to get a feel for how thorough that input criteria will be. I guess I was giving a slice at what I'd expect, to see some check-on calculations, going through them in some detail, but to assure that the input of the HPCS design was valid in the first place, not ergo, here it is and where it goes.

MR. DICK: The answer to your question is essentially, yes. But I want to be sure that we understand what we're talking about in terms of input, because part of what you described to me is part of the design process. I mean, part of the design activity.

Some of the design input obviously comes from General Electric, from the HPCS. And we would not anticipate going into the General Electric part of those calculations.

But we would accept that as part of the design criteria or the input into the Sargent and Lundy design.

That's the only point I would like to clarify. Is that satisfactory?

MR. GILRAY: Sir? John Gilray. On that third point, you said you were going to review the FSAR commitments.

Are you going to challenge that input?

MR. DICK: Challenge the FSAR?

MR. GILRAY: Yes.

MR. DICK: We regard the FSAR as essentially a commitment to which the NRC has subscribed out. To the extent we may find some inconsistencies in the FSAR--and these are not uncommon--we would certainly challenge those and call those forth.

MR. NORKIN: Don Norkin. I'm reflecting a little on the interim report which seems to be going the same way we're going here, as far as meeting commitments, design process.

MR. DICK: Excuse me. Could you speak up a little bit? I can hardly hear you.

MR. NORKIN: I had the advantage of being able to see the end product halfway, and I guess what I'm concerned about is the design process.

When you get into that, discussion seems to end with procedural and procedure, that being do they have an adequate design process.

And what I don't see coming out of that is the implementation and procedural work. I see that the same way --

MR. DICK: Perhaps your concern is due to the fact you haven't seen the end product yet.

MR. NORKIN: I'm concerned about which direction you're going, slicing a little too thin. The same

includes the design process. You've got a procedure in place and that means --

MR. DICK: I'm sorry if we gave you that impression because it was not our intention. We don't expect to accept a procedure just because it's in print.

We are examining the procedures for adequacy as well as implementation. And I don't want to discuss the Byron review in detail here, for obvious reasons.

But let me assure you that we will look at both the adequacy of those procedures and of the implementation thereof.

MR. NORKIN: As long as we understand what your review of the design process means. Does that mean the review of commitment?

I think there is a design adequacy and commitment and will examine the implementation of it on the calculation.

You're splitting it up, and I wonder if you can really do that and show that each commitment is met by the fact that P & I gave, for example, as opposed to carrying it all the way through the actual calculation to carry out the commitment.

You really get to the design aspect in much more detail.

MR. DICK: I understand, I think, what your concern is, but in order to maintain an organized approach to this, you'd have to focus on certain areas.

Now let me try to help your concern with the following comment, which forces me to get ahead of myself a little bit here.

In the process or in the course, I should say, of going through a particular design, the reviewer is looking concurrently at the process and at the adequacy of the design.

He is saying to himself, "Did the individual who made this design do so in an appropriate manner," as well as he's saying to himself, "Is the individual who made this design coming out with a technically correct answer?" if he's doing these in parallel.

MR. NORKIN: But my problem is that you're breaking this up into four parts. You're giving the impression of a shallow review in this area.

It would be much more helpful if you took a commitment, carried it through to the adequacy of other calculations related to it, at the same time you evaluated the process, implementation procedure.

We get a total picture of the implementation commitment and design adequacy and related process, all stemming from this commitment.

MR. DICK: Let me take that comment and consider it and see what we can do to relieve your concern.

MR. NORKIN: That's the problem we're having and I'm trying to head it off right now.

MR. DICK: Let us consider that and when we go back and rework our address or program plans, see if we can relieve that concern of yours.

I believe, however, we can do that and still do so within the structure of what we intend to develop here. This is simply a continuation of the previous VU-graph.

It begins here with identifying certain observations, primarily those which may be related to deficiencies.

In the process of identifying them, we'll make appropriate references and describe them. And we may or may not propose a resolution.

Next, that particular observation, really, a potential observation, is reviewed in turn by an internal review committee.

There are two levels of it. Usually we anticipate the observation will go essentially to the first level and then to Sargent and Lundy for further action.

If it's sufficiently serious, we'll go to a second level. This is in detail number two.

The results will be recorded by the project and we

will expect Sargent and Lundy to respond. In the course of responding, the reviewer will necessarily have to set the response, and we would expect that some government power would also have to expect it, accept it, since there may be certain elements which involve their activity.

For example, one response may be to revise the FSAR, correct any inconsistency. We've seen some of these things. That's an Illinois Power document.

And then next, the final responsibility--sorry, let me close it up. Now, the question naturally arises as to the organizational structure which we would expect to employ to carry this out.

This particular structure was intended to be divided horizontally between personnel on the review team, which is below this horizontal line up at the top here, and people who are office-specific teams.

Let me begin with the project manager, who, unhappily, is not here. That's Mr. Gordon Parkinson, whom some of you may have met.

He will be responsible for the day-to-day effort, and I would next jump down to the groups who are actually doing the work, and I'll attempt to tie this all together.

These particular groups here are organized

according to the three tasks we identified earlier. First of all, it would be the group performing electrical systems work.

The next would be the group doing the HPCS work, and third, will be the group performing the review of the other reports.

Now, the functions which are listed within these groups are not intended to be exclusive since we operate on a basis of just having these groups with a primary identification that's supporting the other groups within the team.

For example, in the case of structural, let us say, they would provide support to the electrical systems group in such areas as cable tray and the like.

Likewise, over here with the group reviewing the other IDIs, the other IDRs, they would enlist the assistance from other disciplines.

MR. MILHOAN: Excuse me.

MR. DICK: Yes, sir?

MR. MILHOAN: The impression--I don't think this is a valid impression, but the impression I get reading your chart, for HPCS, that you do not have an electrical review or IMC review associated with HPCS?

That's how--that's the connotation I can get from that chart.

MR. DICK: You're correct. That's an incorrect impression. And that was the purpose of this note. At one time, we attempted to build one of these charts, and we had a little bit of everything scattered around.

It didn't improve the clarity, so we incorporated this simplification. That, incidentally, was a comment I noticed in the letter from Mr. Grace coming back, and I hope we will clarify that.

MR. NORKIN: I realize you make a point that I & C is obviously going to support HPCS.

MR. DICK: Yes.

MR. NORKIN: And based on Jim's comment as valid, it will be electric power review in the HPCS area itself. Right?

MR. DICK: Yes, of course, although because of the way we are now structuring these groups, that would have taken place regardless of whether or not we looked them over as HPCS electric power group supply, anyhow.

See, we have a special group that's just going to look at the highest point electrical system, and I'm suggesting to you that the HPCS electric power supply will be taken care of in that.

MR. NORKIN: I guess relating to the Byron review, the electrical bunch, PC distribution system, there is no discrete indication in the report that they looked

at the other two systems.

MR. DICK: Well, let me try to help you with that, because that was certainly neither our intention nor our performance.

MR. NORKIN: But you leave the tendency for the electric, for the ESW, that's my point.

MR. DICK: Well, perhaps we can go back and try to clarify that for you. If we never had this group here, let me assure you the electrical power supply to this group will be looked at and it was looked at at Byron. I can say unequivocably yes to that.

MR. NORKIN: I don't like to dwell on it, but to use that as an example of why we have a hang up.

MR. DICK: Well, that may be another good reason for identifying that as a separate subject for review than here, then, but we definitely did look at the electrical power supply for Byron for the specific systems identified. Yes, sir?

MR. PARKHILL: Ron Parkhill. Based on that, how would you form a review of HBAC?

MR. DICK: How would we perform a review in HBAC? Only to the extent that we would find that there was interaction between the HBAC and the electrical system, or the HPCS.

We do not plan a discrete review at this point in

time of HBAC.

MR. PARKHILL: Would I be correct to assume that you would take the heat loads generated by the equipment and look at that and see if that was an input of the HBAC design? I think that's something to be looking at.

MR. DICK: Yes. Let me ask for some help on that one. Bob, what is your view on that?

MR. POWELL: Yes, we would look at that, and we would look at how the HBAC would take care of maintaining the position as described for that. We would look for that.

MR. DICK: Bob, the lady here can't hear you.

MR. POWELL: Robert Powell. Yes, we would look at the heat loads generated by, let's say, the equipment in a particular compartment.

And we would look at the HBAC, what consideration was taken to design the HBAC to take care of the heat load.

We would also look at the support for the system, we would look at anything that would have an effect on the HPCS.

We would not go back and look at the whole HBAC system per se. We would look at the design of the HBAC system as it pertains to maintaining the condition the

HPCS.

MR. DICK: Does that take care of it, Mr. Parkhill?

MR. PARKHILL: Yes.

MR. LEWIS: Mr. Lewis. HPCS, not to belabor this point, but similar to the electric power, you were covering the instrumentation control design affiliated with HPCS, using your I & C there.

MR. DICK: Absolutely.

MR. LEWIS: So that the Chapter VII commitments related to HPCS, implementation control commitments for HPCS, would be given a look from beginning to end?

MR. DICK: Yes, sir.

MR. LEWIS: I make that comment because I saw some--I think, some gaps in that area with respect to a couple of systems in the Bryon interim report, where not only did you not have the I & C guide listed on the chart, but I think there was the Chapter VII commitment that at least didn't show up as being reviewed.

MR. DICK: Well, we'll certainly go back and look to assure ourselves that those gaps don't exist. I might offer an explanation, though, and remind everyone here that that was an interim report and simply a snapshot of where we were as of, say, it was early April, I guess, wasn't it, Bob? No, it was -- out cutoff was basically around the first of May.

But thank you for your comment. We'll check to make sure that doesn't exist in the final report.

MR. SIEGEL: Could I ask a question? Byron Siegel. Are we--before you proceed with it, it seems we've got some gaps in the areas where the staff is uncertain as to what exactly the completeness of the review.

Are we going to get any further feedback from you before you start the review, with regard to filling in these gaps, or based on discussions that occur today?

MR. MILHOAN: Let me answer that question. We, the staff, will review the program plan and approve that program plan before it comes up.

This discussion today, I think, is assisting Bechtel in preparing that program plan, but when we get into program plan, we'll do a review of that.

And there may be additional questions to ask on the program plan as we go through the program plan.

MR. NORKIN: Don Norkin. With respect to the comment, Jim, of us reviewing the program plan, the program plan, is it similar to the one that was submitted to Byron?

It's not going to be a lot more detail than the slides, design process, that kind of thing. We know what the Bryon program looks like.

So they submitted it, we got it, we received it,

the review was already in progress. We couldn't do very much with it. Was it unreasonable to say that the program plan, we needed that kind of information, we needed a program plan--your targets and opportunity, things you think are significant, things you have to look at in the high-pressure core spray system, for example, that would be meaningful to me to see that you judge to be the important thing that you have to look at technically.

MR. DICK: We can incorporate that. Generally, we find those as we go along, but it's certainly not unreasonable to anticipate some.

I gather, Mr. Norkin, what you're looking for is some examples rather than a definitive list.

MR. NORKIN: Well, we're looking for--the interim report, for example, the list we did look at, I think we'd like to see more of that up front in the program plan.

I think it's difficult to review the program plan unless you know what specific technical areas you are going to review.

We know what the program is going to look like at Bryon. I don't think that's going to be the right thing to look at.

MR. MILHOAN: Jim Milhoan. I think Don is pointing

out that, yes, the level of detail we need. We need to have a full understanding of the scope of your review, to the extent that you need to provide that detail in the rrogram plan.

I would not anticipate you providing me an inspection schedule, day-to-day inspection schedule in the program plan, but we need the details so that we understand the scope of review that you are doing and have confidence in that scope of review, to the extent that you need to provide staff examples to do that. That would be acceptable.

MR. DICK: We have no objection to that. The message is certainly clear you're looking for a greater level of detail here.

We can anticipate some, but please understand the position of the reviewer, and I'm sure many of your people have done the same thing.

You develop these areas of review and things you have to look at as you go along.

MR. SIEGEL: We understand that, I think, but you know what you're going to start with basically and we realize you may get off on tangents in areas.

But in the beginning, you probably have a fairly good idea of exactly what the scope of the work you envision as presently.

MR. DICK: Let us agree to go back and enhance the level of detail to the extent we can, then simply have to submit it and see if that's satisfactory to all concerned.

MR. LEWIS: I'm being susceptible to being redundant. With regard to that, you can see that a lot of our comments are coming via the dimension of depth.

And it was with that in mind that we put the Enclosure 1 and attached Seabrook report. By that, I mean a plan that we would expect and would give us a happiness feel is a plan that we would suspect would test out the design process and the design comparably to what you see in the illustrative example.

Now sometimes that may have to be a tradeoff, jack-of-all-trades and master of none, going across the board superficially and not really giving a test for anything, versus truncating a little bit and giving an in-depth technical review.

And then when that in-depth review, assertion, would find something, let's say, unhappy it found something, then it would have to--using your acronym of a T, might have to go out horizontally and check other systems to see if that same thing is there from a pervasive standpoint.

MR. DICK: I understand. We'll certainly review

the example you've referred to. As Peter Karpa indicated earlier, we haven't seen the Seabrook, so I cannot comment intelligently.

I might add, however, that what we had done, though, is to take advantage of a number of other program plans which we had seen.

I have, perhaps, eight or ten in my bookshelf, which I believe are consistent with what we have been contemplating up to this point, which we felt were acceptable to the NRC in terms of depth.

Now what I'm hearing is that the NRC is seeking even greater depth in what has gone before and holding forth the Seabrook plan as an example of what they're now looking for.

MR. MILHOAN: The Seabrook are an integrated design inspection report. We just happened to attach Seabrook as an example.

You are fully aware of the Byron integrated design report.

MR. DICK: Of course.

MR. MILHOAN: But that's the depth of detail that we're talking about.

MR. DICK: Is this one that was done by the NRC?

MR. MILHOAN: Yes, sir.

MR. DICK: That you're talking about. I see.

Let us review that and we'll try to be as responsive as possible.

May I move on quickly, so as not to encroach upon other people's time any more than I already have? I promised to fill in some missing pieces here.

I spoke already of the systems groups that we have organized, and they are reporting directly to the project manager.

The internal review committees are also shown over here, those two committees I mentioned earlier. Our quality assurance engineer reports directly to Mr. Amaral here on the project.

We have an administrative group, another one with licensing support. And over here, doing the review of the other reports, the primary responsibility would be for our licensing people and quality engineering group.

We anticipate having direct communication between these, the personnel of these groups and their opposite numbers in Sargent and Lundy, and likewise with the project manager.

I sit up in here, where I bridge basically Byron and the Clinton review and report directly to Peter Karpa.

Now you've asked a question to which I'd like to respond, and that deals with the qualifications of

personnel. I won't attempt to list everybody here, but I have attempted to list certain key people.

This is not necessarily a selection sample. We certainly tried to take the individuals who were governing it, but we threw in a scattering of other individuals.

What we have attempted to do here is to indicate their total professional experience and their nuclear plant design experience.

And in doing this, we tried to read your words very strictly, and do not incorporate any other experience here but that related specifically to plant design.

For example, in my own case here, I have an additional six years in power reactor design and application experience which don't show here.

But if you add these numbers together with the numbers of the other people, it turns out that there is an average total experience here of about 26 years, and of nuclear, over 16 years.

Now these people probably come to a greater average than that, but that is a reasonably impressive experience background.

I'll talk to you in a moment about some, but let me add one or two other things in general about these people.

First of all, we're very pleased to have these people on our team. They practically have all had experience with the Byron review.

Their credentials include those of registered professional engineers in every case I can think of, in having personally reviewed all the resumes.

They have been selected for their capability and their good judgment, and I cannot overemphasize the importance of good judgment in an exercise of this nature.

Let me just give you some highlights of some of their experience. I'll start with Peter Karpa here. As you know, he's our manager of engineering for Bechtel Power Corporation.

Before that, he has been a division manager of engineering for both our San Francisco Power Division, our Los Angeles Power Division, and our Ann Arbor Division, as well as manager of engineering for our (inaudible) activity. He has a long background of projects experience.

Mr. Amaral here is known, I'm sure, to practically everybody in the quality assurance fraternity. He's our corporate manager of quality assurance, and he has been for a number of years.

John, before that, was a quality assurance engineer

on our RFTF project. He was past chairman of the Energy Division, the ASQC, and before that, he almost had a career in nuclear and other activities.

I'll skip over myself for a moment. Mr. Parkinson, our project manager, Mr. Parkinson you might characterize as a professional project manager.

Before coming on this project he had been the assistant project manager on the Diablo Canyon project, and previous to that, had been on the Susquehanna project, Wayne Arnold and a litany of others.

I might add that he started to cut his teeth, more or less, on the nuclear business on Fermi I with Detroit Edison.

Mr. Cahn, Bob Cahn has been on the staff of our chief nuclear engineer as his technical assistant. Prior to that, he had been the IDPT coordinator for the Diablo Canyon project, and prior to that had experience with a number of our other projects, including Pilgrim and the (inaudible) project in Spain.

Our project quality assurance engineer, again, experience at Hope Creek, came off of our staff of the quality assurance department. He's been most helpful.

Dan Hardie, over here, Dan Hardie is a past supervisor of our quality engineering department--not a department. I should say our quality engineering group

in the division. He had been on the Diablo Canyon project, leading that type of activity at Diablo Canyon.

I won't go into all these details, but I stand ready to provide the background on that.

Let me just skip over here and talk about some of the lead people here. Bob Powell, you heard from just recently.

Bob Powell in principal engineer on the staff of the corporate manager of engineering, and had, for a number of years, been our chief plant design engineer in the San Francisco Power Division.

Bob had a wealth of project experience before that, which includes Peachbottom and Limmerick, and more than I can think of. I guess Clearpoint was in there, too, wasn't it, Bob?

The other gentleman leading the effort here is Mr. Chuck Jordan. Chuck Jordan is a corporate chief electrical engineer.

Chuck Jordan had prior, previous to that, been chief electrical engineer for the San Francisco Power Division, had project experience with Duane Arnold.

Let me see here. I need a little help. Oh, yes, he had also been our chief electrical engineer in London.

As far as I'm concerned, to get a little better

acquainted here, prior to becoming associated with the project, I had been project manager for the Byron effort.

Then in sequence backwards, I had been manager of engineering and licensing for our Zimmer activity, and before that, one of the project managers on Diablo Canyon, and variously manager of engineering, manager of division of quality assurance and project engineer in a number of situations.

We can go into further detail. If you're interested, I'll pick people at random, but I think this gives you a general flavor of the backgrounds and some of the capabilities of some of the people we have assigned to this team.

Are there any questions? All right.

MR. PARTLOW: Jim Partlow.

MR. DICK: Yes, sir?

MR. PARTLOW: I understand there are about 30 people assigned to the team, roughly?

MR. DICK: Yes. Now, these aren't all 30. We ran out of space here.

MR. PARTLOW: Sure. Yes. The review team, are they going to be in Sargent and Lundy offices?

MR. DICK: Part of the time. The way we've been operating, sir, is that we have been sitting with

Sargent and Lundy to the extent we need to gather information and talk with their people.

Basically, the analysis work we're doing is in San Francisco. We nominally had planned on about a 50-50 split of an individual's time.

Actually, it hasn't been quite that. It's been more like one-third to two-thirds, two-thirds in San Francisco, one-third in the offices.

Now, let me talk a little bit about the design process review and respond to your questions. The design process review, we proposed to attack from two directions.

I discussed this earlier, and I don't want to repeat a lot. We propose to attack it as part of the review of each plant's system.

That is, the 1-E electric power system and the HPCS. And as I explained in response to an earlier question, the reviewer will go down through those reviews, put together the right process, as he does it.

And I think you will see from our report on that where inspection of our paperwork, that that indeed is what's been happening.

And then, of course, the other part being the horizontal review of the design system. The sub-tasks are here, and these are identified in our program plan.

I won't read them out for you. To respond to an earlier concern, I have indeed identified certain broad target areas.

I cannot overemphasize the importance of interface control. Perhaps that's because some of us have had experience at Diablo Canyon.

MR. LEWIS: Question. I see that you have listed calculations documentation.

MR. DICK: Yes.

MR. LEWIS: What about calculation review? Not just looking at the documentation, but --

MR. DICK: Calculation review we would anticipate being carried forth under the review of design adequacy.

What I am addressing here is the design process.

MR. LEWIS: Okay.

MR. DICK: Any further questions?

MR. MILHOAN: Yes. Milhoan, NRC. With respect to design process review, the hierarchy of documents that you would start with, would you start with the overall quality assurance program? What is the hierarchy of documents going to here?

MR. DICK: In the case of Sargent and Lundy, the program is somewhat interwoven with the procedures. Basically, we would start with procedures. We are

not anticipating a quality assurance audit here. We are, instead, anticipating performing a review of this so-called design system.

It will be oriented essentially to those functions which are directly related to the control of the design.

Now, this is simply to indicate, again, some of the other areas we would expect to look at here in the course of the review of the systems, I think, in response to some of your questions--yours, Mr. Milhoan, with regard to procedures.

That's the first thing we look at, of course, and the control, the design tools, and within a rather broad category, the quality program related to looking at this design system.

And we would make some of the assessments which are listed here, which I hope is some reassurance to some of your concerns that indeed look for direct causes.

The one point I would like to make is that we also--we don't anticipate just to find fault. We find strengths here. We would expect to call those out as well.

And then we would also anticipate seeing particularly further reviews of some of the other projects, where strengthening actions have been taken

in their system. Now, finally, I suppose you thought I'd never get here, this is the last slide and one that deals with how we will extrapolate what we find outside of Clinton to what we do within the Clinton report.

And these are simply the major steps that we would anticipate doing. Certainly we would identify the key elements we'd be looking for.

We would then proceed to survey these other reviews, tabulate our findings and would analyze what we find and attempt to find correlations.

Then we would identify certain areas in Clinton that we should target. In other words, we would use these other reviews as a road map for things we should look at in Clinton.

And that would be the overall strategy we would employ.

MR. MILHOAN: Milhoan, NRC. With respect to the other reviews, in the next month, we'll issue the IDI report on River Bend.

In that integrated design inspection, we did take a look at RCI. To the extent that we took a look at RCI, which is comparable to Clinton, would you review the River Bend IDI report findings?

MR. DICK: Well, that's difficult to say, because I woudn't expect and Sargent and Lundy would have any

association with River Bend. And since we are looking for area of the Sargent and Lundy design process that would be relevant here, I wouldn't want to preclude it.

If there was something that you felt was, we could take a look at it, but I wouldn't anticipate it otherwise.

Is there something here that we may be missing?

MR. MILHOAN: I think you are concentrating on the Sargent and Lundy design process, and we're talking about the design process for Clinton.

It just happens that there is no major subcontracted design activity at Clinton other than the four areas that Mr. Hall identified.

And he provided reasons why he did not think those needed to be looked at.

MR. DICK: Yes, sir.

MR. MILHOAN: And my earlier question was, would you take a look at those four reasons and agree or disagree with those particular four reasons, or those reasons why those four areas need not be looked at for the design process?

Mine is a broader question. Yours is concentrated on Sargent and Lundy.

MR. DICK: That is correct, and that was the direction we were given, that we should look at Sargent

and Lundy. Now, if the scope is to be enlarged, we would have to understand that.

MR. HALL: Donald Hall of Illinois Power Company. We didn't know that River Bend had come out. Even if we had, I doubt if we would have incorporated it.

We were particularly looking at those design inputs that would have affected Clinton directly through Sargent and Lundy.

In our opinion, looking at those four, somebody-- there was another one. For example, Chastain did some dam design work.

We set those aside on that basis, because of the overwhelming influence of Sargent and Lundy. We would have no objection, certainly, if the independent reviewer came up with some reason to go down and look into any one of those. Certainly ICI is needed a candidate, even without knowing that you looked at them.

We would have no objection to Bechtel looking into any one of them, none whatsoever.

MR. DICK: Please understand we're not trying to be reluctant. We're trying to properly define our scope of work.

Any further questions? With that, I come to the end of my presentation, which was somewhat longer than

anticipated.

MR. MILHOAN: Why don't I suggest--we've been at this for approximately two hours now. Let's propose we take a ten-minute break and reconvene at 1:00 o'clock. I think everybody agrees to that.

(Whereupon, there was a ten-minute break.)

MR. MILHOAN: Yes, we're ready to convene again.

MR. DICK: Well, the next gentleman we'd like to present is Mr. John Amaral, whom I believe you're now acquainted.

He will discuss the subject of how we propose to deal with the broader implications of what we're seeking and what we find.

MR. AMARAL: A great deal has been said this morning. I'll repeat again, I'm John Amaral, manager of quality assurance for Bechtel Power Corporation.

I'll try not to go over some of the same ground. Charlie had asked me to join the group this morning to take on kind of a philosophical approach or a tutorial approach to this problem of efficiences and causes evaluation with respect to their impact on other systems and projects.

The sophistication or the amount of sophistication is a choice when you decide what kind of a system that you're going to employ.

You can become or you can choose a very elaborate method, or you can choose very simple schemes. Strangely enough, with the elaborate methods and the simple schemes, you probably come up with the same solutions, especially when you're using the ultimate computer, the human brain, that has as much experience as Charlie has demonstrated that we have presented.

Computers are helpful, especially when you have large amounts of information, computers and word processors are very helpful for collecting or sorting or classifying, and especially retrieving information that you are interested in.

They can be convenient for small amounts of information if you plan to exercise that information in different ways.

In establishing an approach or a trending program--I'll stretch that terminology for what we're doing here--the reason I say stretch it, normally when we think of trendy programs, we're planning something in advance for the future.

But the techniques for jumping in, if you already have the data, or if you plan to get the data, are about the same--that is, the kind of techniques, the textbook techniques that are available.

Information that you are interested in establishing

are the kind of attributes that you expect, the levels of importance of those attributes, the collection retrieval system that you're going to use, and what you are going to report, the kind of analysis and recording, whether you are using the frequency distribution, a standard deviation sort of thing, or the coefficient variation and so on.

The tools that are available are the same tools that we usually talk about in cause analysis, or cause and consequence analysis, cost and effect analysis, and so on.

There are variations in those tools and they go through the same logic whether you have a program, whether you plan a program or are getting in the middle of a situation, as you are in this particular case.

What I would point out is you use those tools when you have to, but normally you borrow the logic from the tools.

For example, in cause and consequences, the engineer usually thinks in terms of cause and consequences when he does an analysis of this type.

He makes a top event, the conditions of that event, and what's not allowed to happen. What he might not do is go on to establish something more elaborate in developing a scheme for what is important, the thing

that we might expect, some of us who are familiar with handbood 53, that divides the things into critical, major, and minor.

The engineer can do the same thing. He can divide these things up into critical, major, and minor, using his own scheme of thought of what is important with respect to the impact on safety as the most critical, and something less critical as a major, and then something that is neither one of those as a minor.

With respect to acceptability standards, there has been comment about the differences in the genesis of some of these programs that we're expected to review, the common thread being Sargent and Lundy, the engineer, and in the case of Fermi, not entirely common but still Sargent and Lundy throughout.

That kind of lack or difference in background or genesis will have an impact, certainly, on the standard of the work that has been done before.

Now I don't mean to imply that that affects the criterion, the engineering criterion. What I mean to imply is that you might expect a little more sophistication in some work that was done in 1975 or '76, especially today, but these programs don't come up that late, than you might expect in one that was done in 1968, when the CP, at least, was established in 1968.

I just want to point out that difference, and that's what I had in mind when I talked about the difference in acceptable standards.

Charlie talked about the balance of that strength and weaknesses. This is not a criterion that is necessary for trending, but it certainly is a criterion that the engineer should be aware of, that there are strengths and weaknesses in all of those different designs.

And as it was pointed out earlier, the end result is the important thing, and there may have been several different ways to get that and a particular way may not be the way that we would have done it, but the result of that way may have been just as conclusive and correct as it would have been done another way, if I make myself clear.

And further, on balance, in judging the good and bad, if you're looking at a deficiency, is it really a deficiency if the good and bad balance each other out? That consideration needs to be judged.

In the use of the informal methods, as I mentioned earlier, you can use these textbook approaches in establishing your informal methods, or you can simply use a well-seasoned, knowledgeable engineer who, in his day-to-day practice, uses logic to deal with these

kinds of problems and come up with these kinds of conclusions.

In this process, we normally call those people analysts. What he has in mind is establishing the logical relationships and with this experience, certain things just pop out at him, the similarities in the design process, or the dissimilarities in the design process.

Certainly where vendors or service bureaus are used, there are only so many of them out there. There are only so many programs that can be used, even though there have been refinements of those programs over the years.

There's still a source that's available as one of these things that you have as an obvious signal. He has further signals in the way of design margins, the practices, the standard practices or the not-so-standard practices of the designer.

Then the unknown problems in the industry, there are a few of those. There are some that circulated in the industry via bulletins and information notices and others that haven't quite made those ranks that we're aware of.

I might just tell you briefly about the process that we use as a company, and I was, of course,

instrumental in setting this system up first in the Gaithersburg Division.

It uses a combination of sophisticated system and a not-so-sophisticated system. It does use a word processing system.

It uses Napper as the BASIC system. Each of our divisions feed into it. Any problems that we're aware of, any problems that are discovered on any of our jobs, instantaneously, those problems are read out in our division and are dealt with first by a prescreening, and the very obvious ones removed from the process.

And those that are not so very obvious are the ones that have to be looked at further are taken to review by a committee in each of the divisions, a committee of disciplines, which then consider the deficiency or defect, whatever it happens to be, further.

Further, it merits a deficiency as to whether or not it has any further impact on any of our current systems or any jobs that we would have.

With that, I think Charlie should wind it up, unless there are any other questions in this particular area.

I have a few charts later that I will pick up on in the area of quality assurance. See, Charlie, when you

give a perfect presentation, there are no questions.

MR. GILHORN: I have a question on that.

MR. AXELRAD: I guess we got that one straightened out.

MR. GILHORN: When you implement this process, you'd be using your presen QA program manual?

MR. AXELRAD: That's a good question. That's the charts that I alluded to that will be presented later, and I'll be using the program that you're familiar with.

MR. DICK: All right. Well, the next area we'd like to present to you is a discussion of our review methods.

Bob Powell will discuss that in the process and we'll hopefully address some of your needs.

MR. POWELL: I'm Robert Powell, and I am principal engineer with Bechtel Power Corporation in San Francisco.

I'd like to discuss now the review methods or review techniques that we would use for this review. One thing I'd like to point out, and some of the questions that have come up have brought this out, when you're doing a review like this, the only thing you can be sure of is that you have a beginning, which is when you're making your plans and you're identifying your

commitments. And you have a conclusion, where you arrive at what your answers are.

As you're going through the review, a number of these things are going on concurrently. I don't want to present you with this and this and this.

It's a process that's controlled, but you don't just say, "We're going to just look at the commitments and we're going to do this part of it first, and then we're going to go on and we're going to determine adequacy, and then we're going to finish up by looking at the design process.

Really what you're doing is, as you're going along, you're really determining all these things. The first thing we'll do is we make our review plans or, as we call them, our check list.

As initial start, we have our licensing engineers, who'll review the FSAR for commitments that have been made in the systems thta we're reviewing.

Then we will identify design procedures, criteria, output documents that apply. All this is going on. We would have interviews, discussions, whatever, with our Sargent and Lundy counterparts so that we thoroughly understand their design process, so we thoroughly understand how they did their design, so that when we eventually arrive at conclusions, that we have

thoroughly understood the work that they've done. Now, as we go through, we identify these commitments.

Then we compare the commitments with the procedures, criteria, output documents, to see that somewhere they have addressed those commitments.

MR. LEWIS: Question. Mr. Lewis, NRC. As the first bullet, "Make Review Plans," could you expand a little bit on that? What sort of documents or what are they?

MR. POWELL: Yes, I happen to have them. In general, these are the things that each discipline relate with the review, was put together in this list of items that they want to make sure that they look at.

We review them to make sure that everything is covered. These are the items that we think are important.

Now I'll show you a little later the list of the review plans that we made for the discipine.

MR. LEWIS: And these are included in the program plan?

MR. POWELL: No.

MR. DICK: No, those are tools. Charles Dick here. Those are tools that the reviewer uses, which, of course, are available for special NRC or whether you come through the nuclear project.

But we wouldn't normally put those in the program plan for several reasons, one of which is that if it's the one I'm thinking of, it tends to be developed as you go along, continually revised.

We prefer not to revise the program planning more than necessary.

MR. LEWIS: Lewis. Again, you could put a caveat in the program plan to indicate that those things have that importance.

MR. DICK: Certainly. Certainly, because -- set forth as an example?

MR. LEWIS: Yes. Because as I see this, just my own reaction to it, I think is what would be very helpful to the NRC in assessing the adequacy of your program plan, while this, as you say, has the living dynamicism go a little different, the fact that this is your initial condition depth of review in each area, I think, would be very helpful for us to see attached to the program.

MR. DICK: Thank you for your suggestion. I'll take that under advisement.

MR. POWELL: This is a continuation of the other Vu-Graph. Then this is where we get into the detail review check for adequacy.

And these are the items that we would look for when

we are reviewing documents we discussed earlier. We do go into calculations, we look at the validity of the inputs of the calculations, how the calculations were performed, and reasonableness of the outputs.

In some cases we will take a look where engineering judgment has been used, which is the case for a number of calculations where they don't do calculations.

There are places where it's obvious that it's very reasonable to use engineering judgment, calculations are really not required.

If, in our judgment, we find a spot where it looks pretty like a gray area that it's not all that clear that you can arrive at a particular conclusion by using engineering judgment, we would run an independent calculation to verify that results were accurate.

We would not do that in every case; only those areas where in our judgment it was not clear. Any questions?

MR. LEWIS: You look at revision control?

MR. POWELL: Yes, that would be included out here. Yes, sir. That will also be covered. In fact, that really, as we find, is probably one of the most important areas.

We would develop flow charts of the design process and review selected documents for adequacy and

completeness of procedural requirements. This definitely includes the items we talked about.

We would go and one thing we would check is field revisions, revisions design, if they've been properly taken care of and have either calculations or have in some way been taken account of in the final design process.

We use standard review sheets. All the work is done, is recorded on these sheets, from whom we've gotten the information, from Sargent and Lundy or whoever.

All telephone conversations are documented, etc. And then we identify and process many observations for the program plan of any observations that are discovered as a result of our review vis-a-vis the observations as to whether or not the design met the commitment, whether or not it is adequate and whether or not it's the proper design process.

MR. LEWIS: In your control, you give some emphasis to checking that the right levels of engineering review have chopped off on the engineering document?

In other words, depending on its importance and what not.

MR. POWELL: Yes. You mean whether it's gone to

the chief engineer for review?

MR. LEWIS: Yes.

MR. POWELL: In fact, that is one thing that we would look at as a part of this review would be internal reviews done by Sargent and Lundy on work on these systems.

This question came up earlier. I'd like to discuss a little bit on the extent of our review. It would be our intent, for instance, take the HPCS system, and we are also doing the 1-E Electrical.

But if we weren't, we would take the electrical out to whatever part of the electrical system was unique for the HPCS system, back to a bus, back to a load center, whatever part of the electrical, and we would check that out.

We do the same for the instrument and controls for that system. We check out the supporting system, pipe supports for that system, structural, we take it back into the structural system of the particular structure that we're talking about.

As I discussed earlier, we would look at the HBAC system to the extent of how it serviced this particular compartment or what the effect would be on the HPCS system or the 1-E Electrical.

In the review, we would take certain areas, and

I'll get into that later, some of the areas in general that we have found to be the hard spots, and those are the things where we would go in, and go into as much depth as required to arrive at a conclusion.

If it's kept being soft, we keep going until we arrive at a conclusion that we were satisfied that the system was okay.

MR. SIEGEL: Let me ask a question.

MR. POWELL: Sure.

MR. SIEGEL: On the HPCS. Would you take it all the way back to the diesel generators and all the associated equipment associated with it, or not?

MR. POWELL: No. That's why I wanted to say what is uniquely for the HPCS.

MR. SIEGEL: Well, that is. That's why I'm asking. I think it has its own diesel generator.

MR. POWELL: Okay. In that case, we would take it back to its diesel generator.

MR. SIEGEL: Yes.

MR. POWELL: As we're looking at this system, it depends a little bit, ambiguous, because we'd be looking at it through the AC electrical. Yes?

MR. PARKHILL: Would we be correct to assume that every system interface identified on the PNID will be reviewed for its adequacy?

MR. POWELL: Could you give me an example?

MR. PARKHILL: Let's say cooling water for motor. I don't know if that's shown on S & L's PNID, but --

MR. POWELL: Yes, if there is cooling water required to cool that motor, we will see that there is, in fact, cooling water, and we will check to see that it has the right design conditions, that there is a pressure required, a temperature required.

We will not carry that cooling water back through its system. Is that clear?

MR. PARKHILL: Well, I assume that your answer would be that PNID would be the basic document that would identify boundaries?

MR. POWELL: Yes. That's correct. But we would look at everything that could affect that system. We would look--well, Helba and Melba, we would look at that.

And we would look, if it requires cooling water someplace, we would see that, yes, there is cooling water, and we would check and see that those conditions for that cooling water were as required.

But we would not go back and check that whole cooling water system, because I would consider that out of the scope of this review.

Does that answer the question?

MR. PARKHILL: Yes. But I would like--you mentioned Helba and Melba. What is your approach on that?

We've identified that as a problem with Byron, and we're wondering about what your approach would be as far as expanding the scope of review in relation that this is basically a cold system and it doesn't have a--it's a different type of analysis here.

MR. POWELL: Well, we would look at--you could have some targets on the HPCS system that could be hit by some other system, and we would look at it in that light, not necessarily what the HPCS system is going to do to something else.

We'd also look at what is going to happen to the HPCS system from some other system.

MR. PARKHILL: But you're going to look at both aspects of that--the effect of the break and the HPCS system with other systems and the associated interaction of the consequence of the break and a HPCS, evaluate that interaction?

I assume you would also look at the stress analysis of the HPCS system to see if another system that had, let's say, a hot-plated break would have an effect on the stress analysis of the HPCS and so forth? Both aspects of that?

MR. DICK: If I understand the question correctly.

MR. POWELL: Yes, yes, yes. And we look at the Sargent and Lundy stress analysis where shows where to postulate where the breaks are.

MR. PARKHILL: Okay. Just to maybe clarify this a little bit, is, then, when you look at the stress analysis and identify a break, you would be taking the jet or the pipe work as a result of that break in evaluating the consequences of that and other systems?

MR. POWELL: Yes.

MR. PARKHILL: So you might be hitting, say, 20 targets and you would evaluate the interaction of the possible damage of those 20 targets?

MR. POWELL: I think what we'd say is that we have identified 20 targets and we would send that information back to Sargent and Lundy and let them evaluate it.

MR. PARKHILL: Isn't it up to NRC to evaluate it?

MR. DICK: Excuse me. Let me try to help this a little. We've recently gone through quite an exhaustive examination of this sort of thing, and I'm coming from that type of framework.

Let me just restate some of the things that Bob Powell has said here to provide a springboard here.

Bob has pointed out that we would examine the impact on the HPCS, for example, from other systems, and likewise on other systems from the HPCS for line break, including jets and whip and whatever else.

Typically--excuse me, not typically. I correct myself. What we do, we take those break points. If they are established by another source, say, General Electric, as a result of stress analysis, and we will use those break points as the basis for determining the impact on, say, the HPCS.

That's where we get it. Now, if Sargent and Lundy has, in turn, determined those break points, we would, of course, examine the Sargent and Lundy stress analysis to establish those.

Now I'm not--does this answer your question, Mr. Parkhill?

MR. PARKHILL: Not directly, no.

MR. DICK: Well, let's try it again.

MR. PARKHILL: Okay. What I am interested in, I guess what my hang up on the question is, when the high energy portion of the HPCS system breaks, then targets are then identified in that evaluation of the failure, the possibility of a failure of those targets on the overall plant operation is evaluated?

MR. DICK: Yes, that is evaluated. We evaluate it

to the extent we can. But if there is doubt, we pass it back to Sargent and Lundy. If we, for example, would find that there would be a piece of HPCS piping that would be potentially lost as a result of jet impingement, we would refer that back to Sargent and Lundy to justify that that could be lost, from the standpoint of the functionality of the system.

MR. PARKHILL: The question also goes beyond just the piping realm, but would address instrumentation, cables.

MR. DICK: We would do that as well.

MR. PARKHILL: Thank you. That answers it.

MR. NORKIN: NRC, Norkin. You say we would do that. You assume that is supposed to be what you did at Byron?

When you say that you would do that, is that identical to what you did on Bryon?

MR. DICK: Yes.

MR. NORKIN: Well, the report --

MR. DICK: Which report are you referring to, sir?

MR. NORKIN: In a report that's not addressed anything but typing, it does not address any targets. There are no assessments resulting from breaks.

MR. DICK: That is correct.

MR. NORKIN: Especially by breaks and the system

under consideration.

MR. DICK: That's correct, but you've only read the May interim report. I say you've only read the May interim report.

A June interim report has recently been issued, and I think when you review that, you'll find it consistent with my answer.

MR. NORKIN: I just wanted to make sure it was calibrated.

MR. DICK: Yes.

MR. WANG: Mr. Wang, NRC. As far as structure is concerned, how far do you go in the field? Do you stop at the pipe support?

Are you going to review the adequacy of the structure?

MR. DICK: We would take the supplementary seal for the support back into the structure.

MR. WANG: That's all you're going to do? Are you going to see if the (inaudible) support or foundation?

I mean, if the housing structure is not adequate, it's obvious, depending on how good the system is, what is the result.

My question is, are you going to check for adequacy of the housing structure?

MR. POWELL: Charlie, as far as I'm concerned--

MR. DICK: May we have a side bar discussion here a moment? Off the record.

(Whereupon there was a short break.)

MR. POWELL: Safely transmitted into building structure, that's right.

MR. WANG: And so you would evaluate the structure?

MR. POWELL: In that regard, yes.

MR. WANG: Thank you.

MR. POWELL: These are the review plans. Under mechnical, we have process, layout, piping engineering, piping stress analysis, pipe support.

Civil/structural, electric power, I & C, and equipment qualification. And covered in these areas would be such items as the Helba, Melba, and fire protection.

MR. NORKIN: Excuse me. Don Norkin, NRC. You mentioned Helba and Melba. A related subject, interaction of the category, the one in nine category, where is says --

MR. POWELL: Two over one type?

MR. NORKIN: Yes, two over one.

MR. POWELL: Yes, we looked at that.

MR. NORKIN: You covered that, too?

MR. POWELL: Yes.

MR. NORKIN: One thing I want to clarify in the same vein, if you are looking at the Sargent and Lundy analysis, in some areas like in piping, when you do your independent analysis, you're additionally looking at Sargent and Lundy's analysis, aren't you?

MR. DICK: Yes.

MR. POWELL: Yes. Oh, yes.

MR. NORKIN: Okay.

MR. LEWIS: Let me ask a question. On the review plans that you've just listed, the one you gave me is illustrative and so you have plans for each of those areas that you just put up there?

MR. POWELL: Yes.

MR. LEWIS: Are they in existence now?

MR. POWELL: They are for Byron, yes.

MR. LEWIS: But not Clinton.

MR. POWELL: No.

MR. LEWIS: The reasoning for my questioning is that I think that a lot of our questionings are begging the insights as to what's in those detailed plans.

MR. POWELL: Well, I think we can --

MR. DICK: Let me understand, Mr. Lewis, the context of your interest here. And I'm trying to understand the process you want to use as far as reviewing and approving our program plan and the depth

to which you wish to go. There is nothing, first of all, which we wish to keep secret on this.

We operate in a goldfish bowl. But these review plans, as we've discussed, are things which are prepared on an ongoing basis.

I'm sure you people do some of the same thing. And I'm wondering if it's your desire or intent to review the review plan as such as part of your approval of the program plan, or whether this is for background information.

MR. MILHOAN: The thing we want to make sure is that we have, when you provide your program plan, we understand it should be a management document.

At the same time, we want to have a common understanding, when we approve that program plan, that we assure ourselves that we understand the depth of review that you're going to.

Now, we don't have any desire to approve your individual review plans. We think the program plan will be sufficient.

But if they could be attached as examples of how you're doing this, therefore you're not tied to the formal NRC approval of that review plan.

MR. DICK: Fine. We have no problem with that. We were concerned--I was concerned, rather, that if we got

into approving that level of detail, we might be a long time getting out of it.

But we have certainly no objection to making these available on an example basis. And as Mr. Lewis and I discussed earlier, with the understanding that they're subject to later revision.

MR. NORKIN: I'd like to add this is a detailed plan, right? The check list of the pipe stress analysis.

MR. POWELL: Yes, go ahead, Bob.

MR. NORKIN: I'd like to add, this is the kind of plan that looks to me like it is a good plan. It could have been used for the ESW, CEW system.

MR. POWELL: It was.

MR. NORKIN: It's a generic type plan. And what I'd like to see for my own, it would help me to have this complemented by what's going to be specific for this discipline.

You know, what the review would need to develop as to the targets of opportunity for, you know, specific to that system.

I don't think it would go very far, really, and this is a head start.

UNIDENTIFIED: He's getting down to the nitty gritty.

MR. NORKIN: How does the guide plan differ from system to system, really? How does he know what he wants to look at in that system?

MR. POWELL: Well, essentially, if you take, like, the component cooling water, we're talking about Byron now, they're going to look for essentially the same things.

I don't really understand how you could say, well, I'm going to take a look at this particular problem. Take stress analysis, for example.

"I'm going to look at this particular problem in the CCW system, or I'm going to look at this particular problem in the ESW, or I'm going to look at his particular problem in the HPCS."

In fact, that information I couldn't give to you at the present time. I don't know that information until we get into it.

MR. NORKIN: Well, the systems guide, the project engineering guide, they have a specific pump they want to look at.

They want to look at pressure drop calculations for that month, or they may want to look at something to do with the sunscreen, for example.

MR. POWELL: Well, that's correct.

MR. NORKIN: That kind of detail.

MR. POWELL: I mean, that's not a big problem if you want to take a general checklist or review plan such as this, and then you put in there, "We're going to look at this pump."

But we couldn't get to the detail of what particular problem we're going to look at or what pipe supports we're going to look at, because we really don't know.

We could say we're going to pick some anchor-to-anchor problem, but we couldn't give you like a count number or something.

MR. NORKIN: I understand that, but I think you can tell us that you perceive the big thing, the preparations vis-a-vis the important components such as this pump or this refueling water storage tank, something like that.

MR. POWELL: That's no big problem.

MR. MILHOAN: Milhoan, NRC. I think what we're saying, again, is it's in the area that we recognize that your review plan evolves as you continue through the review, but you take it in the depth of detail example areas of what you would look at to provide more detail as you proceed with the review plan. So that we recognize ours evolves, too.

MR. POWELL: Certainly.

MR. MILHOAN: But there is a certain level of detail in the integrated design inspection program that we know we're going to look at at the beginning.

That inspection plan evolves throughout the inspection, but it's the examples of that.

MR. DICK: We can certainly provide those. Yes, we'd be pleased to provide those. I think we empathize with your problem.

You're trying to get a better feeling for the depth of the thing, and we'll try to do that.

MR. NORKIN: We have to look at something a little differently for the high-pressure core spray system than we do for the ESW system on a TWR, so that's the reason we have to make the thing system-specific and plant-specific.

We can't be looking at the same program for, you know, Byron as we are for Clinton.

MR. DICK: We understand that.

MR. POWELL: This is the method that we would use in reporting our observations over time during this review, identified the reviewer, who would fill out what we call a potential observation report.

He first submits it to the team leader here, who would identify whether or not it really dealt with an operation.

That's the first screen. It later signs off to go to the project manager. Then we have our level I review committee.

It consists of senior people on the project who review this potential observation, see whether it's valid and whether it has safety significance.

They may find out that it isn't valid, for one reason or another, and then a completion report would be filled out to show that it resolved in that manner.

If it was determined that it's valid, but it's not safety significant, then we would prepare an observation report, initiate a resolution report, and I'll continue on the next slide.

If it's found that it is safety significant, Illinois Power and Sargent and Lundy would be advised that we had determined that we have a safety significant observation.

Then we send the observation to our level II committee, which is a committee of very senior experienced personnel, who would then review it to see whether they considered it was valid and that they concurred whether it was safety significant.

Depending on their finding, if they say it was not valid, then they would just fill out a resolution report for completion.

If it was found out that it is safety significant, then you go and notify Illinois Power and Sargent and Lundy.

They initiate a resolution report and submit it to the project manager, who obtains Sargent and Lundy and Illinois Power's review of that particular observation.

When we get the results back, the answer from Sargent and Lundy, and then we would determine whether we agree.

If we agree, we close it out. If we don't agree with the answer, then it goes back through the cycle.

MR. LEWIS: Question. Lewis, NRC. During the development of your observation analysis, how do you inject the assessment as to whether something could be a pervasive deficiency or finding?

As an example, suppose you find out that a certain calculation or input is incorrect in the test system and it's maybe a rather waning one.

I don't see the method where you check to see whether that pervades itself in the S & L design process.

MR. POWELL: The first thing we do, let's say--I guess in most cases, there is a duplication of designs within a system.

We won't be looking at the whole system from one

end to the other, obviously. Let's take pipe supports, for example. We would be looking probably at the section of that system, going into great detail.

If we would find out that there is a problem that we thought was pervasive, as you do, we would, you know, go in and look at another section of that system.

If we got to the point where we couldn't satisfy ourselves by looking at the HPCS system, then we would advise Sargent and Lundy and Illinois Power and would recommend that Sargent and Lundy take a look at some other systems.

MR. LEWIS: What if you found things like set point calculation errors in the process, variables that are important to the HPCS?

Would you, Bechtel, look at set point calculations in other systems?

MR. POWELL: No, we would not propose to do that.

MR. DICK: Excuse me. This is Charles Dick. Let me try to help the answer here. I think this goes to the point of one of your questions on your agenda.

It is also something that we'll discuss downstream. Bob, in fact, has a VU-graph which deals with that under the subject of extensions to other systems.

MR. POWELL: I think I just covered it.

MR. DICK: You'd better go there, because I think

there are a couple of points we'd like to make there.

MR. POWELL: Yes, I'll go there, but I think we've just --

MR. SIEGEL: You're saying if there is any generic connotations in things that you find, you would identify them to Sargent and Lundy and Illinois Power, and then they would have to pursue it further outside the scope of the review that you're doing?

MR. DICK: Yes, that's one of several approaches. Frankly, it's the preferred approach.

MR. KNAP: Excuse me. Dick Knap, Region III. Going back (inaudible), is all the verbal and written documentation been depicted in the completion report?

All the correspondence back and forth, are those going to be appended and made available?

MR. DICK: Let me try to answer that. This is Charles Dick. The final report would have key documents in there, but not all of the correspondence, Mr. Knap.

We wouldn't visualize that, no.

MR. KNAP: Would you retain those and have them available?

MR. DICK: Absolutely. It would be our intention to, in fact, turn those all over to Illinois Power at the completion of the review.

And furthermore, they're all available for your inspection.

MR. NORKIN: Don Norkin, NRC. I think this is sort of related to Bill Lewis' question. That is, in pursuing these observations through the two levels of review, starting with the safety significance, let's say, for example, you get calculations in, let's say, two or three different disciplines that turn out to be messed up but enough margin in the calculation that the design's okay.

Now, what's your mechanism for looking at that as a generic type deficiency, where even though in each case everything worked out because of the margin, the calculations in two or three different disciplines were deficient?

Where does that come out in your process of these evaluations?

MR. POWELL: Number one, it would be pointed out if the calculation has been incorrectly done, even though you came out and you said that the final answer, the hardware is adequate, it would be a design process observation.

It would be written up as an observation and processed as such. Then we would take a certain number, we're going to have all these observations.

These observations are going to be all reviewed to see what the trends are, and these would become part of the final report.

But if there is a problem with a calculation to the extent that you're talking about, as far as I'm concerned, that is a design process problem.

Because you're supposed to have the originator of the calculation, you're supposed to have a checker. Somewhere along the line, it's supposed to be caught.

And if you don't catch it, you've got a problem with your design process.

MR. NORKIN: Well, it is difficult, from our experience, to sort it all out with the different people running around, to really sort it out with the commonality factor, to see the type of problem three or four times.

And it's difficult. In the haste to try to look at each observation, to state the significance of it. I'm glad you're concerned about generic. We'll get into that.

MR. DICK: Let me add. This is Charles Dick. Let me add to what Bob has said, because I know this is a concern that the NRC has.

We've heard it from your inspectors, we've heard it at meetings, and we've read it. And I think we've got the message that you just don't look--you don't look at

a deficiency and say it's a "no, never mind," and drop it and walk away from it.

That's not our intention, and there are several situations under which that can occur. You can look at one, which is the one that Mr. Lewis mentioned, which is pervasive, and how you spill over into other systems.

That's the one that Bob started to complete here a minute ago.

There's the one you talked about, Don, where you say, "Well, it may not be significant here," but you worry about it some other place.

And we are committed on Byron, and we will be committed here to look at those things.

Now, having said that, I must also point out that it's important to use judgment in how far you chase these things.

If it's a series of random, minor errors--and I hesitate to use the word "errors" but let's say random, minor deficiencies.

You may or may not elect to chase those. The reviewer has to use judgment, and we expect him to do that.

From our experience, he does. We have observations on record, which are available for your inspection,

where we have, in fact, done that. And we've passed them back to Sargent and Lundy, and we've said, "Go look at other cases." And that's part of the process.

MR. NORKIN: You say the reviewer may not choose, based on his judgment, the reviewer may not know that they're random.

It may take a team to see that it's happening in four areas.

MR. DICK: Are you speaking about a calculation? As an example, let's say, calculation error in electrical design, another one over in stress design, and that sort of thing?

I think I would have to just on this hypothetical basis, that sounds more or less random, doesn't it to you?

MR. NORKIN: Well, I'm looking at failure to document assumptions in four different areas.

MR. DICK: I should point out to you that we have an internal mechanism, whereby the system leader--in this case, Bob Powell--reviews all the work that's going on in that system, which does cut across a variety of discipline.

He signs off the review sheets. Every review sheet has his initials on it. And he has a good opportunity to see that.

John Amaral, do you want to add something?

MR. AMARAL: We also have a review by the quality engineer that looks across all disciplines to make sure that something isn't pervasive, whatever.

That's the function of the quality engineer. We do have that.

MR. DICK: That's an overview, yes.

MR. POWELL: I'd like to just say one thing in regard to that. I think engineering is a little bit different than cards.

It isn't the same to be lucky as being good. I think we've got to be correct. I think if you're just lucky, I don't think that's good enough. That pretty well covers this.

MR. DICK: I think so.

MR. POWELL: These are the criteria for system selection. Also not included here is the one that the sufficient work has been done in installation, so we can't check the process to see that as-builts are being properly accounted for in calculation and design.

MR. MILHOAN: Excuse me. Milhoan, NRC. You are mentioning as-built. You have not talked any in your talk about a system on-site verification.

MR. POWELL: What we are doing is, we would look at and make sure that--we are looking at a calculation, we

check and make sure that we are using the latest design drawing that has been incorporated in that calculation.

If there is an as-built, we make sure that the as-built, the as-built drawing--we're not talking about a verification--the as-built drawing has been incorporated into these.

MR. MILHOAN: To ask you a specific question, do you plan on doing an on-site verification of the sample system?

MR. POWELL: Walk down?

MR. MILHOAN: Walk down the system.

MR. POWELL: No.

MR. DICK: Mr. Milhoan, this is Charles Dick. Let me expand upon that a little bit. We will do on-site review to the extent that Sargent and Lundy is involved in it.

If they have been doing as-built drawings on-site, we'll review that. We will, in fact, look at the work from the Sargent and Lundy side.

If it's necessary to get over onto the other side in order to get a more clear view, we'll do that. So I think we'll get a pretty clear picture of the quality of the as-built drawings and the handling thereof, as it comes through there.

MR. MILHOAN: I guess I'd be interested in your

comments as to why you would not think part of this, this process of a walk down of the system would not be useful in the design review process.

MR. DICK: Let me try that. In the context of a Bechtel design and construct project, we would probably do that.

In the context of what we are trying to do here, we believe that it might dilute the effort. Why do I say that?

The as-builts, as we understand the process at Clinton at present, are prepared by contractors, not by Sargent and Lundy.

May I ask for verification from the Illinois Power people for that?

MR. HALL: That is definitely so.

MR. DICK: That is correct?

MR. HALL: Generally so.

MR. DICK: Well, that is our understanding. If that be the case, it appears to us that in the unhappy event, let's say, there might be some deficiencies in as-builts, we would have some difficulty in ascribing where that thing--what the source of that is, is what I'm seeking.

What I'm really driving at is that you are suddenly in a situation of getting the as-built mixed up with

the Sargent and Lundy design, and it would be a very difficult thing to separate out.

MR. LEWIS: I would think that would be, rather than a reason for not having a walk down, that would enhance my desire to have a walk down, because the purpose of this is to understand whether the design and design process leading to the reactor in question is adequate.

MR. DICK: Yes, Mr. Lewis. It depends on what you're looking for.

MR. LEWIS: Somebody different out there other than Sargent and Lundy, that's added reason for the football getting dropped.

MR. MILHOAN: Milhoan, NRC. I think the same thing was brought out this morning. I think we may have misunderstood your scope from what you were doing at Byron as applied to Clinton.

We're talking about the design process at Clinton, not the Sargent and Lundy design work, but the design process that's going on at Clinton, so that may have been a little confusion in where we were going.

MR. DICK: I think you corrected defined the problem.

MR. MILHOAN: In the scope of work. But our point is, we are interested in the design process. So that

may alter your thinking a little bit in the scope of the work that you're talking about.

MR. LEWIS: And that's why you saw the interest in interface from beginning to end in the design process. I think our IDI inspections have shown very valuable annex to the look-see of the design and design process of the architect engineer, the actual on-site walk down of that sample system.

Things were brought out in that walk down that may have been okayed without --

MR. DICK: We understand what you're saying. I believe we had understood this to be a design verification.

We had considered the as-building as part of the construction activity, and the construction was outside of our scope.

And that's why we apparently have the mismatch.

MR. HALL: Mr. Hall from Illinois Power. In my statement that I started out with, I addressed this from our standpoint.

And my statement was, if the reviewer feels that it is necessary, that the field walk down, for the purposes of confirming configuration, certainly is an acceptable thing for us.

We would get concerned if it got into the full

verification of welds, heat numbers, and things like that, from that standpoint.

Because we have a full scope program in another forum to handle that.

MR. MILHOAN: Milhoan, NRC. I understand what you're saying. It's the same way with an IDI inspection.

We're not talking about a construction assessment inspection. That's a construction process verification, but we do have a walk down.

A walk down is part of our design inspection which we find very valuable. I think we're sounding like we're talking on the same wavelength.

I guess we would ask, in this particular regard, in preparing the program plan, that you take this further aspect into consideration.

MR. DICK: I understand.

MR. NORKIN: Spinning off from what Mr. Hall and Mr. Milhoan just said, I don't--where are your inspectors going to complement what they're doing?

We don't--in IDI, we don't look at the walk down as an as-built confirmation or make sure there is constructive design.

We look upon it as we would inspect a program plan, the items where your inspector feels that a walk down

is necessary. For example, in pipe stress analysis, to confirm some of the assumptions for the process configuration, I have seen cases, for example, in Calloway where there was a misassumption because there were two different supports for identical pipe.

In the actual weld connection line, on the support it was different, and yet they were assumed to be the same, both in the analysis.

So in that case, I think, pipe stress analysis, for example, would be the advantage of the walk down. I think if you were getting into the 201 or the high energy line break, the fact that Sargent and Lundy, I don't believe, have done walk downs in this area the way it's confirmed, you know, the cause check, do walk downs in that area.

MR. DICK: Sure. Well, please understand we're not attempting to denegrate the value of a walk down in the totality of the project.

What we are simply attempting to identify is what is desired for this specific IDR.

MR. POWELL: This VU-graph, this gives some samples of types of things that we've found to be problem areas, the types of areas that we would be looking hard at for these systems.

Seismic analysis, pipe support design, separation,

equipment qualification, consistency between logics and schematics, and establishment of system design pressures.

So these are the types of things that we would include and certainly wouldn't exclude other items.

MR. LEWIS: By separation, you mean to include in there adequate independence?

MR. POWELL: Yes. Yes.

MR. LEWIS: For both seismic and environmental qualifications?

MR. POWELL: Yes, that was -- yes, both seismic and environmental. Any questions?

MR. DICK: Thanks, Bob. The final item we'd like to present to you is a brief outline of our quality assurance program and how we implement it on this project.

MR. AMARAL: Mr. Gilray, this is in response to your question earlier, for the program that we're using.

The NRC-approved Bechtel Topical Report, BQ-TOP REV-3A, type O blood splattered on it from the design section, as you recall, the criteria drawn from that report is the organization section, the functions of the design control, document control, and audits.

The organization that I'm speaking of overall

activities, and you've heard a great deal about this today already, but the project, of course, uses experienced, qualified personnel.

That's the key to quality. The procedures that we're using on the project are standard procedures that are tried and true.

In some cases, they have never been the standard program for IDIs or IDRs, because the volume hasn't warranted such.

But we have taken and extracted from our standard procedures that which is standard and applicable to this program.

The monitoring and auditing function by QA is an ongoing function on this particular project. The key individual in QA is the project quality assurance engineer, who coordinates the QA program, first coordinates with the project manager. In this case, it will be Mr. Gordon Parkinson.

As in his program, we'll be monitoring and auditing, be monitoring on a greater frequency and, of course, auditing on a lesser frequency.

He improves those capabilities on the project, and issues action requests when he feels that he needs correction of particular activities that may have not been provided in exact accordance with the procedures

of the program as we have described them. He maintains then a daily log of all of his activities, and, of course, participates in the reporting activities of the project to include the QA portion of the reports. I think we're just about on time.

MR. MILHOAN: Mr. Amaral, with respect to the implementation of the program, as you're aware, the NRC would come in and look at the implementation of the Bechtel program during the conduct of the program.

As mentioned earlier, the record itself would be accessible to us. I assume that there would be a record of election system or something set up so that the record would be easily accessible to the NRC throughout the project?

And you'd indicated after the completion of the project, that they would be passed to Illinois Power.

MR. AMARAL: Yes, sir.

MR. MILHOAN: Mr. Hall, with respect to the retention of record after they're transferred to IP, would IP intend on retaining those records until after completion of issuance of the full power license?

MR. HALL: At least that long. Probably we'd make them part of the permanent plant records.

MR. MILHOAN: Okay.

MR. HALL: For permanent retention.

MR. MILHOAN: Thank you.

MR. AMARAL: First, the NRC has had some experience on the Byron project, and having performed the review of the quality assurance program. Question?

MR. LEWIS: Similar to the overall philosophy that was used in the design review of going to school or using the benefit of past reviews, where those reviews have had comments substantive to the QA program, are you factoring that into your IDR review of QA?

MR. AMARAL: That's done. If it's done, it's done by engineering, not by QA. That was a line item on one of the charts.

MR. LEWIS: Okay. I would then understand, for example, let's take an illustrative example that you were going to take into account the INPO construction review.

And I believe that that had subsets in it pertaining to QA. Am I correct on that?

MR. HALL: Yes.

MR. LEWIS: There were QA findings on that. So similar to your overall pattern of using the benefit of past review, would you be doing that, as an illustrative example, using as background the areas to concentrate on in your review of the QA program?

MR. AMARAL: I would respond to that as yes. I

wanted to make clear that that's part of the engineer's review and not a subsequental or separate QA review.

MR. DICK: Thank you very much, John. Well, gentlemen, that concludes the formal part of the Bechtel presentation and our questions and answers.

I would only add that if Pete Karpa would like to make any final remarks here, this is the best opportunity for him to do so.

Before he does, perhaps you gentlemen have any final questions to which we might be able to respond.

MR. MILHOAN: Excuse us a minute.

(Whereupon, a short break ensued.)

MR. MILHOAN: We have no further questions at this time on your presentation. I think you have heard our individual comments throughout your presentation. So beyond that, we have no further comments at this time.

MR. DICK: Pete, did you want to conclude?

MR. KARPA: Yes. I would like to go back and mention maybe three or four items that perhaps modified our plan somewhat.

And I think Charlie Dick mentioned earlier that we did not--we do have a graph of the program plan in existence at this time, and we wished to wait until this meeting was over with, and then modify the plan accordingly.

I guess it's a good thing that we did so, because there are some modifications that I think came out of this meeting.

Just before we part company, I think I'd like to verify that everybody agrees that these were the modifications that came up.

There was some discussion about RCI work, following the River Bend. I think we did not have that included previously.

I guess there is a scope expansion to do this. Am I correct?

MR. MILHOAN: Obviously we will review your program plan when you submit it to us. This was a concern that we expressed.

And it's a concern that you will have to consider in preparing your program plan. It's a concern that we will have to further review once we've received your program plan.

MR. KARPA: Okay. The other point that was raised--and I think it's a good one--getting at the adequate level of detail in the plan or in the final report.

And that's that we would select some samples of the work sheets, but only as samples, typical. They would not be subject to approvals, just to illustrate the

level of detail that we do get into. I feel that that was a desire and agreement that this will be done.

MR. LEWIS: Question, Mr. Karpa.

MR. KARPA: Yes.

MR. LEWIS: I understand the basis that it would be as examples. Would you give us copies of the review plans across the board, albeit they are on a sample basis?

Mr. Powell had shown the ones that make up your total potpourri of plans, and I just wanted to clarify that we would be interested in getting the set, albeit with the caveat that you just mentioned.

MR. KARPA: Sure. No problem at all. That's fine. One rather significant thing that I guess came out of the conversation was the need to form some type of a field walk down and verification of the as-built process between a contractor and the architect engineer.

And I think we would address that and suggest that we include whether that is 100% walk down or a partial one, just on a sampling basis.

I think it might be something that we would describe in a plan and submit for approval.

The last point I have was that we are planning on issuing the program plan by the end of next week.

I'd like to ask Charlie Dick whether with these additional modifications, whether it will be the same process scheduling.

MR. DICK: We will try. I would like to see what the Seabrook transmittal contains, and consult with my associates.

But I think we should do our very best to get that plan out as quickly as possible, in spite of the additions.

And we will still try very hard to maintain the schedule. If perhaps we find it's necessary to take a few more days, please understand.

MR. KARPA: If I get delayed in the beginning point, I'm always concerned about the finishing point, because, you know, you get squeezed between two dates.

That may have impact on the dates like end of September, interim report, and maybe even potentially on the December 15 completion date.

But we can play this game and perhaps increase staffing or work overtime or pull some other rabbits out of the hat here that we've done before.

We also seek, of course, the full and complete cooperation of the architect engineer, and I believe we have assurance that we will have this.

We will propose, according to that protocol that is

in place, there will be work going on, perhaps as of right now and from here on out.

So these are the only points I make record of. If there are additional ones that I've overlooked, I'd like to hear them now.

MR. SIEGEL: I believe we would like to--and I believe you agreed at the beginning of the meeting--we would like to have copies of the new draft that you provide.

MR. KARPA: They were provided already.

MR. SIEGEL: Okay. That's fine. Thank you.

MR. MILHOAN: Before I ask Mr. Hall for comments, you're correct. You have agreed to the protocol and continuing the protocol.

We understand your comments about--we will review the program plan and approve the program plan. We understand your comment about proceeding with work at the present time and it's subject to proceeding at your own risk.

But you are subject to the protocol and there would be nothing that I can see that would be detrimental to proceeding with that particular work, subject to protocol and subject, of course, to Illinois Power.

I can't authorize you to do that. Illinois Power is in the seat to do that.

MR. KARPA: Yes. In a similar vein, I guess, since the program plan is not final and approved, we would be slightly at risk doing what we're going.

But you are familiar with the Byron plan, and we don't intend to deviate unless there are valid reasons for deviating.

So you have a fair understanding of how we do our work, and you've seen our presentation. So with that common understanding, we plan to charge ahead.

MR. HALL: From our standpoint, we agree with your comments, Peter. Also, we'd like to review the program plan, of course.

We also would like to try to get some type of time table established for the next step in reviewing the plan and some idea of when we could have the next public meeting.

We, sitting around the table, came up with a target of ten days, but I have no feel for what type of schedule you all are on.

And it all hinges on exactly your previous comment, Mr. Milhoan, on the subject of working at our own risk and that type thing, and how fast can we turn the plan around after Mr. Dick submits it.

MR. MILHOAN: Of course, we have other work under way, and we would plan--my intent is to conduct an

expeditious review of it. At the present time, I can't say whether ten days is right or not.

That seems within the ball park to me. I think the best option is to present us, to give us a program plan as quickly as you can.

We will do our review as quickly as we can without compromising the thoroughness of the review that we plan on doing.

When we do that, at the point--and I assume at that time you're intending to request another meeting to discuss our comments? That was sort of the --

MR. HALL: That's correct. We would like to have the public meeting as soon as we can to resolve your comments and to incorporate them so we can proceed with an approved plan.

MR. SIEGEL: Are you talking about ten days from the time that we receive it? Is that what you're talking about?

MR. HALL: Yes.

MR. SIEGEL: I don't know if you have a problem with work load or not.

UNIDENTIFIED: We sure do.

MR. SIEGEL: But I suggest that if it's in a draft form but not officially signed off, I don't know if that would help. With a work load problem, it may not.

MR. MILHOAN: I don't think it would add to that much expediting to give us a draft. I'd rather, when you're satisfied with the program plan, submit the program plan to us for review.

MR. SIEGEL: If you could probably send it out Federal Express directly to Jim, it would get out.

MR. DICK: Surely.

MR. SIEGEL: I don't know if they have your number.

MR. DICK: We will minimize the delay in the mechanics.

MR. SIEGEL: Okay.

MR. MILHOAN: You bring up a good point in the protocol for you sending things to the director of the Division of Licensing.

We do want to continue that in a protocol. If you see fit to provide a copy to me for the correspondence that you submit to the director of the Division of Licensing, that will expedite the mail room situation a day or so.

MR. SIEGEL: Well, it could be more than that.

MR. DICK: What's your home address?

MR. SIEGEL: Either that, or make sure you sent it to addressee only. That way it avoids either getting opened or somehow getting in the docket system. It prevents maybe a delay of a week or so.

MR. DICK: Well, let's clarify that procedure, because we're talking about something meaningful now.

MR. SIEGEL: I mean, you can docket it. I think what Jim is saying is that you can docket it informally if you want to send him an advance copy, that's the copy that the docket is signed off, okay? What's been approved--not a draft.

You can send him an advanced copy, send it directly to him at NRC to be opened by addressee only, and he will get it before it goes to the docket.

MR. DICK: I see.

MR. MILHOAN: But the formal copy is the one that you send to the director.

MR. DICK: Yes.

MR. SIEGEL: It may probably save you a week in getting it to him by doing it that way, is what I'm saying.

Or do you want more than one copy? Is that a problem, Dick?

MR. GODDARD: No. I'd just like to say one thing. Inasmuch as quality assurance is a subject of a litiged contention in this case, we would request that copies go to the parties.

MR. DICK: I presume there is a list of that that could be made available to us, either by Illinois Power

or yourselves?

MR. GODDARD: Yes, we can make it available.

MR. DICK: Fine. Would you do so?

UNIDENTIFIED: Jim, we'd appreciate a copy also.

MR. MILHOAN: Well, when it gets docketed --

UNIDENTIFIED: You're talking about short term.

MR. SIEGEL: Maybe the people who should get it, should get early copies of it.

MR. MILHOAN: With respect to the review of the program plan, it would be a coordinated review between headquarters and the region.

So again, if you want expedited review of the program plan, it would be nice if you would submit Dick and the region a copy of the program plan at the same time you send it to the Division of Licensing.

MR. DICK: Jim, not to belabor the mechanics, but may I suggest that we also establish how the response will come back?

Will it be in parallel to the response to Illinois Power, or directly--pardon me. Through Illinois Power to Bechtel?

What is your intention?

MR. MILHOAN: The approval of the program plan would be a letter from us to Illinois Power. We can provide a copy to Bechtel of that approval, if there is

no problem with Illinois Power on that.

MR. HALL: It's no problem to us. We would provide it, in any event.

MR. MILHOAN: Do you have anything?

MR. HALL: No.

MR. MILHOAN: I have one other, further specific item that we didn't address during the meeting. It concerns the subject of cutoff date for the review of the IDR program.

As you're aware, in the IDI program, we establish a cutoff date for inspection for IDI inspection. And that means in the report, we're examining design details up to a certain cutoff date.

We would expect that same thing to occur in the IDR program. I noticed there was an April 1 cutoff date mentioned in the Illinois Power letter.

I'd ask Mr. Dick, what cutoff date are you planning to use in your review?

MR. DICK: April 1st. That is a qualified response, though. Let me explain why I qualify it somewhat.

There is work in process, and I am reasonably familiar with what your concern is in that respect. I believe the reviewer will need some latitude, that there will have to be some confidence placed in his

judgment in distinguishing legitimate work in process from work which is conducted basically as a result of the review.

Further, a main point of interest in establishing a cutoff is, what was the design process? In other words, was the process which had been used up to the point of the review, that the reviewer looked at, typical of the design that was really issued?

So we establish the cutoff date. So yes, we do establish the cutoff date but with the flexibility to consider legitimate work in process.

MR. MILHOAN: I guess in that respect, we have some concern not with recognizing the work that's ongoing, but distinguishing with the work what is up to the cutoff date and what work is after the cutoff date.

Because we want to--we're taking a snapshot in this period of time--what is represented of the design process at this particular time.

We want to make sure that we do not, in human nature, we do not have a polish system, as you've told me before.

You recognize that they can't polish a system, but please let me remain skeptical. So we see a valid reason for that cutoff date.

In the IDI reports, we do recognize work that's

beyond the cutoff date, but we put it in perspective of that cutoff date.

MR. DICK: Let us then agree to treat this cutoff date as closely as we can, in the way in which you treat it in your IDI process.

MR. MILHOAN: One further thing. You said you would--the April the 1st date was a cutoff date that you would use.

Was there, prior to April 1st, was there any telephone conversations or correspondence with Illinois Power prior to April the 1st?

MR. DICK: Let me talk a bit here. There's none of which I'm aware.

MR. HALL: Not from our knowledge.

MR. DICK: There is none to the knowledge of the Bechtel personnel at this meeting.

MR. MILHOAN: Okay. Mr. Hall, prior to April the 1st, was there any notification by Sargent and Lundy that you'd planned on doing an IDR review?

MR. HALL: Not in the detailed context of this. We had been talking over the past two years about the need, as we approached completion, for some type of an effort.

But there was no specific discussions oriented to this factor.

MR. MILHOAN: Thank you. Any other questions? I understand that members of the audience, there is no further comment from members of the audience.

There is no public comment that will be offered today. With that in mind, I guess I'd like to conclude, if you have no further comments.

I conclude the meeting, and I think as we've said, the next step is submittal of the program plan.

You have heard our comments throughout the meeting. They have been rather extensive comments, and I hope they've been helpful to you in the preparation of the program plan.

With respect to the protocol, as we indicated in the June 22 letter, we agreed with your protocol with Enclosure III to that, pending further NRC review.

We would ask that you continue to use that protocol while we're doing our further review of that enclosure. We discussed the cutoff date now.

I guess the only other thing, if you have no further questions, we'll look forward to receiving your program plan.

We will establish, once we do that, we determine our level of review, we will then establish a future, another date for a public meeting at your request.

MR. DICK: Thank you.

MR. MILHOAN: There are copies of meeting attendees, if anybody wants them.

MR. DICK: Thank you.

MR. MILHOAN: Thank you very much.

CERTIFICATE OF PROCEEDINGS

This is to certify that the attached proceedings before the NRC COMMISSION

In the matter of: PRESENTATION, BECHTEL POWER CORPORATION, CLINTON IDR

Date of Proceeding: JUNE 28, 1984

Place of Proceeding: WASHINGTON, D.C.

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

BARBARA BECKER

Official Reporter

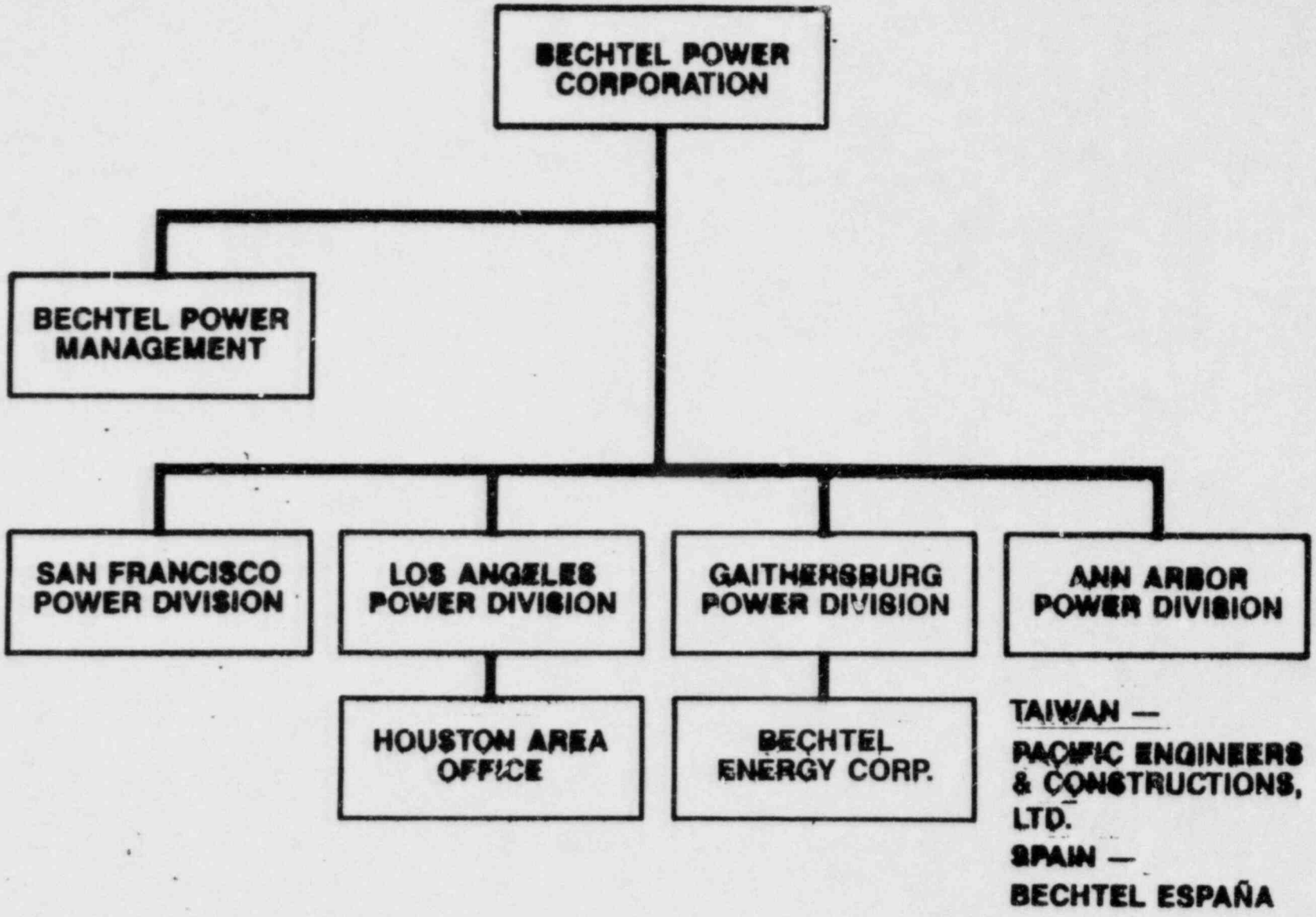
Barbara Becker, N.S.R.

Official Reporter

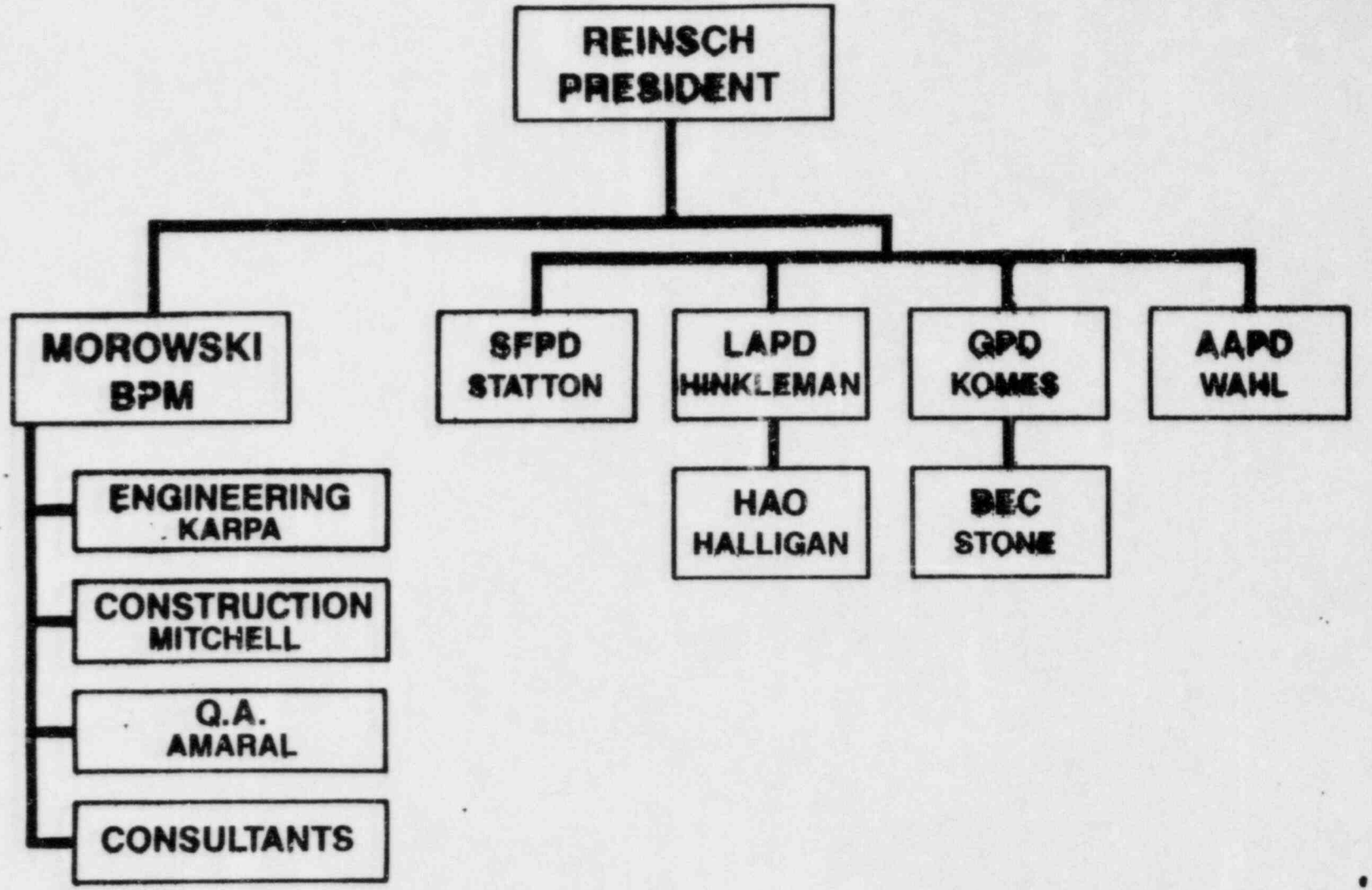
PRESENTATION
BECHTEL POWER CORP.
CLINTON IDR
NRC MEETING, 6/28/84

1. INTRODUCTION (P. KARPA)
2. IDR PROGRAM (C. W. DICK)
3. BROADER IMPLICATIONS (J. M. AMARAL)
4. REVIEW TECHNIQUES (R. S. POWELL)
5. QA PROGRAM (J. M. AMARAL)

BECHTEL POWER CORPORATION



BECHTEL POWER CORPORATION



INDEPENDENT DESIGN REVIEWS PERFORMED ON BECHTEL PROJECTS BY OTHERS

PROJECT	DATE	REVIEWER	TYPE/COMMENTS
SUSQUEHANNA	1982	TELEDYNE ENGINEERING SERVICES (TES)	FEEDWATER SYSTEM (VERTICAL REVIEW)
DIABLO CANYON	1982 AND 1983	TES – REVIEW MANAGER STONE & WEBSTER	SYSTEMS REVIEW – THREE SYSTEMS (VERTICAL)
		R. L. CLOUD ASSOC.	SEISMIC REVIEW – ALL ASPECTS
		R. F. REEDY	QA REVIEW – DESIGN PROCESS
SAN ONOFRE	1981	TORREY PINES	REVIEW OF SELECTED CRITICAL SYSTEMS AND COMPONENTS
MIDLAND	1983 PRESENT	TERA	THREE SYSTEMS (VERTICAL)

INDEPENDENT DESIGN REVIEWS PERFORMED ON BECHTEL PROJECTS BY OTHERS (CONT'D)

PROJECT	DATE	REVIEWER	TYPE/COMMENTS
CALLAWAY (SNUPPS)	1982	NRC	INTEGRATED DESIGN INVESTIGATION (IDI) OF AUX. FEEDWATER SYSTEM
SOUTH TEXAS	1983 PRESENT	STONE & WEBSTER	ONGOING DESIGN REVIEW (ASSESSMENT) OF SELECTED SYSTEMS AND COMPONENTS
GRAND GULF	1982	CYGNA	GENERAL FSAR REVIEW
PALO VERDE	1982	TORREY PINES	QA REVIEW OF DESIGN PROCESS
MAANSHAN (TAIWAN)	1982	NUS CORP.	GENERAL LICENSING REVIEW (PSAR/FSAR)

INDEPENDENT DESIGN REVIEWS PERFORMED BY BECHTEL

PROJECT	DATE	TYPE/COMMENTS
MIDLAND	1982	DESIGN REVIEW OF IMPORTANT SYSTEMS AND STRUCTURES (HORIZONTAL AND VERTICAL, FOR SELECTED AREAS)
VOGTLE	1982	DESIGN REVIEW OF IMPORTANT SYSTEMS AND STRUCTURES (HORIZONTAL AND VERTICAL, FOR SELECTED AREAS)
SOUTH TEXAS	1983 - 1984	DESIGN REVIEW OF IMPORTANT SYSTEMS AND STRUCTURES (HORIZONTAL AND VERTICAL, FOR SELECTED AREAS)
DIABLO CANYON	1982 - PRESENT	REVIEW OF POWER PLANT SEISMIC DESIGN AND OTHER SAFETY RELATED FEATURES (BOTH AS REVIEWER AND REVIEWEE)
ZIMMER	1983	DESIGN COMPLETION AND OVERALL ADEQUACY.
BYRON	1984 - PRESENT	DESIGN REVIEW OF THREE KEY SYSTEMS (VERTICAL)

OBJECTIVES

ADDED LEVEL OF CONFIDENCE IN S&L DESIGN OF CLINTON STATION

BASIS OF IDR PROGRAM

- LETTER OF MAY 31, 1984 – HALL TO KEPPLER
- OTHER RECENT REVIEW PROGRAMS
- NRC COMMENTS ON OTHER PROGRAMS
- LETTER OF JUNE 19, 1984 – HALL TO KARPA
- IDR INDEPENDENCE PROTOCOL
- PERSONNEL DECLARATIONS/AGREEMENTS

TABLE OF CONTENTS

INDEPENDENT DESIGN REVIEW PLAN

APPROACH

- REVIEW TWO PLANT SYSTEMS AND OTHER REVIEWS
- ASSESS
  - LICENSING COMMITMENT COMPLIANCE
  - DESIGN ADEQUACY
  - DESIGN PROCESS
  - BROADER CONCLUSIONS
- PERFORM REVIEW, NOT REVERIFICATION

SUGGESTED SCOPE

- HIGH-PRESSURE CORE SPRAY (HPCS) SYSTEM
- CLASS 1-E ELECTRICAL POWER SYSTEM
- OTHER, RELEVANT REVIEWS/INSPECTIONS

TASKS

1. ASSURE LICENSING COMMITMENTS MET, FOR EACH SYSTEM IN SCOPE (FSAR, ETC.)

2. REVIEW DESIGN ADEQUACY OF EACH SYSTEM IN SCOPE (INCL. STANDARD METHODS, AND JUDGEMENTS)

3. ASSESS THE DESIGN PROCESS, FOR EACH SYSTEM IN SCOPE (INCL. INTERFACES AND DOCUMENTATION)

4. DRAW BROADER CONCLUSIONS, COMMENSURATE WITH RESULTS AND SCOPE, FOR OTHER DESIGNS.

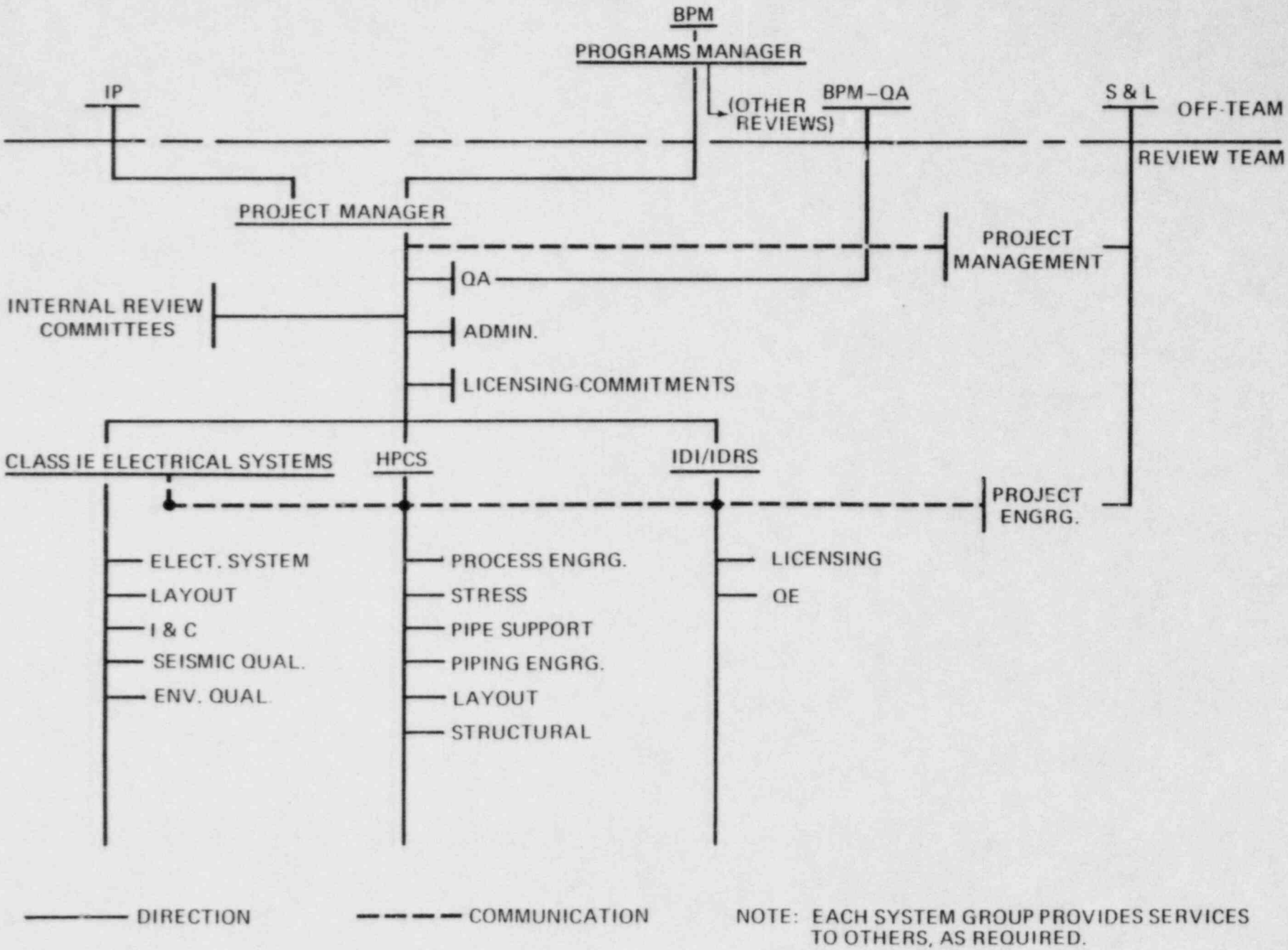
PRELIMINARY
SUMMARY OF APPROACH

		PROJECT	S & L	IP
1.	DEFINE SYSTEM BOUNDARIES	X	X	X
2.	REVIEW PROCEDURES, INCL.	X		
	INTERFACE CONTROL			
	ANALYSIS			
	DOCUMENT CONTROL			
	CHANGE CONTROL			
3.	REVIEW COMMITMENTS	X		
	FSAR			
	FSAR QUESTIONS			
	OTHER			
4.	REVIEW EACH SYSTEM, INCL.	X		
	COMMITMENTS			
	INPUT/CRITERIA			
	DESIGN ADEQUACY			
	DESIGN PROCESS			

PRELIMINARY
SUMMARY OF APPROACH (CONT'D)

		PROJECT	S & L	IP
5.	IDENTIFY OBSERVATIONS REFERENCES DESCRIPTION PROPOSED RESOLUTION	X		
6.	REVIEW COMMITTEE ACTION (2 LEVELS) VALIDATE CLASSIFY	X		
7.	REPORT RESULTS	X		
8.	RESPOND TO OBSERVATIONS		X	
9.	ACCEPT RESPONSE	X		X
10.	CLOSEOUT, AS REQUIRED		X	

CLINTON REVIEW PROJECT ORGANIZATION



NOTE: EACH SYSTEM GROUP PROVIDES SERVICES TO OTHERS, AS REQUIRED.

KEY PERSONNEL EXPERIENCE SUMMARY

	YEARS EXPERIENCE		
	TOTAL	NUCLEAR	
CORPORATE MANAGEMENT			
P. KARPA	35	17	MANAGEMENT SPONSOR
J. M. AMARAL	33	14	QUALITY ASSURANCE MANAGEMENT
REVIEW TEAM STAFF			
C. W. DICK	36	19	PROGRAMS MANAGER
G. L. PARKINSON	37	22	PROJECT MANAGER
R. S. CAHN	15	15	LICENSING – COMMITMENTS
D. W. WOLFE	14	4	QUALITY ASSURANCE ENGINEER
D. B. HARDIE	31	15	QUALITY ENGINEERING
SYSTEM GROUPS			
A. W. DAVIS	31	27	I & C ENGINEERING
C. M. HAZARI	31	15	ELECTRICAL SYSTEM ENGINEER
W. R. HINTZ	28	27	STRESS ENGINEERING
C. W. JORDAN	24	20	ELECTRICAL SYSTEMS GROUP LEADER
A. S. MEYERS	40	10	PIPING ENGINEERING
M. G. MICHAIL	22	12	STRUCTURAL ENGINEERING
R. S. POWELL	36	27	HPCS SYSTEMS GROUP LEADER
B. S. SHICKER	37	26	STRUCTURAL ENGINEERING
A. VALACHOVIC, JR.	42	12	FIRE PROTECTION

KEY: TOTAL – YEARS PROFESSIONAL EXPERIENCE
NUCLEAR – YEARS NUCLEAR POWER PLANT DESIGN EXPERIENCE

DESIGN PROCESS REVIEWS

- PART OF EACH PLANT SYSTEM REVIEW, AND OF DESIGN SYSTEM REVIEW
- SUB-TASKS
  - CHECKLISTS
  - INTERVIEWS
  - DESIGN PROCESS REQUIREMENTS
  - FLOW CHARTS
  - PROCEDURAL REQUIREMENTS
    - ADEQUACY OF PROCEDURES
    - IMPLEMENTATION
  - SPECIAL TARGET AREAS
    - CALCULATIONS DOCUMENTATION
    - INTERFACE CONTROL
    - CHANGE CONTROL
    - DESIGN REVIEWS
  - OBSERVATIONS

OTHER REVIEWS

- SELECT POTENTIAL RELEVANT REVIEWS
  - IDRs
  - IDIs
  - INTERNAL REVIEWS
- CANDIDATE REVIEWS
  - LA SALLE
  - BYRON
  - FERMI
  - CLINTON
- CRITERIA
  - RELEVANT
  - PUBLIC DOMAIN
  - USEABLE

DESIGN PROCESS
(DESIGN SYSTEM REVIEW)

- DESIGN SYSTEM AREAS
  - DESIGN PROCEDURES
  - INTERFACE CONTROLS
  - DESIGN TOOLS
  - QUALITY PROGRAM
- ASSESSMENTS
  - COMMON STRENGTHS/WEAKNESSES
  - ROOT CAUSES
  - CORRECTIVE ACTIONS
  - OTHER STRENGTHENING ACTIONS

EXTRAPOLATION

- IDENTIFY KEY ELEMENTS
- SURVEY OTHER REVIEWS
- TABULATE FINDINGS
- ANALYZE AND CORRELATE
- TARGET FOR CLINTON

BROADER IMPLICATIONS

- GENERIC PROBLEM ASSESSMENT METHODS
- ACCEPTABILITY STANDARDS
- BALANCE OF STRENGTHS AND WEAKNESSES
- USE OF INFORMAL METHODS

REVIEW METHODS

- MAKE REVIEW PLANS
- IDENTIFY LICENSING COMMITMENTS OF AREAS SELECTED FOR REVIEW
- IDENTIFY APPLICABLE DESIGN PROCEDURES, CRITERIA, AND OUTPUT DOCUMENTS (PROCUREMENT SPECIFICATIONS AND CONSTRUCTION DRAWINGS)
- INTERVIEW S&L COGNIZANT PERSONNEL TO ASSURE THAT REQUIREMENTS ARE CORRECTLY UNDERSTOOD. THIS PROCESS IS A CONTINUING ONE.
- COMPARE S&L PROCEDURES, CRITERIA, AND OUTPUT DOCUMENTS WITH LICENSING COMMITMENTS.

REVIEW METHODS
(Cont'd)

- REVIEW SELECTED DESIGN DOCUMENTS FOR FOLLOWING TO DETERMINE ADEQUACY:
  - SAFETY CLASSIFICATIONS
  - ACCURACY AND COMPLETENESS OF INPUTS
  - APPLICABILITY OF STANDARD DESIGN METHODS
  - METHOD OF ANALYSIS
  - BASIS ON WHICH ENGINEERING JUDGMENTS WERE UTILIZED
  - ACCURACY OF IMPLEMENTING THE ANALYSIS, INCLUDING USE OF VALIDATED COMPUTER CODES
  - ADEQUACY OF MEANS BY WHICH DESIGNS WERE VERIFIED
  - TRANSLATION OF DESIGN INTO OUTPUT DOCUMENTS, FOR COMPLETENESS, CLARITY, AND PROPER CONTROL

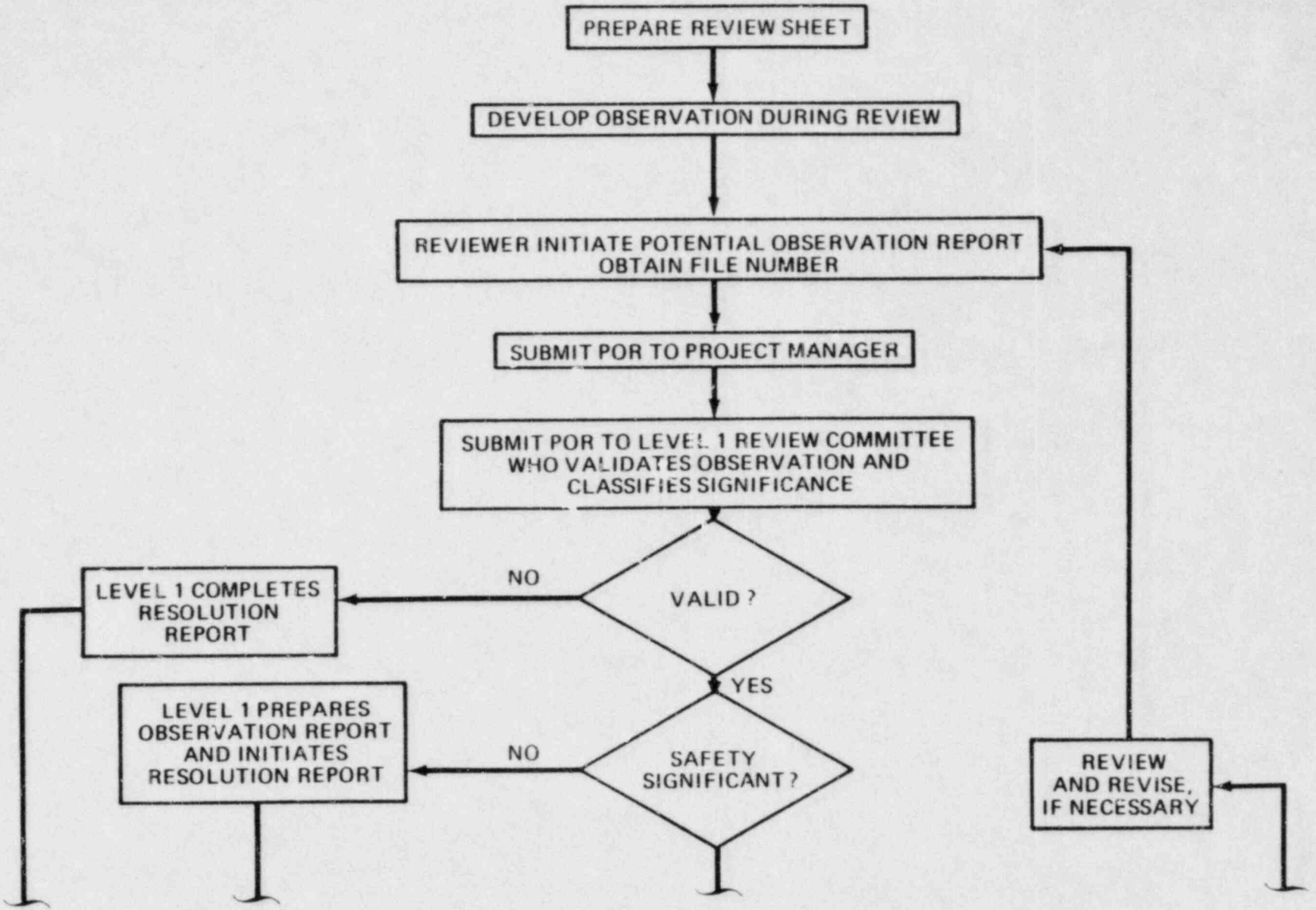
REVIEW METHODS
(Cont'd)

- DEVELOP FLOW CHARTS OF DESIGN PROCESS AND REVIEW SELECTED DOCUMENTS FOR ADEQUACY AND COMPLETENESS OF PROCEDURAL REQUIREMENTS
- DOCUMENT ALL REVIEW WORK ON STANDARD REVIEW SHEETS
- IDENTIFY AND PROCESS OBSERVATIONS PER THE IDR PROGRAM PLAN

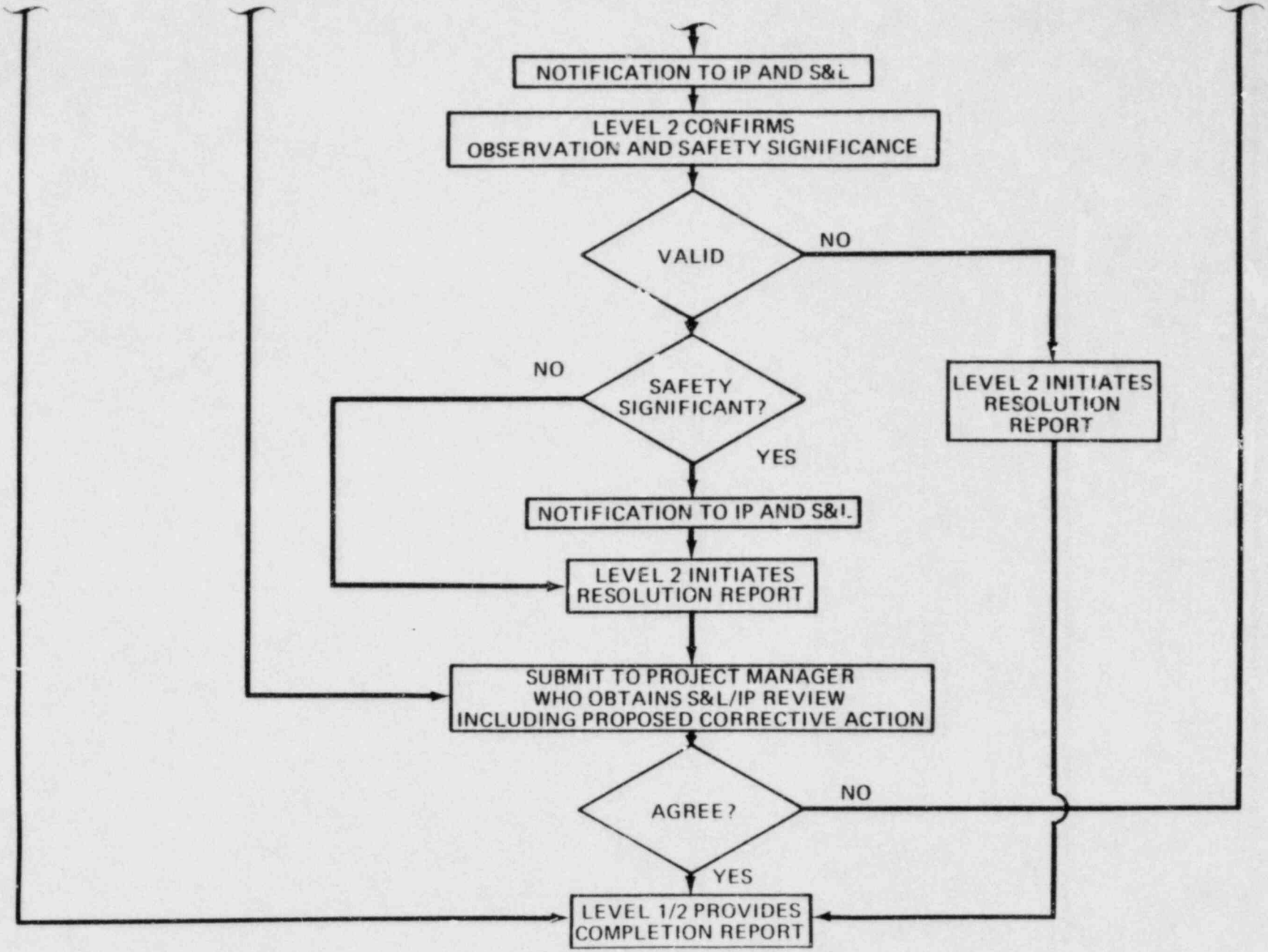
REVIEW PLANS

- MECHANICAL
  - PROCESS
  - LAYOUT
  - PIPING ENGINEERING
  - PIPING STRESS ANALYSIS
  - PIPE SUPPORT
- CIVIL/STRUCTURAL
- ELECTRIC POWER
- INSTRUMENTATION AND CONTROL
- EQUIPMENT QUALIFICATION
  - SEISMIC
  - ENVIRONMENTAL

OBSERVATION REPORTING PROCESS



OBSERVATION REPORTING PROCESS (CONT.)



SAMPLE SELECTION BASIS

JUDGMENTAL SAMPLING OF PROBLEM AREAS

- SEISMIC ANALYSIS – STRUCTURAL AND PIPING
- PIPE SUPPORT DESIGN
- SEPARATION – ELECTRICAL AND INSTRUM. & CONTROL
- EQUIPMENT QUALIFICATION
- CONSISTENCY BETWEEN LOGIC DIAGRAMS AND ELECTRICAL SCHEMATICS
- ESTABLISHMENT OF SYSTEM DESIGN PRESSURES

SYSTEM CHARACTERISTICS	HPCS	CLASS 1E AC POWER
ESSENTIAL TO PLANT SAFETY	X	X
DESIGNED BY A/E	X[1]	X
A CLEARLY DEFINED DESIGN BASIS	X	X
GENERALLY REPRESENTATIVE OF SAFETY-RELATED FEATURES IN OTHER SYSTEMS	X	X
DESIGN WHICH INVOLVED INTERNAL INTERFACES WITH THE NSSS VENDOR, COMPONENT VENDORS, AND ENGINEERING SERVICE ORGANIZATIONS	X	X[2]

[1]SYSTEM PARAMETERS BY NSSS VENDOR
[2]MINIMAL INTERFACE WITH NSSS VENDOR

EXTENSION TO OTHER SYSTEMS

- REVIEW OTHER APPLICABLE AREAS IN SAMPLE SYSTEM
- REQUEST S&L TO REVIEW OTHER SYSTEMS AS APPLICABLE

BECHTEL QUALITY ASSURANCE PROGRAM

- BECHTEL TOPICAL REPORT BQ-TOP-1, REV. 3A
- CRITERIA
  - ORGANIZATION
  - DESIGN CONTROL
  - DOCUMENT CONTROL
  - AUDITS

ORGANIZATION

- EXPERIENCED, QUALIFIED PERSONNEL
- STANDARD PROCEDURES
- MONITORING/AUDITING OF DESIGN REVIEW ACTIVITIES

PROJECT QA ENGINEER

- COORDINATES QA PROGRAM
- MONITORS AND AUDITS
- APPROVES PROCEDURES
- ISSUES ACTION REQUESTS TO CORRECT DEFICIENCIES
- DOCUMENTS/LOGS QA ACTIVITY