QUALITY ASSURANCE AT THE MIDLAND NUCLEAR POWERPLANT

OVERSIGHT HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT

OF THE

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS HOUSE OF REPRESENTATIVES

NINETY-EIGHTH CONGRESS

FIRST SESSION

ON

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NOTE.—The first listed minority member is counterpart to the subcommittee chairman.

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QUALITY ASSURANCE AT THE MIDLAND NUCLEAR POWERPLANT

THURSDAY, JUNE 16, 1983

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT,
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D.C.

The subcommittee met at 9:50 a.m. in room 1324 of the Longworth House Office Building; Hon. Morris K. Udall (chairman of the subcommittee), presiding.

The CHAIRMAN. The subcommittee will be in session. The purpose of today's hearing is to consider the quality assurance breakdown of the Midland, Mich., nuclear powerplant. By way of background, I would like to point out that the subcommittee's first hearing dealing with quality assurance was held in November of 1981. At that time the Commission gave us, for the first time, an idea of the extent to which there had been failures to comply with quality assurance requirements applicable to nuclear power planning and construction. Since then we have expended considerable effort in the committee to see that we understand this problem. Our findings to date do not entirely engender optimism.

We are finding plants built without an adequate effort devoted to making sure that construction was done in accordance with the NRC's regulations. As a result, there has been a lack of documentation to demonstrate compliance with these regulations. These deficiencies give rise to debate over whether the problems extend to the actual construction and plant safety. Whatever the answer is to that question, the immediate costs could be immense. As we now know, at least in the case of the Zimmer project in Ohio, a nuclear powerplant that has been the subject of extensive hearings—the problem extends far beyond the documents.

Our witnesses today will provide information on the nature and scope of the quality assurance problem at the Midland site. I hope we'll be able to get an idea of the nature and significance of the problem and whether the NRC is on top of the situation.

I'm sure before the day is over we will hear on the one hand that, except for the remedial soils work, the problem is essentially one of poor recordkeeping. Yet, I suspect others will testify that there are, in fact, significant safety defects.

One thing is abundantly clear. Something happened in Midland to significantly prolong the construction process. We learned from an NRC memorandum that the underpinning work was of such magnitude as to be tantamount to constructing a third reactor. The

NRC's brown book, dated April 1982, stated that the Midland unit 2 was expected to receive an operating license in July of this year with Midland unit 1 getting its license in December. Clearly that schedule is not going to be met. I would like to know how these estimates were devised. In themselves they raise doubt as to whether the utility and NRC has been on top of the situation.

Today's discussion would naturally raise the question whether things would be better or worse if the nuclear licensing legislation now before our committee would become law. Would this legislation make it more or less likely that the Midland problems would have been discovered and corrected?

I also hope to hear from the NRC as to what is proposed to insure a high level of public confidence that the plant has been properly inspected to insure compliance with the Commission's regulations prior to its being allowed to operate.

I take particular note of the intervenors' testimony indicating the procedures used for selecting the independent auditor, were not consistent with those outlined in the Commission's letter to Chairman Dingell and to Congressman Ottinger. I would like to make sure the NRC addresses this point.

I have also received reports that the role of the NRC at the Midland site has been one of overinvolvement in construction decisions. I would like to hear the Commission's views on that point also.

The intervenors have stated that the operating license hearings are being held prior to anyone having an adequate picture of whether or not the plant is being constructed in accordance with the Commission's requirements. I would hope that someone will be able to explain that. It also seems that there is something fundamentally wrong when problems such as those of Michigan Midland are brought to the fore only as a result of considerable expenditure of time and money by citizens.

With that we will now proceed.

Mr. LUJAN. Mr. Chairman, I do have a few opening remarks. Over the past several years this subcommittee has held a number of oversight hearings on construction quality problems at several different reactors for the purpose of discussing or determining the cause of their problems and investigating possible legislative or administrative reforms.

Today's testimony will add to that hearing record and I suspect that we'll hear again of quality assurance and quality control programs which initially fail to detect developing problems in a timely manner.

Less than a dozen of the approximately 60 reactors currently under construction in this country have experienced an inordinate amount of delay due to construction quality related problems. Yet these delays translate into billions of dollars of additional costs to the utilities and, of course, ultimately to the customer, and create an atmosphere of impatience and mistrust among members of the public.

In addition, the NRC, as the regulators charged with ultimately assuring the public health and safety, receive an inordinate amount of often conflicting criticisms from many diverse sources for their performance at such facilities.

Two questions arise from our previous hearing record which will undoubtedly occur again today.

First, why has the larger percentage of reactors under construction, while certainly experiencing delays due to other factors, still been able to avoid the construction quality problems experienced by a few of these reactors? And second, what is being done or can further be done at sites like Midland to get the construction projects back on course in such a way as to not only complete the plant safely and expeditiously, but also in a manner to insure increased public confidence?

Mr. Chairman, I would also like to briefly note that, as is often the case, we are holding today's hearings during the pendency of regulatory agency proceedings on Midland. I note that one NRC Commissioner and some of the staff who are here today could ultimately be part of such proceedings.

It is my understanding that the judicial branch of our Government has not been pleased in the past with this excessive congressional pressure on regulatory agency decisionmakers during the pendency of their proceedings, and obvious attempts to lead such decisionmakers in their decisions, in fact, violate due process.

Being sensitive to these legal issues, Mr. Chairman, I am sure we can fully exercise our committee's oversight function here today without prejudicing either way any subsequent decision. And finally, Mr. Chairman, I look forward to expanding our record on construction quality at nuclear powerplants. Thank you very much, Mr. Chairman.

The CHAIRMAN. Any other opening comments by any of our colleagues? First, we'll hear from Consumers Power Co. Mr. John Selby, president and chief executive officer, and Mr. John Cook, vice president of project engineering and construction. Gentlemen, we are happy to have you here this morning. You may proceed.

[Prepared statement of John D. Selby may be found in the appendix.]

STATEMENT OF JOHN D. SELBY, PRESIDENT AND CHIEF EXECUTIVE OFFICER, CONSUMERS POWER CO., ACCOMPANIED BY JAMES COOK, VICE PRESIDENT OF PROJECTS, ENGINEERING AND CONSTRUCTION

Mr. SELBY. Thank you Mr. Chairman. Good morning. I am John Selby, chairman, president and chief executive officer of Consumers Power Co. On my right is James D. Cook, vice president.

Consumers Power Co. is a combination utility supplying gas and electricity in a service area that has about 5.3 million residents; significant industries including automobiles, chemicals, metals, pharmaceuticals, food products, and others; as well as a fairly large rural complement, including 49,000 farms.

Consumers Power Co. has been involved, and it was one of the early participants in the nuclear industry. Starting with our Big Rock Point plant which started operation in 1962, and then our second unit, Palisades started in 1971, and both plants are still operating. Big Rock celebrating its 20th anniversary of operation in August of last year. During 1982, our plants generated, by nuclear

figures, roughly 18.7 percent of the company's total electric generation.

Now, the regulatory performance at the Big Rock plant over its total lifetime has been relatively trouble free. However, the same is not true regarding our Palisades plant.

In the late 1970's and early 1980's, Palisades was troubled by a series of regulatory noncompliance and personnel errors, which led the NRC region III to consider shutting the plant down.

We at Consumers Power proposed, and the NRC then issued, an order confirming certain actions designed to improve that regulatory performance. These included organizational and management changes; dedication of more company resources; improved training and discipline for plant employees; and an independent, third-party review of corporate and plant management. The results to date have been gratifying. After 2 years of close review, Mr. James Keppler, Director of NRC region III, stated in March, and I quote, "We have concluded that your programs to improve regulatory performance have been successful and there is reasonable assurance that safety-related activities will continue to be conducted in accordance with applicable regulatory requirements." And now on to Midland, our third project in the nuclear arena. Midland is a two-unit, pressurized water-reactor system, under construction just south of the city of Midland and just south of the Dow Chemical Co., chemical manufacturing complex.

The nuclear steam supply vendor is Babcock & Wilcox. The architect/engineer is Bechtel Corp.

The plant is unique. It is a cogeneration nuclear facility. It will have the capability upon completion of delivering up to 4 million pounds per hour of processed steam to the Dow Chemical complex just north of the plant site, and generate up to 1,357 megawatts of electricity.

Construction on the Midland project started prior to issuance of the construction permit, started in early 1970 with some site work. It was stopped in 1971, while waiting for the issuance of the construction permit, which occurred in late 1972.

Construction was then restarted, but slowed down during the period of 1974 and 1976, until 1976, as a result of financial problems with the utility itself. We were short of cash.

We reinstated construction in 1976 on a regular planned basis. To date, the plant is approximately 83 percent complete.

Now, as has been stated, there are basically two issues related, to be discussed this morning by us. One is the issue of the quality of the completed and ongoing work, which I will discuss as I describe our construction completion program. And the second issue is the foundation reinforcing work, as a result of the soils compaction problem.

In December of last year, 1982, as a result of our own review, of the project and the NRC inspection of the diesel generator building, we decided that we should stop work on those quality related systems that support the reactors, reexamine, review and redesign our construction completion program activities that manage it, and the quality associated program work.

We submitted to the NRC the outlines of that type of program in January.

Now, the objectives of the construction completion program are to improve the implementation of the quality assurance program and second, to assure effective and orderly conduct of the remaining Midland project work.

What specific kinds of things did we do? Well, first we changed some of the organization and absorbed the quality control function—these are the inspectors, under direct Consumers Power Co. management—and integrated it with our quality assurance people, which are really quality engineers, in defining the specific program. It is now a single organization under our direction.

We revised our project quality control instructions. These are the documentations, the documentation of the mechanisms and the various things that may be done by the inspection force in assuring the proper quality has been built in in the plant. Some 200 of these instructions have been reviewed and revised, and we have combined some of them, simplified and redone those.

A complete retraining and recertification of quality control inspectors. This includes training sessions, written tests, and performance demonstrations. We will verify the quality of completed work and status of the work.

Now, as I said, the total plant is 83 percent complete. That means that most of those systems are physically done. We will send in teams made up of engineering, construction, quality people, to review the status to determine, not only what work remains in order to meet all final requirements, but the status of the equipment that is already installed, including its quality.

From that we will define specific activities that are needed to bring the system to completion with the required quality; and then those teams, on a system-by-system and area-by-area basis, will direct the completion of the system and, upon that, the final quality inspection will be done by our quality forces.

In addition to those activities, we've established a system of third-party reviews. We have ongoing and operating in the soils area, and Mr. Cook will describe that. We intend to implement a similar kind of program for the completion of the aboveground work as covered by the construction completion program. And the third activity that we have under way is a detailed design and construction review in great depth on three systems. One is in process, two still to go.

We believe that this program will provide for completion of that plant on the schedule that we have laid out, with quality as required to provide for reliable and safe operation.

And now to describe the soils and foundation work, I would like to call on Jim Cook.

The CHAIRMAN. We'll be breaking in about 2 minutes to go and vote. We will try to come right back. Go ahead.

Mr. JAMES COOK. Mr. Chairman, because the soils question at Midland is unique to this plant and one of considerable differences from things you may have heard before, I have prepared a couple of visual aids to help explain the scope and definition of the problem. If it would be all right, I would like to stand and use this easel to make this presentation.

The CHAIRMAN. That will be fine. As you wish.

Mr. JAMES COOK. The Midland plant is built on a soil site and there are two kinds of soils we'll be talking about today. First is the original soils put by the glaciers many years ago, called glacial till. The plant was excavated down to the deepest elevations, built on those, and then fill soil was put in on top of the excavation to build up the soil level to where the more shallow foundations could then be built. This fill soil is the origin of the soils problem at Midland.

That soil was put in, under a specification that called for it to be put in under carefully controlled conditions and to achieve a certain compaction or density, so that the soils would have the required properties. That was the origin of the Midland soils question. That the soil was put in improperly in places and the desired degree of compaction was not achieved.

The CHAIRMAN. I guess we better break at this point. We'll come back in about 10 minutes.

AFTER RECESS

The CHAIRMAN. The subcommittee will resume our hearing. Mr. Cook, you were starting to go over your diagram.

Mr. JAMES COOK. Mr. Chairman, before we broke I was explaining that the problem occurred because the fill soil that was placed in the 1975–77 period was placed with inadequate technical supervision of the actual compaction process, and as such was not, in places, compacted properly. Why didn't we find it at that particular point in time? We should have. The system was set up so it should have. But the independent testing laboratory that was taking the soil samples that were to confirm the adequacy of the compaction had some inherent problems in the testing and, because of that, because of two problems, both poor testing which gave improper results and poor supervision of the compaction of the soil, the problem was not detected as it occurred. Therefore, no one was aware that we had a soils problem until 1978.

At that point in time, the diesel generator building here on my diagram, crosshatched, started to show unusual settlement. The building had progressed until it was about 60 percent constructed and the third part of our checks and balances came into play. The settlement markers that all these structures have, which monitors the actual settlement that may occur over their lifetime, started to show unusual settlement. At that point we knew we had a problem. Unfortunately, we had most of the buildings constructed on the site at that point in time.

What was then done was a massive investigation program, using the best soils consultants in the country. We discovered what the problem was and we looked at options on how to fix it. The settlement on the diesel generator building was actually accelerated by taking the incomplete building and surcharging it with 20 feet of sand piled in and around that building, which took the soil that was actually in place and squeezed it by the added weight until the compaction was there and the settlement was then predictable. And then the sand was removed.

This occurred in 1979 and the diesel generator building has been very stable and its settlement predictable since that time.

However, because of the fact that we have found inadequately compacted soils at the diesel generator site, a sitewide investigation of all the fill soil was taken. And we found out that there were other places on that site that had inadequately compacted soil; and that is the reason you see, on this diagram, two other parts of the plant that are crosshatched, because they have foundation improvement work, or new foundations being built under existing structures; and that is the complexity and extent of the Midland soils problem. There are other parts to the soils question, but these are by far the dominant features of the soils problem.

If I can have my other diagram, I will give you a quick summary of the extent of the work that's being done to repair the foundations underneath the auxiliary building, which is the most extensive and the most complex of the soils' remedial work.

What we have is a small part of that fairly extensive building on the south end, which is between the reactor containments and the turbine building, that has an overhung portion. We are at this point in time tunneling under that building to be able to support the building and then ultimately to put in new foundations that will go from the old foundations all the way down through where the fill soil was to the good, or original soil, to eliminate completely any question of having improper settlement occur under those buildings during the lifetime of the plant.

Now, to generate the design of these remedial fixes, as I said, we had the best soils consultants available in the industry. We also had a similar complement of experts in this kind of work. We have hired contractors who are the best that we could find in this country in doing this kind of work. Frankly, this kind of work is not unusual. It just does not occur normally in nuclear plant construction. Any time you have to build a tunnel or subway or work like that, you have to go under existing structures to repair foundations. There is a technology in place. The only difference between what is out there in industry today and what we are doing here is, it is done under the nuclear industry quality assurance requirements and, therefore, it is much more proceduralized and done with a great deal more formality.

In terms of the auxiliary building, we are tunneling in from both the east and west end of the building; and as we go, we take out as little dirt as possible to make sure those buildings are not disturbed. Once we have gone in a little ways, we then dig down all the way through the fill to the undisturbed soil and put in a concrete column called a pier, which we then jack onto the building bottom and take the load that the soil would have supported, had it been left in place. We do this in a very tedious and slow fashion, going all the way across under the buildings. Once we get to a certain point in the sequence, we tunnel in a north-south direction under the safety related structure, the auxiliary buildings, until we reach the containment. On the side of the containment and on the pier that we started from, we will then install massive steel beams called a grillage structure, and that will be used to hold up the building when we put in the new foundations.

These black marks on my diagram here in three places, each one capable of taking almost the entire building load, have been de-

signed to support the auxiliary building during the foundation work.

Once all of the temporary underpinnings have been done—and, as I said, we are going in from each end of this auxiliary building complex; we are digging by hand right now—we will go in with small equipment and actually excavate under the buildings. And the orange portion of these diagrams shows you the complete outline of the permanent new foundations that will be in place when this job is complete. And we will basically have a new foundation that is essentially 45 feet deep from the old foundation. It will go down to the undisturbed soil and will assure with no questions asked that the foundations for the Midland nuclear plant auxiliary building and in turn the service water pump structure can, in fact, fulfill their designed function with no problems concerning soils for the life of the plant.

This is, of course, a massive undertaking and it is being done with the greatest care imaginable. We had an exhaustive design analysis to come up with the completion of these designs for the fixes. It has been reviewed for a period of 2 to 3 years by the NRC, and we have documented all of that; and so have they, in their conclusions in their supplemental evaluation report. The work is going on under direct NRC responsibilities; it is being done under a separate organization conceived to handle this work with sole responsibility: We have both the construction and the quality forces under this organization. We have taken considerable steps to improve the implementation of the QA aspects of this soils' work by having expanded training for the production forces and for the quality forces. And we also have in place a third-party overview of this construction work, which is in place and is monitoring the initial work which has been going on since December of the underpinning work. And I'm pleased to say that their initial reports on our progress have been quite complimentary and, I believe, indicate that a considerable amount of care has been taken with this work and that we are confident that the rest of this work, even though it is unique to the nuclear business, can be done satisfactorily and meeting all NRC regulatory requirements.

The CHAIRMAN. Mr. Selby.

Mr. SELBY. Let me make just a few concluding comments, Mr. Chairman. Our quality programs certainly have received a certain amount of exposure, notoriety, and criticism. We have had quality problems. But I want to say that almost without exception, in the majority of cases, it was our quality programs that detected those problems. The quality control program has been working; between ourselves and the NRC, they have all been detected by those two organizations—ourselves and our contractors and the NRC. Up until this last fall, the diesel generator building, we were batting pretty high. The NRC in that inspection found some things that our system had missed and we have addressed those problems and we have restructured the program so that they will be covered adequately in the future. We are committed to quality and we have committed the resources in order to achieve a construction of that Midland plant that meets all of the requirements for safe and reliable operation. I want to just give you one example of what I mean by those commitments.

After Three Mile Island, the nuclear industry put together the ad hoc committee, made up of representatives of the investor-owned utilities, the co-ops, and the municipals that were involved in nuclear power. I participated as a member of that committee.

One of the things that we did was establish the Institute of Nuclear Power Operations. I was on the board of directors and the original executive committee of that organization, participated directly in setting up that organization.

As a result of our experience—my experience in those activities, and reviewing other information from Three Mile Island—particularly relating to operator training and performance, we concluded in Consumers that because we have a cogeneration plant, it is different than anything else in the United States. It has characteristics that cannot be duplicated by simulators of a generic nuclear steam supply system. We have built at Midland a complete duplicate control room of the Midland plant, including both reactor plants' steam supply control, because of this cross-connect through to cogeneration. That simulator will be ready to start training operators in July of this year.

We also implemented one for Palisades, that is dedicated strictly to our particular plants and will meet our requirements of that kind of activity.

The total cost of that is over $38 million.

The last point that I would like to make is on the issue of emergency preparedness. We have two plants, Big Rock and Palisades, that have had experience with emergency preparedness and the first emergency preparedness drills and exercises. We have just completed one at the Palisades plant. There was a third at Palisades. That exercise included more than 200 Consumers Power employees, State, and local officials.

An evaluator for the NRC which monitors onsite procedures called the drill coordinated, orderly, and timely and a significant improvement from previous exercises.

The FEMA official in charge of the 11-member team that evaluated offsite activities said the State and counties around the Palisades plant were able to demonstrate adequate capability to protect the population if this had been a real accident.

Those same experiences and procedures and activities are in process in order to develop the procedure for Midland, and it is expected that the first exercise in that activity will be done next year, 1984.

Now, Mr. Chairman, we'll be glad to try to answer any of your or your members' questions.

The CHAIRMAN. I regret I'm going to have to leave and will miss some of the proceedings this morning, but I'll turn the meeting over to Mr. Seiberling. Allow me about 2 minutes of philosophy here. Looking back, hindsight and all that, obviously there has been an expensive and difficult time for your company. Obviously there's some impact of Three Mile Island. If we could do it over again, what two or three things went wrong, either on our part or NRC or on the part of the company, if you did make any mistakes?

Mr. SELBY. I think there are a lot of contributing factors. The first being that it is a cogeneration plant and there is no precedent for that plant. It has been the precedent and it has faced the first-

of-a-kind problems throughout its whole licensing and construction procedure.

Because of some of those early delays in the licensing—it took us about 4 years from the time of submittal of the preliminary safety analysis report to the construction permit—that was a long time in those days back in the late 1960's and early 1970's. It has also been faced with changing requirements. We have had a moving target. The whole industry has. We are not unique. But I think that a plant that was basically designed for the requirements, the codes and standards of the late 1960's, to meet the requirements, codes, standards, safety requirements in the 1980's is a significant undertaking, and a lot of that has been the situation with regard to Midland. And it is not only the hardware. It is the processes and procedures, the level of documentation, the degree of flexibility, and decisionmaking that you have between the design organization and the people at the site.

Those kinds of things have changed in the interim and we have been in the process, over time, of attempting to keep up with the new requirements while still not destroying the basic system, because we have a 3,000- or 4,000-man organization that's involved in doing the work. And to change the way you manage, the way you control a large organization is difficult, time consuming, and fraught with problems. So you attempt not to make massive changes.

The CHAIRMAN. All right. Thank you very much. Mr. Seiberling.

Mr. SEIBERLING [presiding]. Mr. Lujan.

Mr. LUJAN. Thank you, Mr. Chairman. The graph that you showed us, Mr. Cook, shows that remedial work is being done between the turbine building and units 1 and 2. The whole orange section goes all the way to units 1 and 2. It seems to me like that's the critical part. If a pump building has problems with it, that's not really as important as units 1 and 2.

The compaction under units 1 and 2, has that been settled? Is it as far as you are concerned?

Mr. JAMES COOK. Yes, the containments are down on the original soil to begin with. Other buildings have not actually had any problems. The diesel generator building is the only building that has actually had any settlement occur that was beyond the normal predictions of what all buildings do on soil sites.

Mr. LUJAN. So, as sure as you can be, then, the containment buildings would not have the compaction problem?

Mr. JAMES COOK. That is correct.

Mr. LUJAN. Because they are built down——

Mr. JAMES COOK. They are on the original soil to begin with.

Mr. LUJAN. This thing went on for 10 years; you had the soil there. I assume that—well, first of all, let me say I was kind of amazed, one of the quality assurance benchmarks was if the building would sink or not. That's a little late. But how could it go, then, on for 10 years? But you took soil samples, I assume, as you are building up in that magnitude that you are drilling in there, and somehow or another, somebody would say that these soil samples show that—did you just put the holes in the wrong places or what?

Mr. JAMES COOK. It should—could I give you a quick summary of the chronology again? The fill soil replacement did not occur basically until 1976 and 1977. The diesel generator building was then built on top of some of that fill soil.

Mr. LUJAN. So it went on only for 2 years.

Mr. JAMES COOK. That's right. When the building was built, then we started to see the settlement. But to clarify one point, all buildings on nuclear powerplants and safety-related buildings have settlement markers because you do make predictions of what the settlement will be and you have to monitor that. We monitor a great many things on nuclear powerplants, soil settlement being one of them.

Mr. LUJAN. You expected some sinkage?

Mr. JAMES COOK. Oh, yes. There will be some settlement of all the buildings, even the buildings on the original soil. But it is very predictable and the building is designed for it.

Mr. LUJAN. Did you take core samples as you went along?

Mr. JAMES COOK. Yes; on the fill soil we did.

Mr. LUJAN. Who do you send the core samples to?

Mr. JAMES COOK. They were sent to a testing laboratory who were on the site hired to do that work. That was one of the causes of the problem. The soil testing work was not proper and it gave us back misleading results.

Mr. LUJAN. Are those studies given to both you and the NRC and the contractor? Who do they go to?

Mr. JAMES COOK. It was given to the contractor and any other organization that needed them during the time that they were taken. Once the problem was identified——

Mr. LUJAN. Who? That's what I'm trying to get at. What other organizations need them?

Mr. JAMES COOK. We do have a requirement to have an overview of the quality assurance program of all the work going on at the site. They were seeing them to some degree and I frankly can't remember exactly what.

Mr. LUJAN. What I'm trying to get at, did NRC approve those? Did they get a chance to see them?

Mr. JAMES COOK. No.

Mr. LUJAN. Did they get the studies?

Mr. JAMES COOK. They can come in and look at any part of the work they want to see, but to my knowledge they didn't have any direct involvement with the testing work during that period of time.

Mr. LUJAN. They never looked at those samples?

Mr. SELBY. We don't know that they didn't look, but they did not formally approve. That was not part of the program or procedure at that point in time.

Mr. LUJAN. Supposing that building really sank? During operations, we'll say. Would that have posed any kind of a threat for safety of human life?

Mr. SELBY. Well, the problem that you have if the building sinks successively is the connections between that building and other buildings which don't sink.

Mr. LUJAN. In operation those pipes would be full of radioactive material?

Mr. SELBY. No, those particular pipes in this particular case would not. It would be basically electrical connections and that type of thing. But you don't want to place stresses on those materials which might cause failure of those electrical systems because of the diesel generator that is the emergency power supply. It serves the water pumphouse—it pumps pond water, not radioactive any more than natural radioactivity; but again, it is part of a safety system that you need in the event of difficulty with the plant.

So it is a problem then of stress on those connections and potential stress on those connections.

Mr. LUJAN. Would it be a plumbing problem rather than contamination?

Mr. SELBY. Yes; well, and loss of service, so you'd have to shut the plant down.

Mr. LUJAN. You have some other problems, in addition to those of the compaction of the fill. You state that most of those have come as a result of your own quality assurance and contractor's quality assurance. Do you want to comment on your perception of the thoroughness of the NRC inspections at Midland?

Mr. SELBY. Well, I think it is—let's say it has undergone a change with time. I think probably as their inspections at most sites in the country have. You know, they have been affected by the changed requirements also.

We have had a resident inspector at Midland for approximately 5 years now.

Mr. LUJAN. Is that usual during construction?

Mr. SELBY. Yes; I think it is the policy of NRC to have a resident inspector at all construction sites. We were one of the early ones, but I believe they have them at all sites now. Their inspection is an audit-type inspection, an overview, in which they can and do go into an area and perform as detailed an inspection as they desire.

We keep them informed. Our results are available to them and there are procedures which, if we find anything that indicates that the actual equipment has not been installed as required, or a quality problem, then we are required to notify them. And I believe that we have done that in accordance with the requirements, since the beginning of the construction.

So, it is kind of a moving target. It goes back to the beginning when we had one resident inspector. Now we have two. We have additional teams, people that are identified in the region office who work almost exclusively with Midland. And so it has been escalating.

Mr. LUJAN. What my basic concern is, I suppose in any nuclear powerplant, is really those areas that can expose someone to radiation. The rest of it would be just like any other powerplant.

Have you gotten a pretty clean bill on what would be in the containment buildings, which are the critical parts, at least in my view?

Mr. SELBY. Yes; I would say the answer to that is basically the containment buildings have a clean bill. We have had some problems within the containment building, some liner problems need to be repaired. But those have all been done and I think are just sort of normal kind of things with the construction of any kind of plant.

I am aware of no questions about the potential integrity of the reactor building.

Mr. JAMES COOK. If I might just augment John's answer, the actual reactor and the very close proximity connections to it are being done in construction by a separate subcontractor, the Babcock & Wilcox Construction Co. They have a quite good record in terms of the quality assurance audits and quality control performance on the job. I think they have been uniformly viewed as having done their job quite well. But there are parts of the containment, the rest—some of the piping work and other things that go into the reactor itself that are underneath the construction completion program that Mr. Selby just described. And they will have to pass all of the inspections and verifications that we are doing as part of that work.

Mr. LUJAN. I have a little note from the chairman that I have used up my time.

Mr. SEIBERLING. Mine. Mr. Clarke.

Mr. CLARKE. Mr. Selby and Mr. Cook, I would like to ask a few questions. If the proposed nuclear licensing legislation drafted by the Nuclear Regulatory Commission and the Department of Energy were enacted, in what way would it affect the Midland project?

Mr. SELBY. Sir, I'm not an expert on what's been proposed in its detail. But I don't believe that it would have a significant effect on the Midland project at this point in its history. If you would like a further answer, I'd be glad to research it and write you an answer.

Mr. CLARKE. All right. We'd be interested, if you can do that.

Mr. SELBY. Be glad to do that.

Mr. CLARKE. On page 12 of your testimony you indicate the controls over fill, placement, and testing were deficient. What exactly do you mean by this?

Mr. SELBY. Well, I believe those were basically the two points that Mr. Cook made. The supervision of the filling at the time that it was done was not adequate, such that the fill was installed in accordance with requirements. And the second part, once the fill was installed and compacted, took soil samples of that compacted material and had it tested by an independent testing laboratory; they had a procedural, or methods problem, and the information we got back was not accurate. The information we got back, reports indicated the compaction was in accordance with the requirements when, in fact, it was not; those are the two problems.

Mr. CLARKE. Thank you. On page 5 of your testimony you state that you believe third-party reviews will confirm the safety of construction completed to date. Does the use of the word "confirm" imply that you believe the plant, as it now exists, is in substantial compliance with NRC regulations?

Mr. SELBY. Yes, sir.

Mr. CLARKE. Could you describe the problem with the reactor pressure vessel anchor bolts? We have heard that some of these cracked and at least one flew off. Was there a time when one of these bolts flew off?

Mr. SELBY. Yes. One of them broke and flew out of its particular case. These bolts are rather highly stressed, heat-treated bolts that were to provide a downward force on the reactor support skirt so

that, under earthquake, you had sufficient holddown that the whole reactor vessel would stay there.

In the process of heat treating the bolts, the control of the time-temperature relationship was such that the bolts, a few of them, were too hard. As a result, when they were torqued up, put the prestress on them, they were subject to an extra, an additional stress. And, as a result, there was some cracking and actually I think it was two bolts that parted.

Those bolts have all—we have redesigned the support system with an upper-level support. We have retorqued the bolts, removed the stress. This has been reviewed with the NRC and is considered to be a reasonable and accurate—or effective fix.

Jim reminds me there are 96 bolts on each reactor. The failures only occurred on unit 1 and there were three bolts involved with that.

Mr. CLARKE. Have you found cracks in the reactor containment building? If so, what do you believe to be the cause of these cracks?

Mr. JAMES COOK. I believe there was a question recently about an observation that was made in one precise area of the containment wall. That area has been looked at by both the design organization and our own structural engineers. We believe that the cracking that has been observed there is purely shrinkage cracking which concrete undergoes as it cures. It has nothing to do with the structure condition of the building whatsoever. And we have given the NRC our analysis of that particular observation, which their inspectors saw, I think it was in January.

I should note for the committee's interest that as we finish a plant, we will actually take that containment and force it to crack as part of the structural integrity test.

We will map all the cracks we have before we will start the test. We will then pressurize the containment from the inside and watch our cracks develop when the containment is under pressure. We will then relieve the pressure and the cracks will subside and analyze to make sure the structure behaved as it should have during the test. It's called the structural integrity test during the containment and it is just to give you an example that we expect and make the containment crack as part of its proof testing before we go into the operation.

Mr. SELBY. It's only the concrete we expect to have cracks in; the reinforcing bars will maintain their integrity.

Mr. JAMES COOK. True.

Mr. CLARKE. Do you have an employee information program? Do you solicit information from employees about your quality of construction?

Mr. SELBY. Yes, we do. Within the company. Consumers Power has approximately 12,000 employees and we have the normal kinds of programs, suggestion systems, for example, that solicit recommendations from employees on, basically, any subject that they think will improve the operation, whether it be a safety issue, whether it be a performance or quality issue. So that is in place and that's when these programs were—the value of the suggestion is determined, and the employee gets a percentage of the savings on the improvement.

At Midland site we instituted a quality improvement program a couple of years ago, which again emphasized that we wanted and desired any employee who felt that there was anything wrong with what was going on there, that they identify it and we would take appropriate action and there would be no counteraction against them. I believe we have signs at the site indicating that same thing. So we do encourage that kind of activity on the part of employees.

Mr. CLARKE. Mr. Chairman, I yield.

Mr. SEIBERLING. Thank you, Mr. Clarke. Before we go to the next witness, there are a number of seats in the lower tier here. If any of those people who are standing would like to use them, they are free to do so. But I suggest you do so right now if you are going to.

No takers? OK. Mr. Smith?

Mr. SMITH. Thank you Mr. Chairman. In dealing with the legislation on revising the NRC and just trying to look at the whole nuclear power situation, have you been fairly pleased in dealing with the Nuclear Regulatory Commission and with their representatives onsite? Have you had good communications with them? Mr. Cook, you are directly involved.

Mr. JAMES COOK. I think one of our main concerns is improving the level of communication with our day-to-day interfaces. We are involved so heavily in terms of the amount of detail of information flow, back and forth between ourselves and the NRC, that we worry, and I think the NRC also worries, about the exact understanding of everything we are trying to communicate on. It is, you know, a mass interaction and something that we have targeted as something we want to try to improve.

Mr. SMITH. Well, you know, given the problems, these plants were to be on line 3 or 4 years ago and they are, what, 50 percent over in time and how much in cost have they increased? I guess the question I try and put to you is, is your communication with the NRC representatives onsite so slow and tedious that it has added to the expense of building the plant?

Mr. JAMES COOK. Well, I think the obligation is on us to communicate to the NRC and perform in front of them to a level that will increase their confidence that they will be as interested in not getting into the details as they are now. As soon as we can achieve that level of confidence on their part we will have the ability, I think, to achieve the best completion of this job on the most timely schedule.

Mr. SMITH. The Babcock Co. buildings, or is the builder of the turbine in this unit?

Mr. JAMES COOK. The reactors.

Mr. SMITH. The reactor suppliers. Are there any others like this, or duplicates elsewhere in the country, being built or on line?

Mr. JAMES COOK. They are built and operating. Started in roughly the same timeframe as we are and they are all completed and operating.

Mr. SMITH. One of the things we have talked about here before, and one that I think would be wise for this industry, is some kind of a certificate which would be an operating certificate, and then we wouldn't have so much tedium involved with trying to issue a

license which, in fact, is an operating manual. It just seems like it is kind of a very, very slow process.

In trying to improve this situation, what specific things would you like to see the NRC do? I realize you just said that you feel it is your responsibility. But is there anything that the NRC could do which would improve your ability to, No. 1, get this plant constructed, on line, and save dollars for your consumers who are the people you are ultimately trying to build this plant for?

Mr. SELBY. I'll try to respond to that. Yes, I think there are. There is no way, in my opinion, that a plant of the complexity of a nuclear plant, including Midland, can be built to the required level of quality, safety, reliability that is necessary in order to make nuclear power economically attractive and continue to be, and have it run or direct important elements of the activity that are needed in order to expeditiously properly do things, located away from the site. It can't be done from Washington. And I think that the moves that the Nuclear Regulatory Commission are making to move more authority into the region is in the right direction. But I would further say that I think they need to beef up, if, in fact, we are going to have to continue the level of interaction, communication, and understanding, knowledge that is necessary between our people and the nuclear regulatory people—more people have to be at the site.

Mr. SMITH. Mr. Selby, how many people does the NRC have onsite there? I'm sorry, I walked in a little late.

Mr. SELBY. Two permanently, but then there are people who are there periodically, operating out of the regional office in Chicago.

Mr. SMITH. I see. I think there are some 3,300 employees in the Nuclear Regulatory Commission and there are only 2 permanently assigned to the Midland plant. Do you tnink that more people there might facilitate communication and make the job of trying to oversee what you are doing on a day-to-day basis—or part-by-part process, would facilitate it?

Mr. SELBY. It certainly would.

Mr. SMITH. Interesting comment. Mr. Chairman, I don't have any further questions.

Mr. SEIBERLING. Thank you. I have a few questions. Mr. Selby or Mr. Cook. If this were not a nuclear plant but, say, a coal-fired plant, would this degree of settlement be a serious problem?

Mr. SELBY. Remember, the only building that has settled is the diesel generator building. And that kind of settlement on that kind of a building, an emergency power source, would be of concern and we would have corrected it, probably about the same way that we did on the diesel generator building at this site.

Mr. SEIBERLING. Would it be a safety problem?

Mr. SELBY. It could be, if not corrected. If excess settlement differential existed between buildings, interconnections could be overstressed. And that, as I say, has been corrected. The reason for the massive foundation addition to the other parts of the building are basically because of the earthquake requirements that apply to nuclear plants. We basically do not consider them in terms of fossil-fired plants.

Mr. SEIBERLING. So that the concern with respect to the auxiliary—not the auxiliary building, but the other one you mentioned—is only because of the earthquake requirements?

Mr. SELBY. Unique to the nuclear plant are the earthquake provisions that we must design in.

Mr. SEIBERLING. If the proposed nuclear licensing legislation drafted by NRC and the Department of Energy were enacted, in what way would it affect this project? This is the legislation that would make construction and operator licensing a one-step process, curtailing hearings at the operation phase.

Mr. SELBY. I don't believe it would have a significant effect on Midland because we already have a construction permit which does not include the operating permit. So the hearing process for the separate—separate hearing process associated with the operating permit would have to be gone through, I believe, regardless of any change in the licensing laws. I think the effects of those changes on Midland would be very small.

But as I told Mr. Clarke, I will look at it and we will write you an answer, if I want to modify that in any way.

Mr. SEIBERLING. What basically went wrong here in the early stages? I'm not talking about the corrective action. But what happened to cause this problem?

Mr. SELBY. Well, there was no single——

Mr. SEIBERLING. Or what didn't happen?

Mr. SELBY. Or what didn't happen. Well, I guess I could bring out my wish list, but I don't know that that would do much good.

As I said earlier, I think that the principal problem is the fact that Midland, being a cogeneration plant, is unique.

Mr. SEIBERLING. But building a plant with proper foundations isn't unique.

Mr. SELBY. No argument with that. I have thought you were referring to some of the early times that it took to get the construction permit and those delays.

Mr. SEIBERLING. Why is there a settling problem? The Cleveland Terminal Tower was built 50 years ago on quicksand and is still standing and still sound. It is a 50-story building.

Mr. SELBY. I don't know how much it settled. Our plant would still be standing also.

Mr. SEIBERLING. The thing is they knew what they were doing and did it right the first time. What is happening to industry in this country that we seem to have this type of problem so much?

Mr. SELBY. Well, I don't know that I can effectively answer a question, what's happening to industry? We had provisions in this particular case that should have shown us, back when the soil was being compacted and the fill put in, that it wasn't being done as it was supposed to be done. It wasn't being done. And those provisions, with the testing that was done, did not give the correct answer. And it wasn't until we got to the point where we had the building up to the point that we could measure, based on the benchmarks and determine it was settling faster than expected that we got the indication to go back in and dig further.

Mr. SEIBERLING. Who was responsible for assuring that the building foundations and soil underneath them was properly done?

Mr. SELBY. Well, the Bechtel Power Corp. was the contractor.

Mr. SEIBERLING. Bechtel?

Mr. SELBY. Bechtel. And United States Testing was the testing organization, not a part of Bechtel, that was doing the testing on the soil samples. And we would expect that Bechtel, with that responsibility, would also be responsible for assuring that the proper soils had been placed.

Mr. SEIBERLING. Do you feel that they did their job properly?

Mr. SELBY. Well, obviously when the end result doesn't turn out right, I can't feel the job was done properly.

Mr. SEIBERLING. Well, certainly that's about the best test I know of: Results.

Mr. SELBY. That's right.

Mr. SEIBERLING. Were you surprised at the findings of the November 1982 inspection of the diesel generator building?

Mr. SELBY. Yes. I was surprised at the extent, or number of findings. It was a very concentrated inspection and we would have expected to find some things. But I think the magnitude, and the number of things that were found—none of which I would classify as being major findings, but they were findings. And I would not have expected as many as we got. And it was that input plus some of our own feelings that caused us to shutdown further activity in those areas, and revise our program.

Mr. SEIBERLING. Now, in the summary and conclusions of overall effectiveness by ACRS, they say that region III inspection staff—I'm now quoting "region III inspection staff believe problems have kept occurring in Midland for the following reasons. One, overreliance on the architect/engineers."

Would you care to comment on that?

Mr. SELBY. Well, there may have been times when that was a consideration. We have become more and more involved, as time has gone on. As we have seen some of the things happen, as we developed our own capability in order to go in and take a more significant role. I don't believe that's the case today.

Mr. SEIBERLING. The second reason was "failure to recognize and correct root causes." In that connection they precede this with the statement, "In each of these cases—" and they are referring to the rebar omissions, tendency of location errors, diesel generator building settlement and HBAC deficiency—they say, "in each of these cases, the NRC in its investigation has determined that the problem was of greater significance than first reported, or that the problem was more generic than identified by Consumers Power Co." I presume that's what they were referring to where they say one of the reasons for this was the failure to recognize and correct root causes.

Would you care to comment on that?

Mr. JAMES COOK. I believe, sir, that we took every one of those particular comments and tested ourselves against that comment in formulating our construction completion program. I think if we go through the details of that program, I believe we have made a comprehensive attempt to look at all aspects of our history, our performance, and to try to make sure that in restructuring the job and how we are going to finish it, that we have looked in fact at all the root causes of problems that we have encountered and the situation as we see the job today.

Mr. SEIBERLING. The third comment was "failure to recognize the significance of isolated events." Do you have any comment on that?

Mr. SELBY. I have no comment. I don't know what they are referring to.

Mr. JAMES COOK. I believe my prior comment would encompass that particular criticism.

Mr. SEIBERLING. Fourth was "failure to review isolated events for their generic application."

Mr. JAMES COOK. I think, sir, all three of those comments go back to the way we approached the job, trying to analyze what we should do to make sure we can improve our program and get the plant built correctly.

Mr. SEIBERLING. The fifth and last was "Lack of an aggressive quality assurance attitude." That's probably the most important of all, if it is true.

Mr. SELBY. That, I think, I will comment on and I will not agree with it. I think our company has a good history of a quality assurance attitude; in doing things in the manner which provided for quality and safer operation of our plants, both from the standpoint of the public and from the standpoint of our employees. We have operated 2 nuclear plants for over 30-reactor years, Palisades and Big Rock, and I'm not aware of a single instance in which that operation has resulted in a problem or exposure to the public of any radiation of any detrimental amount. That didn't just happen. It was a result of a concern for quality and proper operation.

In the area of industrial safety I think there are some similar considerations. Consumers Power Co. probably has one of the best records in the utility industry. We hold the record for the number of man-hours of continuous operation of error—or non-lost-time hours of any combination utility in the United States, 5.2 million man-hours, consecutive work on the part of our employees without a lost-time accident. We surpassed that. That was 1981. In 1982 we had 5.6 million man-hours. The previous record was 3.2 million man-hours. I'm proud of that activity. I think our overall record is probably about as good as anybody's. And it didn't just happen. It happened because the management and the employees worked at it. We are proud of it, our employees are proud of it, and our union leaders are proud of it.

Mr. SEIBERLING. Do you have a zero-defects policy?

Mr. SELBY. Yes, sir. Do it right the first time.

Mr. SEIBERLING. Is that widely publicized through all levels of your organization?

Mr. SELBY. Yes. It certainly is made available and publicized. We had programs in various areas of different kinds.

Mr. SEIBERLING. One more question. The April 1982 Brown Book from the NRC indicates that Midland 1 received an operating license in July 1983 and unit 2 in December 1983. What is the current estimate with regard to issuance of operating licenses?

Mr. JAMES COOK. In April of this year, after getting some experience with our soils implementation program, we combined that with our overall plant status and revised their schedules and our current estimated completion dates would be October 1984, for the first unit; and February 1985 for the second.

Mr. SEIBERLING. Does Consumers Power anticipate applying for a temporary operating license, when NRC authority to issue is extended through 1984 or 1985?

Mr. JAMES COOK. That, sir, would depend on whether or not our current operating license hearings have been completed.

Mr. SELBY. If not, we would anticipate the——

Mr. SEIBERLING. I have no further questions. Mr. Murphy?

Mr. MURPHY. I have no questions.

Mr. SEIBERLING. The gentlemen, Mr. McCain and possibly other members might want to submit some written questions. I presume that that would be agreeable with you and you would attempt to answer them if we do submit them?

Mr. SELBY. Yes, sir. We'd be glad to.

Mr. SEIBERLING. We'll keep the record open a reasonable time for that purpose. Thank you very much. We'll now go on to our set of witnesses, consisting of the following individuals: The intervenors, Mrs. Mary Sinclair, Mrs. Barbara Stamiris, and in addition, Ms. Billie Garde of the Government Accountability Project. I would appreciate it if you would give us a summary of your testimony and put the prepared statements in the record as full. We have quite a few other witnesses and I would hope we would not be here all day. Thank you.

[Prepared statements of Mary Sinclair, Barbara Stamiris, and Billie Garde may be found in the appendix.]

PANEL CONSISTING OF MARY SINCLAIR, CITIZEN INTERVENOR; BARBARA STAMIRIS, CITIZEN INTERVENOR; AND BILLIE GARDE, DIRECTOR, CITIZENS CLINIC, GOVERNMENT ACCOUNTABILITY PROJECT

Mrs. SINCLAIR. My name is Mary Sinclair. I have participated in the Midland licensing proceeding since the construction license was announced in 1970. I appreciate the honor of appearing before this distinguished committee and I applaud your taking an interest in the grave problems within the nuclear plants which one inspector has described as unprecedented in any other facility.

Mr. SEIBERLING. Will you move the microphone a little closer, if that's possible?

Mrs. SINCLAIR. The testimony of Billie Garde, who represents the concerned citizens and whistleblowers in the Washington area, and Mrs. Barbara Stamiris, and myself, as participants in the Midland operating license hearings, is intended to provide this committee with the historical perspective of the severe quality control problems at Midland which have become worse with time instead of showing improvement. We will demonstrate how the problems contribute to quality control breakdowns, and we have discovered serious deficiencies in the NRC licensing process.

We have arrived at recommendations for possible remedies of those deficiencies which can be useful to this committee. Our experience has gained insight into other problems at the NRC as follows. We have found that the Commission's answers to specific questions from Members of Congress which bear on safety, quality control, and risk assessment at nuclear plants are often not only

treated carelessly or ignored but are actually contradicted in practice by the staff.

The concerns and recommendations of field inspectors are overruled by NRC management. Instead, NRC management performance demonstrates that utility interests are too often placed ahead of public health and safety and that this contributes to QA breakdown. When NRC inspectors find serious QA deficiencies on-site and write letters to the utility, they can be overruled by NRC management who allow the utility to write an identical reverse confirmatory action letter on their letterhead which is then sent to the NRC regional office. This can prove embarrassing to the NRC inspectors in the field who are deprived of a QA disciplinary measure. This practice can only weaken the attention to QA on the part of the utility.

Midland has a long history of quality control problems. An original contention of the construction license proceedings at Midland stated that Consumers Power Co. "is incapable of and cannot be relied upon to perform adequate quality assurance and quality control." That contention remains as true today as when it was first written in 1970.

In the siting of the Midland nuclear plants, the Atomic Energy Commission bent its own rules in 1969 by approving the location of the Midland nuclear plants 1 mile from Main Street, Midland, bounded by a populated area with an elementary school close to its entrance gate and across the small Tittabawassee River from the Dow Chemical Co. from which the plants were to supply steam and power. The Midland plants are actually within the city limits because of an annexation.

When the construction permit was appealed in 1972, the appeals board exacted a promise from Consumers Power Co. to improve its quality assurance program as a condition of reaffirming its license. Subsequent inspection reports after construction was resumed show the Consumers Power Co. had not kept its promise.

Region III did not act on these reports of violations, but it was the attorney for the citizen intervenors, Myron Cherry, who read the inspection reports, brought them to the attention of the appeals board, pointing out the Consumers Power Co. was not honoring its promises for improved quality control. The appeals board finally wrote an irate letter to L. Manning Muntzing, who was then the director of licensing, in which the board emphasized the poor track record of Consumers Power Co., even at that early date, 10 years ago. They reminded the board and reminded the staff that such a record could compel them to conclude that incorrigibility was involved, and that this was a test case. They said, in very strong language: What we have here is a pattern of repeated flagrant and significant QA violations of a nonroutine character coupled with an unredeemed promise of reformation.

The staff subsequently issued an order to suspend construction until Consumers Power Co. could demonstrate why their license shouldn't be suspended. In a short time, 17 days, the order to halt construction was lifted because of political pressure. After an uncontested hearing, approval of the license was renewed. Quality control problems have continued throughout the construction of these plants. Of special significance is the fact that the reactor

vessel of unit 1 was installed with a major bad weld, which both Consumers Power Co. and the NRC knew would shorten its useful lifetime to 15 to 18 years, and would make it highly susceptible to pressurized thermal shock. Unit 1 is supposed to supply steam for Dow.

Some of the deficiencies that we have found in nuclear powerplant licensing, I think, are worthy to note. We discovered them in the process of the licensing in Midland.

These discoveries may explain why significant problems have been discovered at other nuclear plants after licensing hearings and ACRS review have been completed and an operating license has been issued. Three embarrassing examples for the NRC are the Three Mile Island II, Browns Ferry, and the Diablo Canyon nuclear plants. In addition the ACRS operating license and review of Zimmer was almost complete when a multitude of serious quality control breakdowns were disclosed.

In Midland we have a good example of how this can come about. The extensive deficiencies that were found through the inspection of the office of special cases in October and November 1982, demonstrated that the safety evaluation report filed for Midland in May of 1982 was a myth. Yet the safety technology report is the basis for the NRC operating license recommendations at all nuclear plants according to standard Nuclear Regulatory practice. In the case of Midland, that report was not based on what was actually constructed at the plant site at all. It was created in Washington headquarters by persons who relied primarily on paper descriptions of design and construction. These same Washington-based people are also being sent to testify in support of the NRC staff position at the public hearings, giving assurance that all is built as stated in their reports, when, in fact, they have no knowledge of what actually has been built. We have asked these witnesses in hearings if they have any direct and personal knowledge that what they have testified to is, in fact, the as-built condition of the plant, and not one witness could testify that, indeed, it was.

In other words, the safety evaluation report issued for an operating license of a nuclear plant which is supposed to reflect the state of the completed plant does not in fact reflect the as-built conditions, but is merely a design review of a theoretical plant. Our licensing board in Midland has admitted that this is so.

If the operating license hearing record is to have any credibility, the only persons to testify should be those who personally can vouch for how the plant has been constructed.

Another deficiency in the licensing process is the manner in which the ACRS conducts their review for the operating license and plants. The ACRS subcommittee holds a hearing at the nuclear plant, where the nuclear plant is located, and listens to a summary of the plant's construction by the staff and applicant. The NRC and applicant are able to summarize and present to the ACRS their understanding of the facts in order to obtain the necessary letter of approval. While many issues are explored by members of the committee, there is also much of great importance that can and often is omitted from the presentation of both staff and licensee. In the Midland case that is exactly what happened when the ACRS subcommittee met in Midland, on May 21. In order to overcome this

limited and controlled information base, I decided to provide an objective third-party review for the ACRS when the full committee met in Washington to consider Midland for an operating license. I compiled various statements of NRC inspectors, attached them as exhibits to documents, statements, which I presented that committee on June 4, 1982.

As a result, one of the main factors that—why the ACRS did not give an approval for an operating license at Midland as they have in the past with few exception was—was this act of concern of the intervenors. Instead they took the step of requesting a procedure which discusses design and production problems, their disposition, and overall effectiveness of the effort to assure appropriate quality.

I believe that the presence of citizen intervenors at a site is an important guarantee for an objective third-party review for the ACRS and for the NRC.

Citizens in the vicinity of a nuclear plant bear the greatest risk to their homes and property values and their families from a nearby nuclear plant. They are your best watchdogs for nuclear safety. They are seeking a basic constitutional right, equal protection under the law, and it should not be denied them by Congress as is now the case.

Both the Rogovin and Kemeny reports have advocated funding of attorneys and expert witnesses for citizen intervenors. This review of the deficiencies that we have identified in the present licensing process demonstrates how the presence of outside third-party information from whistleblowers or citizen intervenors can contribute to safety in nuclear powerplants. Thank you.

Mr. SEIBERLING. Thank you. Ms. Stamiris?

Mrs. STAMIRIS. Thank you. I'm glad to be here. From the beginning the NRC has seemed unwilling to place public health and safety ahead of financial considerations of the utility. In 1969, an exception was made from usual siting standards in order to locate the plant near its steam customer, the Dow Chemical Co. As a result, the plant is situated in a floodplain and its foundation had to be built up with 35 feet of fill soils.

At this point I must digress from my prepared testimony somewhat to respond to some answers and statements made by the Consumers' representatives. I believe that what went wrong in the first place is still going wrong today, because Consumers Power Co. does not seem to recognize, or at least acknowledge, its own problems. There seems to be an effort to place the best possible interpretation on problems which, in the end, hinders corrective actions. And, as an example, I would like you to note the differences in the story that I'm going to present about the soils problems, and how they were first caused and responded to.

Consumers' disregard of the QA principles caused the fill soils problems. But when the administration building, which is a nonsafety building, settled and Consumers' own followup audit revealed site deficiencies in 1977, Consumers' witness withheld that from the NRC and still chose to proceed with that and began building the neighboring diesel generator. Today all the plant's major safety structures which are found on the fill soils, including those begun after the first settlement problem, have cracked and settled unevenly. But even more critical than the observable settlement

problems is the damage to the underground cooling pipes requiring complex monitoring devices. An extensive system of permanent dewatering wells must operate over the life of the plant in order to control ground saturation seeping from the plant's cooling pond.

As complex and unusual as the soil settlement problems are at Midland, so, too, are the remedial fixes they require and the fixes themselves are beginning to cause further damage and complications.

The first fix was to load the diesel generator building with tons of sand in order to consolidate its subsoils. The fix itself caused further cracking and stressed the pipes below. Seven inches of settlement at this building have cracked its 3-foot-thick concrete walls through.

Since Consumers had undertaken this fix without NRC approval, it was to be performed entirely at their own risk. But today with the building complete and despite internal disagreements about its adequacy, the NRC has compromised original requirements to approve this structure.

The second fix is what the responsible contractor has caused, and this is a quote, "the largest and most complex underpinning job ever let in construction history." That is, at any construction, not just a nuclear plant. This complex operation is to be performed by a company who was unable to execute the most basic fill soil placement in the first place.

Because building movement must be held to one-eighth of an inch to avoid further structural damage, and because this building too, is already cracked from the differential settlement, one of the judges in the soil hearing has cautioned: This board does not want to be hearing the remedial measures on the remedial measures at some future date. Yet, after only 6 of 57 underpinning piers have been placed, these fears seem to be coming true. The feed water valvepits have been cracked during the jack operation. One of the piers, 11 W, has failed to accept the load as anticipated. The auxiliary building wings are unexpectedly rising. The soil bearing capacity has been found to be one-half that expected, and ground water seepage threatens the integrity of the concrete piers.

The permanent dewatering system is expected to reverse ground flow patterns around the site and recent reports indicate that nearby residential wells are drying up. Extra dewatering undertaken to control ground water in the underpinning shafts may be affecting the foundation soils of the nearby containments, and causing cracking there. Chemical wastes stored underground by the Dow Chemical Co. are subject to migration associated with 40 years of constant dewatering.

In December 1979 the NRC issued an order, modifying construction permits which sought to suspend the soils-related work at Midland until the related safety issues were resolved. But, because Consumers requested a hearing to contest that order, it couldn't go into effect. So the work, like the problems and the hearing itself, go on today. The NRC has repeatedly given their assurance that quality assurance would improve, only to be proven wrong by the next major problem. But in the soils hearing they have done so as part of a prehearing agreement, designed to resolve the very issues the hearing was about.

The June 5, 1982, QA stipulation exchanged the NRC's reasonable assurance conclusion for Consumers' agreement not to contest the soils QA breakdown, eliminating the need to litigate what the NRC and Consumers considered the past QA problem; only favorable testimony about the revised QA problem was to be submitted.

The NRC once again predicted that QA implementation was on the road to recovery. The problems were not over as anticipated, as the next annual systematic appraisal of licensee performance revealed.

Different people looking at the Midland plant came to a conclusion of QA deficiency for the same timeframe as Mr. Keppler's favorable testimony.

Troubled by this conflict, Mr. Keppler said that he was afraid he had misled the licensing board in the soil settlement hearing and sought to have the QA record reopened.

He said he guessed his inspectors were trying to tell him something. His inspectors were trying to tell him something again with the diesel generator building inspection in the fall of 1982. This inspection was undertaken as an indepth look at the most recent construction work since the last QA revision. The inspectors found problems everywhere they looked in the inspection. The quality assurance breakdown involving deliberate breakdowns of QA CQ principles and significant discrepancies between the designed and as-built plant, resulted in $120,000 civil penalty fine. But on December 9, 1982, in the midst of the NRC enforcement deliberations regarding the latest QA breakdown, Consumers Power Co. was given the long-awaited and desperately needed green light to begin the 1½- to 2-year underpinning operation.

The soil settlement hearing established to decide whether the soils remedial work should be permitted would now continue, well after the work in question was irreversibly underway.

Despite continuing and escalating QA deficiencies, the NRC has allowed what is probably the most difficult work ever undertaken at a nuclear plant to go forward at Midland.

Both the NRC and the licensing board defend this course of action by maintaining that the plant will not be granted an operating license in the end, unless all the original design requirements are met. Therefore, construction is allowed to proceed at the utility's own risk; while regulatory judgments await plant completion.

The public is asked to believe that ultimate safety judgments about the adequacy of the plant will be made without regard for the utility's financial interests. But in the real world, of billion dollars sunk costs and completed plants, it is the original safety requirements which are modified in an effort to license the plant; not the completed structures.

Knowing that a completed plant is likely to be licensed, and knowing that only by completing the plant will Michigan law allow the costs of construction to be passed on to the ratepayers, Consumers is unable to make cost versus safety decisions. The only real risk remaining at the end of these proceed-at-your-own-risk arrangements is that to the public who must bear both the cost and the safety burden of the unsafe plant.

The NRC has the regulatory tools to insure the safe construction of a nuclear plant. In fact, the NRC is the only agency capable of

preventing instead of reacting to a safety problem. But at Midland these tools have not been used.

Licensing proceedings are resolved on promises of reformation, not actions and performance. Orders modifying construction permits are made, then ignored. Material false statements are established, then overlooked.

OI investigations are conducted with instructions to avoid conclusions. Design documents are modified after the fact to match as-built construction and accepted by the NRC; and quality assurance deficiency is tolerated while construction proceeds.

There are men within the NRC who seem to have finally reached the last straw. There are inspectors and technical experts trying to make their voices heard. In the recent soils hearing the Midland team of inspectors testified that they have lacked confidence and trust in Consumers' management and their ability to implement the QA work properly. The reinspection of the work and the third-party reviews of the completion program in which Mr. Keppler places his confidence, these are still going forward under Consumers' control, and the reliance placed on reviews which are truly independent or on increased NRC controls to get the job done, miss the salient point.

It is Consumers Power alone who must be evaluated, for they alone will operate the Midland nuclear plant.

If they cannot be trusted to construct the plant safely, how can they be trusted to operate it safely?

The NRC can no longer avoid their responsibility to decide whether this utility has the capability and reliability necessary to safely complete and operate a nuclear powerplant, for only the NRC can make this judgment before it is too late.

Mr. SEIBERLING. We thank you. I'm sorry you didn't summarize this, though, because we are going to have some real problems here. Ms. Garde, do we have a prepared statement?

Ms. GARDE. I have a prepared statement, but I'm prepared to let the statement stand in the record and just summarize my points.

Mr. SEIBERLING. If you could, I would appreciate it.

Ms. GARDE. It is an honor to be here today and I think the summary of the main points I wish to make deal with the construction completion plan, or the solution to the problems that you heard this morning. I think that our organization, which has been conducting an independent investigation of the Midland facility for over a year now, is prepared to stand firm on the position that Consumers cannot adequately be trusted to identify the problems on that site. Until an independent organization is chosen, according to the legitimate third-party process that is set up by the NRC, there cannot be any assurance of what is actually out on the Midland site.

Once tha, is done, only then will it be time to adequately judge whether the construction completion program is an appropriate remedy for the problems on that site.

I said I would make it brief.

Mr. SEIBERLING. All right. Thank you.

I think you raised some extremely important questions. Both of them are questions that I am going to throw at NRC and ask them for their comments. I'm sorry that we have completed the testimo-

ny of the company, but I think on the basis of your testimony we'll probably be submitting to them some additional written questions, because it is not quite clear that the situation is as simple or as good looking as they would like to have us believe. But I don't really have any further questions for you. I appreciate very much the role that you have taken and the degree to which you have bird-dogged this situation. After hearing your testimony, my conclusion would be there's only one solution to this problem and that is to use rubber pipes.

In any event, I guess we'll have to hear further.

Mr. Clarke.

Mr. CLARKE. I have appreciated your great amount of time and concern that you all have. I have a couple of questions that I would like to ask.

Do you agree with Mr. Selby's statement that most of the problems have been detected as a result of Consumers' and Bechtel's own quality assurance programs?

Mrs. STAMIRIS. I would like to respond to that because the NRC has made this position repeatedly in the past. I do agree with it to a certain extent. But I have to qualify that. Although they have identified many problems, that does not necessarily mean—that is not an indicator of a good record that tells us they have not necessarily overlooked others. The more important point is that once Consumers Power Co. has identified their problems, or the NRC has, they have not instituted adequate corrective actions in a timely manner.

So the problem is not so much with the identification as to the corrective action followup, in my opinion.

Mr. CLARKE. Ms. Sinclair?

Mrs. SINCLAIR. Yes; I would like to point out that both Bechtel and Consumers Power Co. knew, and the record exists in the public record, they were aware that the soil was poorly compacted but they went ahead and built safety related buildings anyway on the soil and took that chance. I think in that instance they not only knew about a serious problem, but they overlooked it and plunged that whole project into what I think is a really calamitous state.

Mrs. STAMIRIS. May I add one brief comment in relation to that question? That is the diesel generator building inspection has been focused, as a very important section, and Consumers has said after that inspection they went out and confirmed that problem and agreed to stop work. My reading of documents has indicated that Consumers to a very large degree was already aware of the sitewide problems, before the diesel generator building inspection; namely, from their own evaluation that had been conducted at about the same time. I think this is another indication of their being aware of their problems but not responding to them correctly. Thank you.

Mr. CLARKE. Do you agree with Mr. Selby's statement on page 3 of his testimony that Consumers' quality assurance program includes procedures for protecting the identity of any informants who request confidentiality?

Ms. GARDE. I think that I'm best qualified to answer that question. The Government accountability project, as this committee knows, is a whistleblower protection organization. There is a lot of

problems on that site that are being discussed by workers. We have turned in a number of affidavits, I think a dozen affidavits to the NRC from workers. One of the problems that you might be interested in on the Midland site, which is different than the Zimmer situation, is that Bechtel has a policy where they require employees to sign a nondisclosure form, where the employees state that they won't reveal any of the problems to anyone outside of the Bechtel management.

By signing this, workers that call us, and workers we talk to, are very intimidated about going beyond that process because they are afraid that Bechtel will sue them, which is exactly what the statement says.

I know that the NRC is evaluating that form and that they have taken a position that that violates the NRC's requirements. But when you get down to being an individual welder or an individual craftsperson and you know you have signed that form, it is very intimidating. I don't feel that the procedures installed on the site for protecting whistleblowers are adequate.

Mr. CLARKE. Mr. Selby states on page 8 of his testimony that among the activities demonstrating effectiveness and quality program implementation is the soils remedial work. Do you agree that the effectiveness of the quality assurance program has been demonstrated in the soils remedial work?

Mrs. STAMIRIS. I certainly don't believe that it has, but I don't think I have anything to add other than what I have already testified to.

Mr. CLARKE. You already stated that. Mr. Selby states that soils-related problems were first identified in August 1978, when the diesel generator building settlement was found to be excessive. Do you agree with this assessment of the settlement problem found on page 8?

Mrs. STAMIRIS. Absolutely not.

Mrs. SINCLAIR. No.

Mr. SEIBERLING. Thank you very much. Mr. Craig?

Mr. CRAIG. Thank you, Mr. Chairman, and all three of you. I'm impressed not only on the length, but on the depth and content of your testimony. The written testimony assured great detail. I appreciate that because I have not followed this issue as closely as I have some other issues that relate to nuclear powerplant construction. Mrs. Sinclair, I noticed in your testimony that you have been involved to some degree since 1970.

Mrs. SINCLAIR. Right.

Mr. CRAIG. What was your involvement in 1970 in the preconstruction permit period?

Mrs. SINCLAIR. Excuse me. I had worked on classified information for the Atomic Energy Commission in Washington for a number of years prior to the start of the promotion for the Midland nuclear plants. During the promotion, all that we—all the information that the public was getting was that they were safe, clean, and economical. But I knew through my personal knowledge, and following the technical literature on how the issues were developing within the nuclear industry, that this was not the case. So I began an educational program among citizens even before 1970.

Mr. CRAIG. Are you a resident of the Midland area now?

Mrs. SINCLAIR. I am. I live about 2 miles from the plant and I lived there for about 30 years.

Mr. CRAIG. Were you originally opposed to the siting of the plant in that location?

Mrs. SINCLAIR. No; I took a very hopeful attitude for nuclear power as a result of my experiences as a science writer and editor, working on the technology. But I was disturbed that the actual problems that were, in the current development of nuclear power at that time, were not a part of the information that was being given to the public. I thought it was very important they should be.

The Advisory Committee on Reactor Safeguards, for example, was saying to Glen Seaborg at the time, their urgent needs for more safety research in many areas of the larger size plants that are now being planned. That should have been a part of the information.

Mr. CRAIG. In looking at your testimony, you say you have been a technical writer in these areas?

Mrs. SINCLAIR. I have been a technical writer and editor, been a technical writer for the Dow Chemical Co., for chemical magazines——

Mr. CRAIG. You are a journalist by trade and not an engineer?

Mrs. SINCLAIR. No; but I do have a scientific background.

Mr. CRAIG. I see. Ms. Stamiris, your background?

Mrs. STAMIRIS. I am an elementary school teacher, out of place.

Mr. CRAIG. You are a soil scientist, too?

Mrs. STAMIRIS. No; not quite.

Mr. CRAIG. Ms. Garde? Your background?

Ms. GARDE. I'm a whistleblower.

Mr. CRAIG. From Kansas City, I believe; is that right?

Ms. GARDE. No; I'm originally from Wisconsin.

Mr. CRAIG. Excuse me. I guess I remembered some whistleblowers in Kansas City. You have said that the organization that you are now currently employed by has made some conclusions. Are these conclusions based on your own engineer? Your own group's engineers' examinations and studies? Or are they a collection of the materials involved?

Ms. GARDE. The Government accountability project has a methodology for performing its independent investigations, which are largely the same at nuclear facilities as well as other Government agencies that we work with whistleblowers at. That involves taking statements, verifying that through other sources, documentation, and at least two other individuals.

Mr. CRAIG. So your organization only deals with whistleblowers? That's the purpose of the organization itself, is it not?

Ms. GARDE. Yes; it is.

Mr. CRAIG. I see. Mrs. Stamiris, are you a resident of the Midland area?

Mrs. STAMIRIS. I live in Freeland, nearby.

Mr. CRAIG. To both of the residents, you, Mrs. Sinclair and you, Mrs. Stamiris of the Midland area, assuming all of the problems that you believe exist and that others believe exist and that some don't believe exist, were successfully answered and addressed and brought to a conclusion that would result in the kind of licensing that would bring that plant on line, would you support that?

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Mrs. STAMIRIS. I would not oppose the Midland nuclear plant if I believed it were built safely.

Mrs. SINCLAIR. I oppose it because that nuclear plant is much too close to a populated center; and in conjunction with the huge industrial complex of the Dow Chemical Co., this constitutes a magnitude of risk that I don't think you should subject——

Mr. CRAIG. So under any conditions, Mrs. Sinclair, would you oppose the bringing online of that plant?

Mrs. SINCLAIR. I have come to that conclusion. I didn't think so at first; but having studied the situation and knowing, for example, there is no solution to the radioactive waste problem, and that if there were one, radioactive waste would have to be transported through an industrial area, a populated area, through——

Mr. CRAIG. So under any circumstances you would oppose it?

Mrs. SINCLAIR. Yes.

Mr. CRAIG. But you would not?

Mrs. STAMIRIS. That's correct.

Mr. CRAIG. Do you believe in the criteria which you yourself have established as would be safe for operation? Do you believe they can be technologically met?

Mrs. STAMIRIS. I'm not sure. I'm sorry. Exactly, which criteria do you have in mind?

Mr. CRAIG. Well, the ones you outline—you are coming from a point of view based on your observations.

Mrs. STAMIRIS. Yes.

Mr. CRAIG. A point of view that certain things should be done to cause this plant to be constructed safely and, therefore, then to be operated safely. Do you believe, in your own mind, based obviously on some experience and knowledge, that these can possibly ever be met to your satisfaction?

Mrs. STAMIRIS. I really have difficulty answering that. I think that just based on performance patterns, which are the only thing that I like to put any weight on, I have a great deal of doubt as to whether the proposed solutions or anyone's criteria will or can be adequately carried out. But certainly if they could, and I could be assured that the safety of the plant, I would not oppose it.

Mr. CRAIG. Can I conclude, rightly so or wrongly so, that you say you would not oppose operation of the plant if the criteria could be met, but you don't believe the criteria can be met?

Mrs. STAMIRIS. That's pretty close. I still am having trouble because I'm not exactly sure—I didn't believe I had proposed a solution. I have heard solutions from the NRC and from Consumers and I have a lot of doubts about the ability of those solutions to be appropriately applied.

Mr. CRAIG. Can I, as a Member of Congress in weighing your testimony toward making decisions, assume then, that you are, both of you, in a general sense opposed to this plant ever operating? That those kinds of biases show up in your testimony?

Mrs. SINCLAIR. I think—I'll speak for myself. In every instance of every statement that I made, I am able to document either from sworn testimony or from the documents that are submitted, either by the Consumers Power Co. or the Nuclear Regulatory Commission. So that anything that I have said is traceable and verifiable.

Mr. CRAIG. Is it not true that the opposition statements are also effectively documented?

Mrs. SINCLAIR. They were documented from the hearings statements, yes. I think you should know the problems. I think you should know what the inspectors are saying. I think you should know and I think the ACRS should hear those statements. If you just get the glossed-over, sanitized view of the utility all the time or when NRC management wants to put their best foot forward, you are never going to get the whole picture. That's why you really need people who pursue the record. You need people who are in the hearings and who will ask inspectors the questions so they can get the story.

Mr. CRAIG. I quite often ask these questions of citizen intervenors to see whether they are, first of all, opposed to that plant being there in the first place. Even if all conditions could be met that would assure, as is humanly, scientifically, engineeringly possible that that plant is safe, I think we have to recognize the fact, as this committee does, that we are dealing with a variety of bias. I think it is important the record demonstrate your bias, as well as it should be understood that the people who are constructing the plant and planning to operate the plant have a relative degree of bias also.

I don't believe, and I have found it very seldom, that there are nonbiased, objective points of view in these issues.

Thank you all very much for your testimony.

Mr. SEIBERLING. Thank you. I did want to ask a couple of questions myself. First of of all, let me say no one on this committee has any bias. [Laughter.]

Mr. CRAIG. Mr. Chairman, let me rephrase that. I have mine and you have yours. The record ought to show that.

Mr. SEIBERLING. Maybe I have mine. But in any event, let me ask you whether, at any time in your review of this problem, you encountered any representatives from any insurance companies there that were monitoring this plant?

Mrs. SINCLAIR. Of course we know that all our insurance policies, our home insurance policies simply won't cover—protect our homes.

Mr. SEIBERLING. I was thinking of any insurance companies that were insuring the plant?

Mrs. SINCLAIR. No; we haven't encountered any.

Mr. SEIBERLING. You see, we have a situation, under the Price-Anderson Act, while $560 million—which although it is a lot of money, is peanuts compared to total liability of most insurers—is the limit to utilities liability following a nuclear accident. They can pool insurance and the amount that any one insurance company would bear is very small. I have introduced legislation to repeal the Price-Anderson Act ceiling. It is my opinion that if the insurance companies had complete exposure, you can jolly well bet that they would have inspectors monitoring everything in the construction and even the operation of these plants.

It seems to me that one of the gross deficiencies in the whole nuclear power system in our country is the Price-Anderson Act, and the fact that there is no one who has a huge stake, and I'm referring to a financial stake—outside the company's stockholders—

that's in there, making sure that it is done right and the chances of accident are minimized. I think it is time that the Congress started to reevaluate, in the light of the Three Mile Island, Zimmer, and so forth, that whole policy.

I suspect that, if the Price-Anderson Act had come up for review after Three Mile Island, and after some of the other exposures we have had recently, that it would never be renewed.

So I really thought maybe it's the appropriate time to make that point.

Second, let me ask you, Mrs. Sinclair, at what point in your review of this in the last 10 years did you come to the conclusion that this plant should not be in the location it is?

Mrs. SINCLAIR. I knew when we entered the licensing procedure to begin with, I studied the site criteria and I realized that the site criteria had been set aside in order to allow this plant to be situated there. I thought that was a serious mistake, since there is a big population right around the plant.

I also became increasingly concerned, although we were given assurances that there would be extra quality control and redundant safety systems because of the proximity to population there, what really became a concern was the breakdown of quality control that was apparent.

First of all, we saw, in Palisades with Consumers and Bechtel having a terrible record there, and then Consumers hired Bechtel again at Midland, and very shortly we discovered the appeals board making such a strong statement about how poor the quality control has been. And it has just continued that way and has gotten worse.

I don't trust this company to be able to do it right and I don't agree with Mr. Selby's statement that they have not had any problems in their operation of their nuclear plants or in their other operations.

They never could make their radioactive waste holding plant work at all at Palisades when it first started operation, but they continued operating it anyway.

Mr. SEIBERLING. What you are telling me, if I can paraphrase it correctly, is you feel it should not be on that site because the problems that came up are such that you cannot rely on its being in safe operation and you feel that the site is inherently unsafe. Isn't that what you are telling me?

Mrs. SINCLAIR. Yes, I do.

Mr. SEIBERLING. So it isn't a question that you wouldn't in principle feel that a properly designed plant could not be located in the area, but it is that this particular site, you feel, has now been shown to be unsuitable? Is that what you are telling me?

Mrs. SINCLAIR. Yes. I have come to that conclusion.

Mr. SEIBERLING. I wouldn't say that that is a bias; that is the result of your study of this operation.

Mrs. SINCLAIR. We think so, yes.

Mr. SEIBERLING. Thank you. I have no further questions. I appreciate very much having your testimony.

We'll now proceed with the testimony of the representatives of the Nuclear Regulatory Commission, Hon. Victor Gilinsky, Commissioner; James Keppler, Administrator, region III; Mr. Ronald

Cook, Mr. Ross Landsman, and Mr. R. M. Gardner, Midland inspectors.

[Prepared statements of Hon. Victor Gilinsky and James G. Keppler may be found in the appendix.]

STATEMENT OF HON. VICTOR GILINSKY, COMMISSIONER, NUCLEAR REGULATORY COMMISSION, ACCOMPANIED BY JAMES KEPPLER, ADMINISTRATOR, REGION III; RONALD COOK, NRC MIDLAND INSPECTOR; ROSS LANDSMAN, NRC MIDLAND INSPECTOR; R. N. GARDNER, NRC MIDLAND INSPECTOR; AND DARRELL EISENHUT, OFFICE OF NUCLEAR REACTOR REGULATION

Mr. SEIBERLING. All right gentlemen, Mr. Gilinsky.

Mr. GILINSKY. Mr. Chairman, thank you for the opportunity to participate. I should say at the outset that I'm testifying in an individual capacity. The agency's testimony will be delivered by the head of our region III office, Mr. Keppler.

I visited the plant about a week ago in the company of many of the witnesses that appeared today. I visited inspectors, regional inspectors, various intervenors, Chairman Selby of Consumers Power Co. and members of his organization. I came away with a number of impressions and I would like to share some of them with you. After the previous testimony I don't think I need to recite the history of this plant. I do want to say that in reviewing the troubled history of the plant I am distressed, as it is clear that you are, that our systems for assuring safety, by the utilities and by the NRC, turn up serious problems so late in the construction process and that the solutions are so slow in coming.

There has got to be a better way of spotting problems earlier, in dealing with them more promptly.

I would like to say a few words about NRC's role, and about our process.

After the discovery of the soils problem that you have been hearing about, the NRC staff issued an order in 1979 which modified the construction permit and required the halting of construction in certain areas.

Unfortunately, the view of our lawyers in those days was that construction problems did not justify immediate enforcement action, and this meant the licensee could prevent the order from becoming effective and thus continue in construction by requesting a hearing. This the company did, the plant's construction continued and it has been in hearing ever since. It is, incidentally, a useful reminder that it isn't just intervenors that take advantage of hearings.

I should mention that the NRC staff's formal participation in the current hearing does not fall into the usual pattern which I criticized recently before this committee. Our staff cannot be accused of lining up with the utility. At the same time, I also think that the involvement of the staff in a formal adjudication greatly complicates Commission staff communication on the important issues. I think this argues, again, for ending the NRC staff role as a formal party in such hearings.

In 1982 the licensing board took an unusually active step, adopted an unusually active role, and issued its own order which put the plant's construction under the step-by-step control of the NRC staff. The order was not taken up by the Commission.

It is unfortunate, to my mind, that the Commission itself has had so little to do with NRC's action in this trouble-plagued project. So far as I can tell, the Commission has never had a meeting on safety problems, or had never had a meeting on safety problems at Midland. Not in recent years, anyway. Until yesterday, the last meeting of any kind in Midland was in 1978, and that was on a personal dispute between the staff and intervenor lawyers. Upon my return from Midland last week I recommended to the Chairman, our Chairman, that the Commission address itself to the safety problems at that site.

We had the first meeting on the subject yesterday. Mr. Keppler made a presentation. I thought it was a very helpful meeting. It shows, by the way, that the prospect of a committee hearing is a very useful way of concentrating Commission attention.

Mr. SEIBERLING. Like an election for elected officials.

Mr. GILINSKY. My own feeling is that given the scale of the problems, enormous sums involved, sums which will ultimately be paid for by consumers—that's with a small "c"—the complex interaction of the project with the NRC through a licensing board and headquarters and regional staffs, it is essential that the Commission itself be confident that the agency is dealing properly with Midland. We need to be sure that the company is complying with our regulations and that we are assured such compliance in a sensible manner. That is all I have to say at the moment except to introduce Mr. Keppler, our Administrator.

I do have one other point. I have prepared a large foldout describing the procedural history of Midland. I haven't quite got it ready for distribution, but I would like to submit it for the record. I think it is instructive.

Mr. SEIBERLING. Without objection, we will include that.

Mr. GILINSKY. Thank you, Mr. Chairman.

Mr. SEIBERLING. Mr. Keppler?

Mr. KEPPLER. Good morning, Mr. Chairman. My name is James Keppler and I'm the Regional Administrator of the NRC region III Chicago office. With me today I have Mr. Ronald Cook, Mr. Ross Landsman, and Mr. Ron Gardner, three of my inspectors who have been very heavily involved in the Midland work. They are here at the request of the committee.

I'll summarize my testimony if that's all right with you.

Mr. SEIBERLING. Without objection, your entire testimony will be included.

Mr. KEPPLER [continuing]. Thank you.

I think I'd start out by emphasizing that Midland has experienced repeated problems since the start of construction in 1972. The NRC and the licensee have taken actions to address these QA problems as they occur, and I might contrast that to, when I sat before this committee last summer, in the Zimmer case, where, really, the NRC staff did not recognize the full significance of the QA problems as they unfolded.

The NRC staff has been aware of the Midland problems and has been attempting to deal with them as they were identified.

In 1981 I provided testimony to the NRC's Atomic Safety and Licensing Board, presiding over the hearing on remedial soils issues at Midland plant.

I testified at that time on the more significant QA problems that had been experienced in connection with Midland and the corrective actions taken by Consumers Power Co. and its contractors.

I stated that while many significant quality assurance deficiencies had been identified, it was the NRC staff's conclusion that the problems experienced were not indicative of a breakdown in the implementation of the overall quality assurance program.

I also noted that while deficiencies had occurred which should have been identified earlier, Consumers Power Co.'s QA program had been generally effective in the ultimate identification and subsequent correction of these deficiencies. Furthermore, at that hearing I discussed the results of a special QA inspection that I had conducted in May 1981. A team of nine of my best inspectors that I sent up to the site, which I had initiated to determine whether modifications made to Consumers' QA program in 1980 were effective.

The results reflected favorably on the Midland plant quality assurance department formed in August 1980 to improve QA performance. The thrust of my testimony at that time was that I had confidence in the Consumers Power Co.'s QA program both for the remedial soils work and the remainder of the construction. Now, in April 1982, I was made aware that additional significant quality assurance problems were being encountered. This concerned me in view of my 1981 testimony to the Atomic Safety and Licensing Board.

As a result, I notified the Atomic Safety and Licensing Board that my previous testimony would have to be modified; directed staff evaluation to assess the cause and correction of the problems; and I created a special section within the region III office, solely to handle the Midland project and reviewing the facility's status and history. Meetings were held with Consumers Power Co. to discuss the NRC's concerns, and to inform them that additional measures were required to assure the quality of the plant.

In addition, the Midland section recommended and then conducted the comprehensive inspection of systems and components with the diesel generator building, which ultimately led to the major "stop work" action in December 1982.

Where we stand today, Mr. Chairman, is that Consumers Power Co. has proposed a number of changes which the staff is reviewing, that will consist of a backward look at the completed construction to date; will consist of a program to complete the plant and complete any necessary rework that may be done—all of this overviewed by a third-party organization in addition to the NRC.

We believe these programs, when we complete our review of them and approval of them—we hope that these will provide confidence that the project will be completed satisfactorily.

In any event, we want to assure this committee that the NRC will not issue a license for this facility until we are satisfied the construction has been completed properly.

With that, Mr. Chairman, we are prepared to answer any questions you may have.

Mr. SEIBERLING. All right. There are no prepared statements of the inspectors? All right. Thank you very much.

Mr. Keppler, can you tell me, or maybe Mr. Gilinsky or someone can, what assurances NRC required as to site suitability prior to approval of the site? Was the site originally approved by NRC? In 1969?

Mr. GILINSKY. It would have to have been approved as part of the construction permit proceeding. I guess I'd have to supply for the record exactly what was done at that time.

Mr. SEIBERLING. Mr. Keppler, can you answer that?

Mr. KEPPLER. I can't answer anything to that, Mr. Seiberling.

Mr. SEIBERLING. If a new plant were being submitted for approval today, before any work had been done, what would NRC require in terms of such things as soil borings, foundation plans, and so forth? How deeply do they go into that sort of thing? How deeply would you?

Mr. KEPPLER. Mr. Eisenhut, our Office of Nuclear Reactor Regulation might be able to provide that answer.

Mr. SEIBERLING. All right.

Mr. EISENHUT. Let me try to help you somewhat. When we go through the licensing process, early in the process one of the first considerations to look at is the site. You look at it from a number of considerations.

You look at it from its basic soil characteristics; you look at it from the location of nearby facilities. One of the keys you look at is population.

The only area that I'm aware of that, today, if you relooked at the Midland site, that would be a much closer call than it was at the time, would be the population issue.

We have not gone back and relooked at the population density criteria that we use today, to see whether the site would, in fact, have passed that test. But I do know in the timeframe of the late 1960's and early 1970's, we didn't have such criteria. It was done in a much different framework where we didn't have a specific criteria per square mile where we looked at number of people.

The one step we have taken recently on high population density sites, as we have called them, the higher population density sites of plants that are presently under construction, for example the Seabrook site, we have, in fact, required a probabilistic risk assessment to be done by the utility.

We are doing that in recognition of the fact that these sites have grown to the point where the surrounding population is higher than we previously thought. It does not at this time, I believe, include the Midland site. It is somewhat below that—did not trip our threshold of asking—requiring a PRA, although one is being done for the Midland site.

So it is certainly not in the league of the Indian Points, the Zions, the Limericks, or the Seabrooks, which are in fact the sites on the very high end of the population density scale.

Mr. SEIBERLING. If you knew in 1969 what you know now about soil conditions, would you have doubts about whether this was a suitable site?

Mr. EISENHUT. From the basic framework, as far as a suitable site, I don't believe we would have the doubt.

You see, you've got to remember that the basic underlying glacial till is a satisfactory soil. The problem that came about in connection with the Midland project was that on certain pieces of the structure they had to put in compacted soil. That is a perfectly acceptable process. However, the implementation of that is what broke down at the Midland site.

That is, there is a satisfactory engineering solution from a design standpoint. But it was inadequately carried out at the site.

Mr. SEIBERLING. Thank you.

I don't know that I have time to go into all of the questions raised by the testimony of the intervenors. However, they have certainly raised some very major questions. The siting is one of them, of course. But let me just go through a couple of them here and then I'll yield to my colleagues and maybe we can get back to it after they have their time.

Mrs. Sinclair, on page 1 of her testimony, says that: "Subsequent inspection reports after construction was resumed in April 1973 showed that these promises were ignored by Consumers Power Co."—those are promises about the quality control, apparently. She says, "region III did not act on these reports of violations, but the attorney for the citizen intervenors, Myron Cherry, read the inspection reports and brought them to the attention of the Appeals Board, pointing out that Consumers Power Co. did not honor its promises for improved quality control."

Then she quoted from the Appeals Board, after the hearing in November from the report, or letter, rather, that they wrote in November of 1973 to Mr. Muntzing, who was then director of licensing. Here's what they said:

"What we have here is a pattern of repeated, flagrant and significant quality assurance violations of a nonroutine character, coupled with an unredeemed promise of reformation." Then says, "the staff subsequently issued an order to suspend construction until Consumers Power Co. could demonstrate why their license shouldn't be suspended. In a short time the order to halt construction was lifted because of political pressure. After an uncontested hearing, approval of the license was renewed."

Mr. Keppler, can you comment on this?

Mr. KEPPLER. In late 1973 there was a problem that was identified by the NRC involving cad welding operations at the site. This is the splicing of reenforcement steel in the concrete. We found that the cad welding work was really not being controlled properly and some of the cad welds were not being completed properly.

As a result of that action the NRC, at that time the AEC, required the utility to stop work in that area, and subsequently the Atomic Safety and Licensing Appeals Board did write a letter to the director of regulation at that time, urging that a formal stop-work be issued in the form of an order. An order was issued that required immediate stopping of the cad welding operation, which had already been stopped, but it also required a show cause—the licensee to show cause, why all construction activities should not be stopped, a matter that was dealt with in a formal hearing in the summer of 1974.

The cad welding operations were permitted by the NRC to resume after the NRC was satisfied that the procedures for controlling the work and the quality assurance activities were proper. There was no pressure on the NRC staff to permit the resumption of operations that I'm aware of. I certainly felt no pressure in releasing that work.

Mr. SEIBERLING. Apparently, going to the soil problem, someone wrote a memorandum in 1980 of a conversation with you. A summary of this memorandum was attached to a memorandum from Thomas Gibbon to Samuel Choate with a copy to you—the subject: Possible ex parte contact in the Midland proceedings.

It's a conversation and here is the summary of one of your statements:

> Midland is continuing to work today to make resolution of the settlement problem much more difficult. Keppler said the staff had not yet made up their minds on whether the fix proposed by Midland was acceptable; therefore, the project continues to be built and the problem gets worse. He wanted the work stopped until the problem is solved.

Is that a correct summary, according to your best recollection?

Mr. KEPPLER. Yes; it is. Could I give you a little background on that?

Mr. SEIBERLING. Yes.

Mr. KEPPLER. Mr. Gibbon was the technical assistant to Commissioner Bradford, when he was with the agency. We made a visit to our regional office, and during the course of that visit we talked about a number of matters in which they were soliciting input from the field as to what matters the Commission might be able to focus attention on. One of the issues that was discussed was the question of problems occurring in construction and whether or not work should stop—there should ever be a stop-work issued by the NRC.

The view that I was expressing at that time was when you have a problem and you don't know what the fix is going to be, that I questioned the merits of letting that project proceed, recognizing that it is being done at the utility's own risk. I questioned the merits of letting that type of activity proceed until it was determined that a technical fix was achieveable. So I raised that question as really a philosophy question with Mr. Gibbon, to bring back to Commissioner Bradford.

Mr. GILINSKY. If I may interject a comment, Mr. Seiberling?

Mr. SEIBERLING. Yes.

Mr. GILINSKY. I think over the years, until recently, there was a feeling, which I mentioned in the testimony, particularly by our lawyers, that construction problems did not constitute immediate health and safety problems and, therefore, did not justify immediate enforcement action. The agency did not easily step in and stop projects, even when there were problems that were fairly serious.

For example, there were for many years no civil penalties in the construction area. That has changed to some extent and I think——

Mr. SEIBERLING. I think that's a very important observation.

Mr. KEPPLER. Could I add one other point?

Mr. SEIBERLING. Yes.

Mr. KEPPLER. I make the point, I think the only times we exercised our authority to stop work in a formalized way was when the continuation of construction might cover up work, so that you couldn't then inspect the completed work. Like, perhaps during pouring of concrete.

Mr. SEIBERLING. What was the result of your recommendation? Was the work stopped or was it not?

Mr. KEPPLER. No; but it wasn't a recommendation in that sense. It was a—again, we were focusing on the philosophical argument about whether or not enforcement action should be taken in the formal way of stopping work during plants under construction. It was brought up in that context.

But when Mr. Gibbon realized that the matter could involve an ex parte violation, he felt it necessary to summarize that conversation, which was one small part of a much bigger conversation.

Mr. GILINSKY. Also, Mr. Chairman, the view was if there were any problems, the utility was proceeding at its own risk and then these would be dealt with at the operating license stage. I think we have since learned that you have to deal with these problems at an earlier stage.

Mr. SEIBERLING. That's another question I was going to get into. Is it still the policy of NRC to allow the facility to proceed at their own risk?

Mr. GILINSKY. In some sense they proceed at their own risk. But the fact of the matter is, in the real world when things get built, that weighs pretty heavily on the decisionmakers; and I think we have decided, and I think I can speak for all the Commission on this, one has to be a great deal firmer in the construction phase.

Mr. KEPPLER. I might add, in the case of the Marble Hill project in southern Indiana the NRC took formal actions to stop that project because of a deficient quality assurance program, as well as the concern that completed work might not be able to be inspected by continuing work; and that project was shut down for 16 months as a result of our action.

Mr. SEIBERLING. Mrs. Sinclair cited another example where, in July 1981, Joseph Kane, NRC's chief geotechnical engineer, in answering a question as to whether in retrospect removal and replacement of the diesel generator building would have been a better option, he said:

> When you are considering it from the standpoint of safety alone, it is my opinion that the removal and replacement is a better solution. If you are considering the other facets, that is the cost and impact on schedule, these are facets that engineers must address, then it may not be the superior option.

Of course, everything has to require a balancing, but apparently in this case the costs under consideration are deemed to be more important than the safety problem. Do you want to comment on that?

Mr. KEPPLER. Yes; I would. I think this committee should be aware that the staff evaluations——

Mr. SEIBERLING. All right. Go ahead.

Mr. KEPPLER [continuing]. That the staff assessment of this project, of this remedial soils effort, included quality assurance people, hydraulic engineers, mechanical engineers, geotechnical engineers, structural engineers within the staff; and included consult-

ants from Technology Engineering Center, U.S. Army Corps of Engineers, U.S. Naval Surface Weapons Center; Brookhaven National Laboratory; Science Applications Inc.; Geotechnical Engineers Inc.; Crimm & Samuels and Associates, Inc. There were a lot of people used by the agency in formulating the staff's position, and I think it is a little bit unfair to assess that as an expedient type of decision.

Mr. SEIBERLING. In other words, you do review all of the agencies, and try to come to a decision in which safety is not slighted in any serious way? Is that what you are saying?

Mr. KEPPLER. I think the staff would say that safety was the foremost consideration. Mr. Eisenhut would like to make a comment.

Mr. EISENHUT. Mr. Kane is, in fact, one of our senior soils reviewers on the staff. I think I'd probably concur with him, that the best solution would be to remove the building and start over. We don't require the best solution. We require an acceptable solution and in this case there was an engineering solution that came up in the problem. Mr. Kane was, in fact, a geotechnical engineer who was the principal geotechnical engineer who, in fact, did the final review and concurred in our overall position.

So I think what you have seen is, there is clearly a spectrum of views in this area. Any time you get a highly technical problem, you'll get—we went to the best resources we knew in the agency. Mr. Keppler mentioned some outside organizations: The Corps of Engineers, the Naval Surface Weapons Center—a number of organizations. But the end result was, in fact, that we think we came up with an acceptable conclusion to the problem. It is a solution that is certainly not the best. It is certainly not the cleanest.

As I said, the cleanest would be to remove the building and start over. But we feel it was a satisfactory solution to go forward. It carries the final conclusion of all of these people, including Mr. Kane.

Mr. SEIBERLING. Thank you. Mr. Lujan.

Mr. LUJAN. The final line is that the building is not less safe because of the method used than if you had razed it completely down and started all over again; do I gather that?

Mr. GILINSKY. I think what Mr. Eisenhut said—it was acceptable, he said.

Mr. LUJAN. Is it any more dangerous because of the fact it was not torn down?

Mr. EISENHUT. No; we believe not. When I said acceptable, it passes the test, the acceptable level of safety test. I was just reminded of a comment that each of the various different specialists in the various different groups supported each of the different aspects. It covers quality assurance, geotechnical, hydraulic engineering, mechanical engineering, structural engineering, it covered a very thorough process and each of those different disciplines feel that there was an acceptable level of safety in the final product.

Mr. MOODY. Will the gentlemen yield?

Mr. LUJAN. Yes.

Mr. MOODY. When you say acceptable, that is not the same thing as saying not at all less safe. You are talking about a threshold level. It still meets the threshold criteria, but is that higher in terms of safety? Had you torn it down and started over it wouldn't be at still a higher level?

Mr. EISENHUT. That's right.

Mr. MOODY. It's a series of probabilities. Different things happen. The probabilities of different things going wrong are not identical to a decimal point as they would be if you tore it down as a result and started later. I think the answer to the gentleman's question is less safe had you torn it down and started over.

Mr. EISENHUT. I'm not sure it is less safe. Because if this mission is adequately carried out, and put that big proviso on it, you may end up with the same end product. Because you have to remember what is being done. In effect in the limit, the worst case, call it the biggest facility modification of the worst case here, they are actually now going in and removing all of the soil that is in question. They are then putting a structure in place that should have been there in the first place.

Mr. MOODY. Should have?

Mr. EISENHUT. Should have, because of this. Either you should have compacted the soil adequately in the first place or put an adequate concrete foundation in. Now they are going back in the worst situation we are talking here and they are removing many, many, many cubic yards of soil and they are actually now putting a concrete structure in place, all the way down to the acceptable glacial till which we would have found in the first place. So it is not clear that one is less safe than the other.

It's a distinction you really can't make.

Mr. MOODY. The probabilities of an accident or something untoward happening are no greater now than they would have been had you started from the beginning and done it just the way you wanted it?

Mr. EISENHUT. I would say I certainly can't distinguish between the two in terms of the probabilities.

Mr. SEIBERLING. The committee will recess for 10 minutes and resume.

AFTER RECESS

Mr. SEIBERLING [presiding]. Let's continue, gentlemen. Mr. Keppler, I understand that at some point you informed the Midland Licensing Board, "We believe that we simply cannot rely on Consumers Power Co.'s quality assurance program by itself." You suggested it would be necessary to supplement it by third-party overview. Does this indicate that NRC does not have confidence that the licensee is capable of conducting a quality assurance program in conformance with the Commission's requirements?

Mr. KEPPLER. Let me answer this way. Over the years, as problems have been identified with Consumers Power Co.'s quality assurance program, changes had to be made to improve that program. Each time these changes were made, they appeared to be reasonable. But when it came to the actual implementation of these changes, the problems continued to occur.

They have made change as recently as this year. Again, these types of changes look good. But my reaction is that because of the history of the problems at this site, that realistically I cannot take the position that we can be satisfied with Consumers Power Co.'s quality assurance program by itself. I think a period of sustained

proven good performance has to be shown before I can do that. This was the situation that, as I said in my testimony, in April 1982, I decided that we were going to have to have further verifications of this plant to have the needed confidence in it to conclude that it had been built properly. We decided that a program was going to have to be done to look at past work, and I mean an extensive program, and a program that was going to have to be done to oversee Consumers' quality assurance efforts for future ongoing work.

I'm not about to back off that position until I can see that confidence is warranted in Consumers' quality assurance program.

Let me go back. I really evaded your question, and let me go back and tell you why I think this approach is reasonable.

I had problems with the Palisades plant over the years. In 1981, I was prepared to shut that plant down for safety concerns. The company came forth with a program of some rather stiff oversights of what was going on, and a program to improve its regulatory performance.

The company has demonstrated to my satisfaction that they have been able to lick that problem; and they took a plant which was the worst plant in my region at that time, and they improved the regulatory performance at that facility to a level that I am really comfortable with right now.

In the case of Midland, they have not been able to lick this problem and we are not certain why, actually. I felt that it was prudent to have this type of third-party overview on this plant until we can have some confidence that the company can implement the quality assurance program properly. And I'm prepared to let this thing run this way, with third-party overview, to the completion of this project, if that's what it takes.

Mr. SEIBERLING. Has there been an independent third-party quality assurance program set up? Overview program?

Mr. KEPPLER. There is a program of overview for the soils work, which is proceeding at a very limited rate based upon a Board order by the Atomic Safety and Licensing—that's being done by Stone and Webster. Stone and Webster has been proposed by the company to do the third-party overview for the balance of construction work and that is under review right now.

We have not made a decision on that point yet.

Mr. GILINSKY. If I may add a comment, Mr. Chairman?

Mr. SEIBERLING. Yes.

Mr. GILINSKY. I agree with Mr. Keppler's remarks about the Palisades project. I joined him one day at an enforcement meeting there.

The thing that disturbs me, and it disturbed me at the time, was that while the company had responded—in fact I was impressed with the way they had, to the actions we were taking, they had let the plant deteriorate very badly, particularly with regard to observance to procedures. It really took the most severe action, the threat of even more severe action on the part of Mr. Keppler, to get them to turn around.

They did respond and I think that's all to the good, but it should not have been so hard.

Mr. SEIBERLING. The intervenors press the view that, first of all, that they didn't have any confidence in Stone and Webster. Second, they felt it should be someone who was clearly independent and was representing the consumer point of view; and third, that there should have been consumer participation in the selection of Stone and Webster, at least having a public hearing. Have you any comments on that?

Mr. KEPPLER. Let me say that, from our point of view, Stone and Webster is one of the major architect/engineering firms in this country. We consider them to be competent technically to do the work.

The intervenors have expressed concern that some of the projects that Stone and Webster have been on, have not been handled too well from a quality assurance standpoint. That's a valid comment. But that's true about most of the big firms.

There have been problems with Bechtel plants, as Midland. There have been good Bechtel plants. There have been good Stone and Webster plants. But as a company they certainly are more—are qualified to provide that kind of service.

What we did in the case of our assessment of Stone and Webster, was we made sure that the individuals who were to be doing the work at Midland had had a good track record at other projects. We called and did reference checks on these people to satisfy ourselves that we really had the first team in there.

As far as the independence concern goes, what we try to do is to make certain that both the company and the individuals involved are free from any significant financial types of responsibility with the licensee. Stone and Webster had done really only a very small amount of work with Consumers Power Co. We were satisfied that they were not deriving a significant amount of their income from Consumers Power Co.

So we felt the independence concern from a company standpoint was adequate, and what we did was to require the individuals, as well, to provide sworn statements that they were not involved in any way with Consumers Power Co.

Mr. SEIBERLING. Does it comply with the guidelines set up for the Diablo Canyon?

Mr. KEPPLER. I think it does. That's my view.

Mr. SEIBERLING. Thank you.

Mr. KEPPLER. Let me add one other comment. You made the point about citizen participation. I feel we have, and I guess it comes down to a question of how much. We had—all of the information by the utilities have been provided to the citizens. We had a public meeting up in Midland in February of this year—an all-day—and a meeting into the evening, to discuss the programs that were going to be put in place, being proposed by Consumers Power Co.

We had written input from members of the public and the intervenors, and a meeting was even held back in Washington at which the intervenors were allowed to attend, where further discussion was going on.

I feel we have tried to be responsible in this way. We intend to hold further meetings in the vicinity of the plant during the course of the ongoing work.

Mr. SEIBERLING. Their point was they thought there should be citizen participation in the selection of the third-party oversight.

Mr. KEPPLER. You get down to the point—and I'm going to say it this way—there's a question of: Somebody ultimately has to make a decision. There can't be a handholding, shared decisionmaking process in this business.

Mr. SEIBERLING. I agree. It's a question of how far you should get the public into the operation.

Mr. KEPPLER. I think we are genuinely trying to make sure we are aware of public concerns and I think we made several modifications to the programs as a result of these concerns.

Mr. SEIBERLING. It's a question of judgment. They feel there should be more.

Mr. Moody?

Mr. MOODY. I have two questions. First, Mr. Keppler, you referred earlier to a $120,000 civil penalty that the NRC proposed against Midland. What were the reasons for that?

Mr. KEPPLER. The reasons were for two major violations that occurred in connection with an inspection of the diesel generator building, that we conducted.

One was for multiple items of noncompliance with the quality assurance program. One was for the procedures of handling—identifying problems, where they weren't recording all of these problems. We felt that that was defeating the purpose of trending problem areas in the plant.

Mr. MOODY. You consider these serious violations?

Mr. KEPPLER. Absolutely. I wouldn't have issued the fine if I didn't consider they were serious.

Mr. MOODY. Have any similar situations or occurrences taken place?

Mr. KEPPLER. I'm sorry?

Mr. MOODY. Has anything else of that nature taken place subsequent to those fines? Are you satisfied with their performance?

Mr. KEPPLER. You do realize that the majority of the job is stopped right now. The soils work that is going on is a very piecemeal effort that we are authorizing. I would have to say that, if you ask, are we satisfied? I would have to say not totally. We are still encountering some problems. The inspectors still feel that the attention to detail is not there yet. We are just going to have to be very—to dog this thing in a very painstaking manner to make sure that we get the kind of attention to detail that we want. We are not about to turn this thing loose until we are satisfied that the work will proceed properly.

Mr. MOODY. I have a second question——

Mr. SEIBERLING. We have about 1 minute before the vote.

Mr. MOODY. I would like to follow up my earlier question to Mr. Eisenhut. You said there was no loss of security—of safety. What buildings were you referring to, sir?

Mr. EISENHUT. Principally the example I used was the auxiliary building portion, that I mentioned, where they are putting a foundation completely down to the glacial till underneath. Where I said, in the limit—that is certainly the limiting case in terms of the repair.

It varies somewhat when you go to other facilities. It could be argued when you look at some facilities that perhaps might have cracking in those facilities, one could argue that even though it is acceptable, once you go down to the lower probability numbers, there clearly is a degradation in terms of the difference in numbers.

Mr. MOODY. What would you say about the diesel generating housing structure?

Mr. EISENHUT. Certainly it still meets the threshold of acceptability. But certainly any facility that had—it depends on the degree of crack. If you had extensive cracking such as there is cracking in the diesel building, certainly the probability of a failure of the building would be higher than a brand new building, completely rebuilt.

Mr. MOODY. So your statement to the committee could not be made with respect to the diesel building?

Mr. EISENHUT. It is a degradation. Certainly as I used the limiting case example before it certainly would be, but it would vary as you go to the diesel building and then the other buildings would be in between. There is, in fact, all of those buildings, though, by our evaluation, end up still acceptable from an overall point of view.

Mr. MOODY. My point is that you gave us a threshold concept, but below the threshold there are varying probabilities of something going wrong. You did not agree with that statement. You said indistinguishable probabilities differ. When you discuss the diesels building, however, I think you would probably stand by what I was basically driving at?

Mr. EISENHUT. That's right. On the limiting case if you carefully repair it, it is back to the original.

Mr. SEIBERLING. I'm sorry, we'll have to recess for another 10 minutes.

AFTER RECESS

Mr. SEIBERLING [presiding]. The subcommittee will resume its hearing. Mr. Moody is still recognized.

Mr. MOODY. Mr. Eisenhut—is he still available? Mr. Eisenhut, we'll continue if that's all right with you. We had to break for the vote.

Mr. EISENHUT. Sure.

Mr. MOODY. The point I was trying to make earlier was that we are only talking about relative probabilities. I think you did not agree with me, and I did not make the distinction, building by building. Apparently you were making that disinction because you feel there is a relative probability issue when you get to some of the buildings.

Mr. EISENHUT. I believe the relative probability argument would certainly vary with whom you ask. It is not a hard and fast science you can put your hand on, and I think it varies considerably with the set of experts you ask.

Clearly, it is some kind of spectrum, as you go to a building that has more and more damage, the probabilities of that building surviving, for example, an earthquake event or any other different

phenomena, certainly is going to change. That's patently from basic understanding.

To quantify it is a whole other matter, and we certainly didn't make any effort in our evaluation to quantify it.

We went to the family of consultants that we use and asked them, basically: Do you believe that these fixes, the solutions to the different buildings, would in fact insure that in fact they are adequately safe, using the NRC's regulations as a standard of what's adequately safe?

In the limit, as I said, if you replace the foundation you are back to basically an original structure if they did it right. As you get more and more damage, you would get to a building that just patently, from basic logic, has to be somewhat less capable of withstanding an event.

Mr. MOODY. That's why you surprised me with your answer to Mr. Lujan's question when he asked you if they are any less safe and your answer was no. I followed up later because I said it must be less safe.

Mr. EISENHUT. The record will indicate what I said, but I think I said the numbers would be indistinguishable if you went down and looked at those kind of low numbers. That's what I meant by it.

Mr. MOODY. Does what you are saying apply to all buildings or only certain buildings?

Mr. EISENHUT. I said it would be a variation. They are all going to be low numbers. So, when it gets down to such a low aspect, I don't think you can distinguish any of the numbers. Again, it would vary considerably, with which experts you ask. That's why, you know, we were really in a hard-pressed situation to evaluate these substructure solutions to a problem.

It is a somewhat controversial fix that was imposed on a number of the facilities. It certainly is the first time it was undertaken in a nuclear project. So the staff felt that we really had to go and collect a group of the experts, such as the Corps of Engineers and the Naval Surface Weapons Center and Brookhaven National Lab and another half-dozen or certainly another three or four independent consultant firms, and brought them together to try to reach a collegial judgment. With the different experts in that area, do you agree that this plant can go forth? That this is an acceptable restoration of the margins of safety? And that's what our evaluation basically concludes. That evaluation was issued last fall; that evaluation went to our Advisory Committee on Reactor Safeguards as another level of review of the overall adequacy of the evaluation. They concurred in that overall evaluation and, of course, that evaluation is, now, the subject of the publications that are going on on the Midland project, and undoubtedly they are being tested in that forum.

It is a—you need to look at it in an overall framework. The utility brought in a number of experts. The intervenors are cross-examining on a number of aspects and the staff brought forth another group of aspects.

Mr. MOODY. You are going far beyond what I was asking, which is fine. I'm trying to narrow this issue of acceptable versus distinguishable probabilities. Acceptable is a threshhold and the other is something else. Yet you say that you can't quantify it. But don't

you have to quantify them to decide that they are over the threshold? Doesn't that require a quantification of probabilities?

Mr. EISENHUT. You probably do, implicitly. You probably don't, explicitly. But get down to what you are really talking is a difference in numbers. Your question really related to, is there a change from the fix over and opposed—over and above what you would have had originally in the correct manner?

Mr. MOODY. Your answer was no for the buildings you had in mind; but you admit or agree in the case of the diesel generator building that that indicates——

Mr. EISENHUT. But I can't quantify them because I think they are very small numbers.

Mr. MOODY. But you feel the diesel structure in any event, exceeds the threshhold minimum?

Mr. EISENHUT. No; it is acceptable with the modifications, if the modifications are adequately put in place.

Mr. MOODY. But in design terms it is adequate, and above the threshold?

Mr. EISENHUT. That is correct, and I should caveat that everything I'm looking at, in fact, the office of NRR looks at it from a design basis. We look at it from the basic design. Putting it in place in the construction and seeing that it is adequately carried out is principally in the region, and I really can't address that end of it.

Mr. MOODY. Thank you, Mr. Eisenhut. Could I ask the other gentlemen at the table if they have any comments on that series of questions?

Mr. KEPPLER. I don't.

Mr. GILINSKY. If you want my view, Mr. Moody, it's obviously better to have a building without a crack than a building with a crack. The question comes down to whether it meets, in the end, our requirements. As I say, I don't have a personal view on that.

Mr. MOODY. Mr. Cook?

Mr. RONALD COOK. I don't have any comment.

Mr. MOODY. Mr. Cook, you heard the discussion?

Mr. RONALD COOK. Yes; I don't have any comments with regard to the adequacy of the building at this time.

Mr. MOODY. Mr. Landsman?

Mr. LANDSMAN. I agree with Mr. Eisenhut that the underpinning design is acceptable to the NRC staff. However, the diesel generator building is not one of the structures that is going to be underpinned. It was the 20 feet of surcharge that we heard about earlier this morning that we are using to make the building adequate.

As Mr. Keppler said, there's some members of the staff that do not think the diesel generator building is structurally sound.

Mr. MOODY. They do not?

Mr. LANDSMAN. That's right.

Mr. MOODY. Because of the fact that it merely has a surcharge rather than an underpinning?

Mr. LANDSMAN. More structural integrity. The building is highly cracked. There's no way to really analyze a cracked concrete structure. So it is more the opinion of everybody—if it was acceptable.

Mr. MOODY. This is indeed a revelation that we have a building here that is essential to the safety of the whole operation in case of

power failure, you need these diesel systems in order to keep the pumps functioning; is that correct?

Mr. LANDSMAN. You need it for a loss of offsite power. They are there to generate power to control the plant, to safely shut it down.

Mr. MOODY. If you had a loss of outside power, which you might have in a natural event such as an earthquake, it would be essential that these diesel generators function. If the same earthquake threatened the structural integrity of that building, you might have the same natural event knock out both the failsafe and the backup? In other words, you'd be knocking out the backup itself as well as the primary system which is the very thing you want to prevent? Two things could happen because the same event could trigger both the failures; is that correct?

Mr. LANDSMAN. If you are getting into——

Mr. MOODY. They are not independent probabilities.

Mr. LANDSMAN. If you are getting into probabilities, I think the probabilities that we have been previously discussing—the building is right now standing. I think the low probability that people are talking about is, if you hit it with an earthquake. I agree that there is a low probability that you'll get a certain magnitude earthquake there to hurt the structural integrity of the building. But there is that probability, and you have to design for it.

Mr. MOODY. I'm making a generic statement. One of the characteristics of backup systems is that they have an independent probability attached to them about their failure. So, if you have a joint failure, you have the multiplication of two probabilities which becomes a very small number very rapidly. In addition, if the same event can trigger the failure of both the primary and backup system, you no longer have independent probabilities. One of the ways you lose independent probabilities is to have a structurally threatened system, such as the one we have just described, where the same natural event, an earthquake, could trigger failures simultaneously in both the primary and backup system.

Mr. LANDSMAN. You have the wrong person.

Mr. MOODY. I'm talking with the wrong person. In a generic measure of failure systems, you want an independent probability attached to the system failure of the primary system they are failsafing, otherwise it is not a failsafe system. Mr. Eisenhut knows. Am I right?

Mr. EISENHUT. Partially. You certainly are right. When you look at two systems, if you have the system that's the operational system, you want a backup system that's independent. So that the two systems don't interact.

Mr. MOODY. The probability of their both failing becomes the product of the probabilities—a very, very tiny number.

Mr. EISENHUT. That's correct. However, from the earthquake standpoint, that doesn't apply, because if the earthquake shakes the site, the entire site, everything in the site is going to shake. In fact, both of the redundant systems.

Mr. MOODY. It depends on the nature.

Mr. EISENHUT. If you have an earthquake, the site is going to shake. It is a matter of degree of shaking, in fact, that is going to vary as the magnitude of the earthquake varies. So, as Dr. Landsman said, it is really not a question in terms of the soils at this

point. It is a question—there are existing cracks in the diesel generator building. What you have to look at is, what is the probability of an earthquake of sufficiently high magnitude, such that it will, A, cause an accident, and, B, an accident which has a loss of off-site power associated with it; and also fail the diesel generator building to such a magnitude that it will, in fact, disable the emergency power system. So, that sequence of events is a probability of an earthquake is what you start with, as Dr. Landsman said. That's a low probability.

Mr. MOODY. Of that magnitude.

Mr. EISENHUT. It has to be big enough to fail the diesel building in such a way to disable the AC power.

Mr. MOODY. That's a very different number than it would be if you did not have the cracks in the building.

Mr. EISENHUT. It is a different number and that's why you have to go to——

Mr. MOODY. Significantly different number?

Mr. EISENHUT. I won't necessarily agree with that. But I will—let me put it this way. This is now not a soils question. It is a structural question of concrete, steel-reinforced structure. So what we had to do then was go to the structural experts and ask them for their judgment. Because there really is not a hard-and-fast formula for analyzing it.

You go to their judgment and their judgment would be that the probability of it is still low enough. But it certainly is higher, from basic logical sense, the probability of that structure failing has got to be higher for a given earthquake than it was before.

Mr. MOODY. Low enough probability was what we are discussing. It's almost a contradiction to say you have enough certified about a number to say it is low enough, but not enough to quantify it. I don't want to drag this out any further. Thank you, Mr. Chairman.

Mr. SEIBERLING. Thank you.

Mr. Landsman, the testimony of Mrs. Sinclair contained several problems which she highlighted. One is, she says that concerns and recommendations of field inspectors are overruled by NRC management, and that NRC management performance is too often placed ahead of public health and safety.

I would like to ask Mr. Landsman, Mr. Cook, or Mr. Gardner, do you agree with that statement? Mr. Cook?

Mr. RONALD COOK. No; I do not completely agree with that statement. I think that Mrs. Sinclair is making reference to an issue that we discussed at the hearings referred to. The staff that was on an inspection wished to issue a confirmatory action letter to the licensee; our conversations with our regional office indicated that that would be forthcoming. However, the next following week we were informed that it would be this—we termed it a reverse confirmatory action letter, in which the licensee spells out the items that we would have put into our letter, except it comes out under their letterhead.

The inspection staff was, as Mrs. Sinclair, I think, indicated in her statement, were somewhat disappointed by this. Or embarrassed, whatever the term might be. However, our desires were that the work would be stopped, and, as a net result, that ultimate result did transpire in the electric area and brought under control.

Mr. SEIBERLING. Is this something that happens frequently? This so-called reverse confirmatory action letter?

Mr. RONALD COOK. Of course, we don't have that many confirmatory action letters to start with. We have had, in the last, oh, I'd say 20 months or so--maybe 18 months, that there were two confirmatory action letters and this reverse confirmatory action letter. So, the ratio there would be one-third to two-thirds.

Mr. SEIBERLING. When you say reverse confirmatory action, instead of NRC writing a letter to the licensee, asking him if he's doing certain things, you can merely give the licensee the opportunity to write a letter first and say it? Is that what you are saying?

Mr. RONALD COOK. Yes, sir. My understanding is our present policy is that we write all confirmatory action letters at this time.

Mr. SEIBERLING. All right. Do you want to comment on that, Mr. Landsman?

Mr. LANDSMAN. The only comment I want to make, in the Midland special section that we are in, we get to voice our concerns to our management all the time. It is up to the management to make the decisions of what to do with our concerns.

I think we have said it in the hearing stand in the ASLB hearings. If we really felt very strongly about something there is a way—ways to voice our concern. We have a dissenting opinion or whatever.

Mr. SEIBERLING. Mr. Gardner, do you have anything to add?

Mr. GARDNER. No; I agree with Dr. Landsman and Mr. Cook.

Mr. MOODY. I want to return to what you said, Dr. Landsman. You said that certain of the staff do not feel that the diesel structure meets the sufficiency standard. Am I characterizing what you have said about 10 minutes ago correctly?

Mr. LANDSMAN. I think I said some of us think it is structurally unsound because of the crack.

Mr. MOODY. Because of the crack. Do you think it should be rebuilt?

Mr. LANDSMAN. I never looked into how you could fix it. You could build a new wall around it and fasten it together. We really never got into how to fix it. It is just some of us, because it is very difficult, almost impossible to analyze, as I was trying to say, a crack.

Mr. MOODY. But your statement is a strong one, as I understand it. Would you say it again how you said it before?

Mr. LANDSMAN. Some of the members of the staff—or I'll speak for myself, I guess—think it is structurally unsound. There are a lot of cracks in it.

Mr. MOODY. Mr. Chairman, that's a pretty strong, compelling statement.

Mr. SEIBERLING. It is. I'm still unclear how important the diesel generating—the diesel structure is from a safety standpoint as compared to the auxiliary structure.

Mr. LANDSMAN. It is as important a structure as you have onsite.

Mr. SEIBERLING. I see. Then they are taking steps with respect to the auxiliary power structure but not the diesel structure?

Mr. LANDSMAN. No; we are—they are underpinning the auxiliary building, that's bringing the foundation down to the hard material;

the service water pump structure, we are bringing the foundation down to the hard material; they are rebedding and replacing a great majority of the essential service water piping on-site; they are rebuilding the foundation of the borated water storage tanks, which are also important, if those crack.

The diesel generator building, early in the game in 1978 or 1979, their consultants have decided to surcharge the building, piling the sand on it, trying to get all the settlements out. In the course of getting all the settlement out of the soils, they continued to build the building. So, while they were trying to sink—trying to get the settlement out of the building while the building was settling, and they continued to build it. During this whole course of time it continued to crack more and more.

Mr. GILINSKY. Mr. Chairman, I think it is worth understanding what the possible consequences here are. What we are worried about in the diesel generator building, as far as I can understand, is that the wall, if unsound, might fall on equipment that is important for safety in an accident. In the other case, you are talking about rather more serious consequences.

Mr. SEIBERLING. That was my reaction, but I don't know——

Mr. GILINSKY. The diesels are the emergency source of AC power. They can be very important. There's no question about that. You don't want anything falling on them.

Mr. SEIBERLING. Maybe they ought to tear down the building and just put them in a tent.

Thank you. We are going to have to recess again. Let me just ask you again, one other question, Mr. Landsman.

Mrs. Sinclair said very recently, on May 6, the chief soils engineer at Midland, Dr. Ross Landsman, testified that the fact of attempting to force a natural floodplain area in a nuclear plant site in the initial design of Midland, the safety related building was designed to set on natural glacial till and so forth. Dr. Landsman was asked by a Consumers Power Co. attorney, "if fill material had been placed properly and, in fact, the proper quality assurance had been followed, the Midland facility could be operated with due regard to public health and safety?" Dr. Landsman's answer was the personal opinion of the soils engineer, "No."

Is that correct?

Mr. LANDSMAN. Yes; that is.

Mr. SEIBERLING. Is that still your opinion?

Mr. LANDSMAN. My personal opinion, had the fill gone in right, I still think as a soil engineer during a 40-year operating life of that plant, we would have had a differential settlement problem.

Mr. SEIBERLING. So in other words your opinion has been overruled.

Mr. LANDSMAN. No, no. We are correcting that, though. We are underpinning most of the installation, except the diesel generator building.

Mr. MOODY. Mr. Chairman, could you yield for a second?

Mr. SEIBERLING. I'm a little puzzled at this point.

Mr. MOODY. Mr. Keppler, who made the decision not to underpin the diesel while doing it for the other?

Mr. KEPPLER. I think the company made that decision.

Mr. MOODY. Why did we let them make that decision if we still have an unsound structure in a basic safety component?

Mr. KEPPLER. This was the proposal adopted by the company. It was reviewed by the staff here in Washington and they accepted that position.

Mr. MOODY. We have one staff person who just testified that it is unsound as it is.

Mr. SEIBERLING. That's where I am a little confused. I think maybe what Dr. Landsman's testimony was, in his opinion this was not a suitable place to put a plant. Is that right?

Mr. LANDSMAN. No, no, no, that's not what I said. I said that the original design of those structures, and my own opinion, because they were cantilevered out from the rest of the building and supported on uncompacted fill while the rest of the building is sitting on hard, natural material, you are looking for differential settlement problems. But as the original design——

Mr. SEIBERLING. The fill is improper as a basis. Is that what you are saying?

Mr. LANDSMAN. I'm saying the original design of the buildings was improper.

Mr. MOODY. It is inherent in the design.

Mr. LANDSMAN. That's a better way.

Mr. SEIBERLING. But do you agree that the steps that are now being taken, if taken properly, will eliminate that aspect of the problem?

Mr. LANDSMAN. Yes; except the diesel generator building.

Mr. MOODY. Except the diesel generator.

Mr. SEIBERLING. OK. I see.

Mr. MOODY. Mr. Chairman? I know we have to go but, again, why is the NRC allowing this situation where the diesel generator building is, at least by some testimony here, unsound, and it is a major safety component?

Mr. EISENHUT. Let me try to answer your question. If you have need to know and need to do an evaluation on the structural adequacy of a building, we have a special group called the structural engineers. We go and ask the structural engineers and they go get the appropriate—the best consultants that they have under contract that they get.

If you go to a soils problem, and want to evaluate the soils, you go to the soils engineers.

Dr. Landsman is a soils engineer. There is a spectrum of views. He may have views just like I may have views on a number of things in the plant. But in this case, we went to the structural engineers to determine our position on the structural adequacy of the diesel building.

Mr. MOODY. So you are saying he's speaking outside his expertise?

Mr. EISENHUT. I'm saying we went to that group. We didn't go to other individuals. I don't know Dr. Landsman's background well enough to argue that he's outside his field or not. But I do know that we went to that center of excellence that we have set aside, structural engineering, with their consultants, to do the determination on structural engineering and there is a spectrum of views

even within our staff. But it will come to a conclusional judgment at one level, which is what they did in our safely safety evaluation.

Mr. MOODY. Is it possible to segment the problem into structural problems independent of soil problems? Don't they interact? Your expectation of what structural solution is needed depends on what the soil conditions are, correct? Isn't that a dangerous dichotomy to segment the problem? To ask the structural people an isolated question and ask the soils people an isolated question and really it is the interaction of the two that is necessary?

Mr. SEIBERLING. Can you give a short answer?

Mr. EISENHUT. We did not ask them to do it in isolation. We asked them to do it working together. But when you get to someone who has to make a decision, you have to go back to the center of the knowledge in that area and they have to take into consideration everything they hear from the other disciplines, be it soil, mechanical, quality assurance, whatever, which is what they do; but they do not work in isolation.

Mr. SEIBERLING. Would you like to dispose of the NRC witnesses before we leave?

Mr. MOODY. Procedurally, I assume you mean? [Laughter.]

Mr. SEIBERLING. The clock is ticking. First of all, Mr. Eisenhut, do you think that someone who, like Mrs. Sinclair, in looking at this from a nonexpert point of view over 10 years, would be considered biased if she came to the conclusion that this is not a suitable place to locate this plant in the first place?

Mr. EISENHUT. I certainly don't know enough personally about Mrs. Sinclair, whether or not she is biased.

Mr. SEIBERLING. I mean anybody. Any layman, let us say.

Mr. EISENHUT. Some people are and some people aren't. Just as Congressmen are and regulators are.

Mr. SEIBERLING. I'm not asking was she biased. I'm asking would it be a reasonable thing for someone, after reviewing all these facts, to come to the conclusion, not being an engineer, that this shouldn't have been put in this location in the first place?

Mr. EISENHUT. Let me try to answer it this way. I would agree, and I have stated I have agreed with a number of the points she's made. I don't think they are of the magnitude that would conclude that the plant can't be built in this location.

Mr. SEIBERLING. Would you say reasonable people could differ in that position?

Mr. EISENHUT. Absolutely.

Mr. SEIBERLING. That's all I'm asking. Now, let me ask Mr. Keppler, I read to Mr. Selby and Mr. Cook of Consumers Power, the statement of the NRR inspection staff. Is that a correct summary of their viewpoint?

Mr. KEPPLER. Yes; it was.

Mr. SEIBERLING. Do you agree with that, inspectors?

Mr. GARDNER. I wrote it, so I guess I do.

Mr. SEIBERLING. How about the others?

Mr. LANDSMAN. We agree.

Mr. RONALD COOK. I agree.

Mr. SEIBERLING. Do you agree that the response Mr. Selby gave me is a correct response to all those five points, or is accurate in

summary? Maybe you'd rather wait and look and see what he said in the record?

Mr. KEPPLER. I do recall the last item, I was in disagreement on.

Mr. SEIBERLING. Lack of an adequate quality assurance attitude?

Mr. KEPPLER. Yes; an aggressive quality assurance attitude.

Mr. SEIBERLING. Aggressive quality assurance attitude.

Mr. KEPPLER. That was one of them, and I think I would disagree with that point of view. I feel that a more aggressive quality assurance approach by the company would have headed off a number of these problems.

Mr. SEIBERLING. Do you feel that way, Mr. Landsman?

Mr. LANDSMAN. I'll agree with Mr. Keppler.

Mr. SEIBERLING. Any of the other inspectors? How do you feel?

Mr. GARDNER. I agree with Mr. Keppler.

Mr. RONALD COOK. I agree with that. In fact, we'll stress that.

Mr. SEIBERLING. This has been one of my biggest concerns in this whole field of nuclear power. I have the feeling that too many companies do not have the right attitude toward quality control, and zero defects. In fact, I would extend that to a lot of American industry, and that's one of the reasons that we are in big trouble in our economy in competing with the Japanese and others.

Do you feel that they are taking steps now to correct that attitude? Not just to correct already pointed out deficiencies?

Mr. KEPPLER. I do. But I would have to say I have been disappointed before, and that's the reason for the insistence that we have a backward look and a forward look at this project. I feel that I can't have the confidence in this aggressive attitude, approach of the company, without a sustained demonstration of it.

Words just aren't good enough.

Mr. SEIBERLING. What do you feel is the root cause of this problem?

Mr. KEPPLER. Mr. Seiberling, if I knew the root cause of the problem, I would have fixed it. I have tried to look into what really contributes to the problem, and you can get as many views on that subject as you go around this room. But, when I looked at all of the efforts, by my staff and others to try to pinpoint the problems, we came to the conclusion that we really aren't sure why Consumers Power is having trouble.

As we pointed out earlier, they have dealt with the Palisades problem successfully. And I think they mean well, but for some reason they haven't been able to come through. And we are just going to persist in our efforts.

Mr. SEIBERLING. I just have one other point. Ms. Garde listed six things that on Monday they requested the Commission to do. I guess the answer as to what they are going to do about that will become apparent when they have acted on the request; but, will the Commission take up those items and give it some consideration?

Mr. GILINSKY. I hope so, Mr. Seiberling. I hope that our meeting the other day was the first of a number of meetings and that we will pursue our role in this project.

I think that it is obviously one of the half dozen trouble-plagued projects around the country. And it requires a hand-tailored solution.

Mr. SEIBERLING. Thank you very much. I think that that concludes our testimony of this panel. I do appreciate your coming in and I'm sorry to keep you so late. We'll now proceed to the next panel. I have already missed that call.

Mr. GILINSKY. Thank you, Mr. Chairman.

Mr. SEIBERLING. Our next witness is the mayor of Midland, the Honorable Joseph Mann.

[Prepared statement of Mayor Mann may be found in the appendix.]

STATEMENT OF HON. JOSEPH MANN, MAYOR, MIDLAND, MICH.

Mr. SEIBERLING. If you could summarize it, I would really appreciate it, because I have three more witnesses after you and we are starting to run out of time.

Mayor MANN. I understand that, Mr. Chairman.

Mr. SEIBERLING. Without objection, your entire statement will be included in the record.

Mayor MANN. Mr. Chairman, the city of Midland appreciates your invitation to appear today. You have asked for my views as mayor on the NRC's procedures for handling construction quality at the Midland nuclear powerplant. I, of course, cannot testify as to the quality of the actual construction. I cannot speak on the internal resources needed by the quality assurance program. I can speak to the perceptions of quality as viewed by local governmental leaders. I can offer my recommendation on what the NRC's objectives ought to be.

In any undertaking in this magnitude, errors will be found during the construction processes. Sound judgment dictates that after errors are discovered that they be reviewed, that corrective action be determined, and that corrections be completed in an orderly and timely fashion.

Compounding the foregoing, however, it's apparent that specifications and rules are being changed on a continual basis and this inevitably leads to some misinterpretations and confusion.

My community has been subjected to almost daily newspaper reports on controversies and alleged deficiencies in the construction process. While most citizens are concerned that the plant will be constructed so that it will operate safely, perhaps surprisingly all of this publicity has not led to fear or flight.

We also have to distinguish between those who have legitimate safety concerns which should be addressed and those whose objective is to fault or cripple nuclear power. The real agenda of the latter is not the construction of a safe plant, and this end should be clearly recognized.

Nuclear power is in trouble and the system is partly to blame. The construction of nuclear powerplants just has to be an orderly process, and it is not an orderly process.

My recommendations to this subcommittee are as follows: There must be a calm, rational process of review. Rhetoric needs to be toned down. Risks must be realistically appraised. The power company does not have, nor could it be expected to have, in-house expertise in all areas of construction. In order for them to provide oversight or inspection in such areas, the company has to hire a

third party to review the contractor or subcontractor quality control.

We would recommend a single organization for resolution of quality assurance issues.

There must be clear lines of responsibility and expeditious resolution of problems.

The NRC as a regulator should have the prime role, if not the sole role, of construction oversight.

There should be an adequate number of onsite inspectors and these inspectors must be adequately trained. These inspectors must be thorough and capable of understanding the quality assurance process and its problems.

They, and the NRC, must provide constructive solutions, not merely be faultfinders.

While recognizing that the NRC sees its role as one of regulation through review, the process of do, undo, and redo, benefits no one and causes greatly increased costs and continuing delay.

We would suggest that the NRC be given the role of onsite inspection in critical areas, and be the only and final arbitrator for the approval and continuation of work on the safety-related systems.

Notwithstanding the foregoing, we are convinced that the problems that have come up thus far are being taken care of conscientiously by the NRC and that the plant can be finished in accordance with the applicable standards.

We also believe that it will be possible to operate this plant after it is licensed with safety.

Confidence, character, and reputation are qualities that are earned over a period of years. Consumers Power has been a reliable provider of power and a quick responder in emergency to the city of Midland for most of this century. To shake that confidence, to doubt that character, to impugn that reputation, would require a lot more evidence of the problems than have surfaced up to now in connection with this project. A diversified energy supply is essential to the economic well-being and safety of our Nation and the State of Michigan. Industries in the hard-hit northeastern industrial regions of our Nation need long term competitive electric and steam power. Nuclear power must be a part of that energy supply. We must realistically recognize the limitations of our natural resources and energy demand of not only ourselves but the world.

Nuclear power may represent the best hope for the abatement of acid rain, and a stable energy source during the interruption of other energy sources. It is essential that the new Midland plant be completed and completed safely and soon. Thank you, Mr. Chairman.

Mr. SEIBERLING. Thank you very much, Mr. Mayor. Of course, NRC does have two onsite inspectors. You recommend that they have the prime role of construction oversight and the onsite inspection in critical areas. Do you feel that the number of onsite inspectors is sufficient?

Mayor MANN. I think that my view of the subject is that it would be better to have even more onsite inspectors. Perhaps I'm going back somewhat to the role of my work in a packing house before I entered the Navy; that where the Department of Agriculture fur-

nishes meat inspectors and they do the inspections, and not come in and reinspect somebody else's work or come in and audit somebody else's work; they are responsible for all of the inspection in the plant. I think the presence of the NRC in a more viable form would be desirable.

Mr. SEIBERLING. I tend to agree with you. What is your reaction to Mr. Keppler's statement that he does not know what is the root cause of the problem of business? Do you have——

Mayor MANN. I think the reaction of all of us is, if you don't know what the cause of the problem is, you can't tell somebody else what it is and how to correct it.

Mr. SEIBERLING. Certainly there could have been a little more care taken, obviously, somewhere along the line with respect to the original decision to use compacted soil. Where that oversight failed is not completely clear, apparently.

Mayor MANN. I get the impression from remarks made earlier in this session that the testing of that soil was not adequate. Perhaps had the testing been done on another location, or by the NRC, it may have——

Mr. SEIBERLING. How do you feel about the generator building? We had testimony today that that situation ought to be corrected too?

Mayor MANN. It is good to point out that that's an emergency situation. I can't remember what the chances of an earthquake of any magnitude are in Midland, but they are pretty low, to have an earthquake of anything on the Richter scale. I think you would have to go to the experts; and I get the impression the NRC has gone to the experts, the structural experts and stuff and come up with the conclusion based on the probability that is very low that anything would happen to that building.

I think earlier in the session, when the Consumers Power people were saying is there any radioactivity, either you or Chairman Udall, I can't remember at that time—it came out these are electrical connections. Perhaps there should be more flexibility in those cables so that some settling would not present the problem it does. But now we are getting into engineering aspects which are better left to these experts.

Mr. SEIBERLING. All right. Do you feel comfortable or uncomfortable about this situation?

Mayor MANN. I feel comfortable with the NRC's oversight, with the attention that they are paying to the problem, that things will be put right.

Mr. SEIBERLING. Thank you. You live in Midland. If you feel comfortable, I suppose that's significant.

Mayor MANN. Yes; and I think the population feels reasonably comfortable. We have had 4,600 homes built within a 2- to 5-mile radius since that powerplant started in 1972, up until 1982. This year we have 89 construction permits within that same radius. So I don't see any great concern in that respect.

Mr. SEIBERLING. Well, thank you very much.

Mayor MANN. Thank you.

Mr. SEIBERLING. Our final panel consists of three witnesses: Mr. Joseph Cribben, research and legislative director, United Association of Plumbers and Pipefitters; Mr. Marshall Hicks, secretary-

treasurer, the Utility Workers Union of America; and Mr. George Such, Jr., business manager, United Association of Local Union 85.

[Prepared statements of Marshal Hicks, Joseph Cribben, and George R. Such may be found in the appendix.]

PANEL CONSISTING OF MARSHALL HICKS, SECRETARY-TREASURER, UTILITY WORKERS UNION OF AMERICA; JOSEPH CRIBBEN, RESEARCH AND LEGISLATIVE DIRECTOR, UNITED ASSOCIATION OF PLUMBERS AND PIPEFITTERS; AND GEORGE R. SUCH, JR., BUSINESS MANAGER, UNITED ASSOCIATION OF LOCAL UNION 85

Mr. SEIBERLING. Mr. Cribben, would you like to go first?

Mr. CRIBBEN. I would like Mr. Hicks to go first please.

Mr. SEIBERLING. OK.

Mr. HICKS. The Utility Workers Union of America represents approximately 250 operating and maintenance employees of the Consumers Power Co. who are currently assigned to the Midland nuclear generating plant. In addition, this same union represents approximately 5,000 other operating, maintenance and construction employees of this employer, all of which are located within the State of Michigan. Many of which live within a radius of the Midland nuclear generating plant. The Utility Workers Union of America also represents operating and maintenance employees of nuclear generating plants at Consumers Power Co. and other companies located in various parts of the country.

The UWUA members located at the Midland plant are well trained and experienced in their particular craft or activity, all having been transferred from other operating nuclear or fossil fuel plants owned and operated by the Consumers Power Co. All have been in training for this particular plant for a considerable period of time, and their training is still continuing today.

The workers represented by the Utility Workers Union of America are not involved directly in the construction of the plant or the installation of the equipment. They are, however, very concerned with the quality of the work, as it will be these workers who will remain at the site after the construction is completed, to operate and maintain the facility.

As various systems and components of the plant are completed and turned over to Consumers Power Co., UWUA members take over and participate in the operation and testing of these systems and components and are actively involved in the operation and maintenance of those systems and components from that time forward.

A number of the systems and components have been turned over to Consumers Power Co. and are currently being operated and maintained by UWUA members while they continue their training for eventual full operation of the plant.

As we previously stated, the workers at the Midland plant who are represented by the Utility Workers have more than a passing concern for the quality of construction and the safety of the plant once it is placed in full operation, as it is their livelihood and personal safety which is at stake. Therefore, our members have not been, and were not reluctant to report to the management any pos-

sible deficiencies discovered in the construction of the plant or the installation of any equipment.

It has also been our experience that the management of Consumers Power Co. has been very candid and open with the local union officers and the workers assigned to the Midland plant. The problems encountered in the construction process have been explained and the management has encouraged the union and the employees involved to report any deficiencies observed so that corrections can be made. We, as a union, consider it a most significant situation, when the chairman of the board for Consumers Power Co. meets on a repeating basis with the union leadership to make sure the union understands the management's commitment to immediately respond to, and to make corrections where necessary, when such reports are made—the commitment to quality assurance, that is.

On April 26 of this year, I was present for a full day's meeting at which time the plans for the completion of the plant construction were discussed in full detail with the UWUA local union leadership, including the increased emphasis on the quality assurance program. We feel confident, and our members at the Midland plant are equally confident, that the management's commitment to completing the plant construction and its dedication to the excellent quality of the work will insure a safe and secure workplace when the delays are eliminated and the facility is eventually placed in full operation.

Mr. SEIBERLING. Thank you very much. Mr. Cribben?

Mr. CRIBBEN. Yes; I'm representing both the United Association here today, the United Association of Plumbers and Pipefitters, which is 1 of 15 unions making up the building and construction trades department of the AFL–CIO, and I am also authorized to represent the department. With me on the panel, along with Marshall Hicks, is George Such, who is the business manager, that is the top elected official of our local union, the United Association Local Union 85, in Saginaw, Mich., Mr. Such, who worked at the Midland project for 7 years, most of that time as general foreman, will testify as to the specific working conditions at Midland relating to the quality of piping installations, relationships with quality control inspectors and other matters concerning the Midland project.

Before you hear from him, we feel it may be useful for the committee to hear a brief overview of construction labor's general role and policies with respect to nuclear powerplant construction.

On the average, a 1,000-megawatt nuclear powerplant provides about 8,400,000 man-hours of work for the crafts represented by the building and construction trades department. The members of the union I represent here, the United Association, typically perform about 28 percent of those man-hours of work. Those construction workers represented by the Laborer's International Union would be next in line with 17 percent, followed by electricians at 12 percent.

On union projects, most of the nuclear qualified welders are pipefitters, and members of the United Association, although other crafts, particularly ironworkers and boilermakers, also perform high tolerance nuclear qualified welding processes.

The building trade unions believe that both nuclear and coal have a role to play in insuring adequate electrical energy now and in the future. We believe we have a responsibility to provide the skilled craftsman, mechanics, and laborers for those projects, regardless of the fueling method chosen by the utility.

At any given time my own union has about 30 house apprentices in training on the job and in classrooms around the country, as well as an estimated 50,000 journeyman in special training programs to keep their skills up to date. This was an ongoing process put in place many decades ago through collective-bargaining agreements with our local union and national contractors.

Within the plumbing and pipefitting industry, both the contractors and the union take great pride in the training programs we have developed and consider these programs to be the best, most comprehensive, and widely recognized of its kind anywhere in the world.

The training programs are financed by collective bargaining—let me first point out that the United Association right now has approximately 300 private training schools located in the various affiliated local unions, and associated with the local unions in communities all around the country and Canada.

The training programs are financed by collective-bargaining agreements that allocate a certain amount of money, usually ranging from about 10 cents to 35 cents an hour, for each hour worked by UA members.

The UA training effort represents a deep commitment to the future of our construction industry, and of the Nation. This deep concern is matched by the commitment of union contractors who recognize the need to train for tomorrow's needs.

For the past 30 years the United Association has operated a summer program at Purdue University to provide intensive training for our journeymen and apprentice instructors. After 5 years of attendance at Purdue, instructors are awarded a certificate by the university as qualified instructors in the plumbing and pipefitting industry. Over 1,200 instructors attended the last program and over 2,000 have received their 5-year completion certificates.

Some 20,000 people have attended those courses since they began 30 years ago.

Many others attend and do not complete the entire course but take specialized programs, including many in the welding category, specially in the high tolerances. They then go back and teach this to both apprentices and journeymen.

Our investment in training is enormous. I can't give you a precise dollar figure, but you can be sure it amounts to many millions of dollars over the years and other building trades unions have similar programs. We feel the committee should be given this background so you may understand that there is no fly-by-night approach to skilled training in the unionized construction industry. Our members know that their skill is their stock in trade, and top quality performance on the job will mean increased job opportunities in their working lives. In view of the sometimes scathing and shotgun attacks on not only inspections but on the quality of the craftsmen's work itself at Midland and other construction sites, we feel our presence at this hearing may help to put our concern

about top quality training programs in sharper focus for the benefit of the committee, and perhaps to provide some reassurance for the general public.

My union, and the building trades department of the AFL–CIO, fully appreciates the work of the committee in utilizing its oversight responsibilities where nuclear construction is concerned. The Nation needs to make maximum safer use of its two major energy resources, nuclear and coal, to insure an adequate supply of electrical energy in the future. Without that sure supply of energy, we fear for the Nation's economic future. Many of our members are included among the millions who are jobless today. Only sustained economic recovery will put those men and women back to work, and recovery will inevitably bring with it increased demand for electrical energy. We do not want to see economic growth stifled in the near future by our failure to meet that demand.

Finally, to say that nobody is more concerned about safety at nuclear powerplants than the people who are building them; most of whom live with their families in nearby communities. We applaud the work of this committee in making sure the highest of safety standards will prevail at Midland and elsewhere. Thank you.

Mr. SEIBERLING. Mr. Such?

Mr. SUCH. Thank you very much for giving me the opportunity today to speak before this committee and share with you the views of the building tradesmen and women who are constructing the Midland nuclear plant.

I am speaking on behalf of the vast majority of nearly 2,000 construction craft workers employed at the Midland worksite when I say that there is a great deal of pride, commitment, and determination to perform our job properly. As the business agent for United Association Local Union 85, I have direct knowledge about the quality of the workmanship going into building the Midland nuclear plant. Prior to serving as the local union business agent I worked as a craftsman, foreman, and general foreman at the plant for 7 years. I believe that I have firsthand personal knowledge of this project, plus an understanding of the approximately 600 pipefitters and welders from my local labor union currently working at the plant.

Our highest priority and responsibility is to follow regulations and procedures properly to insure that we are building a safe plant. Most of our construction force at Midland are local residents. They are not going to take shortcuts in building the plant that could impact on their safety and the safety of their families. The construction codes and regulations for building a nuclear plant are stricter and more detailed than for building any other type of electric generation plant. We see this daily in the performance of our jobs.

Likewise the training program, certification process, and inspection requirements for our construction workers at Midland are much greater than for any other kind of work. The welding and pipefitting I have seen in that plant is of the highest quality. The men and women who are performing this work are skilled, trained, and conscientious.

The craftsmen follow strict quality control and quality assurance rules and regulations at the Midland plant to insure that safety is

not compromised. We have in place at the local union a program for our workers to tell their union leadership if they believe that safety and quality are being compromised. The business agent or local president in turn can meet with the contractor or utility to make sure that any problems are corrected. The overwhelming attitude of our workers is that they believe that the quality of the Midland job is first-rate, and the most common statement heard from our welders and fitters is that there probably is an excess of regulations and overinspections at a nuclear powerplant construction site.

Our workers know that onsite programs are in place, that they can go directly to the project quality assurance department, or to the Consumers Power site manager or construction superintendent if they believe that quality programs or safety programs are being compromised. There are programs in place where our local union stewards meet regularly with the project management to insure that communication between the organizations on-site is effective and that no coverups exist. The craftsmen are well aware of internal union mechanisms and onsite direct communication channels to make sure that they understand their job, have proper training and equipment to perform their job, are aware of codes and regulations to follow in completing their jobs, and understand the needs and commitments for the overinspection of their work.

I want to reassure this committee that the Midland nuclear plant is being built safely. The crafts men and women at the job site would have it no other way. The union leadership of my local and other building trades local unions working at Midland also will have it no other way.

Mr. SEIBERLING. Thank you very much, gentlemen. Of course the quality of workmanship on this project is not the primary question that we have been dealing with today. The primary question is the adequacy of the design, and the appropriateness of the remedial work that has been done to correct the originally mistaken decision to use fill and the adherence to regulatory requirements of the NRC. I must say, I think it is greatly to the credit of your people that you are concerned about the jobs, and that these people who are working there have the concern you expressed about doing quality work.

I'm sure that that's the case with at least the vast majority of them. However, we did have some testimony to the effect that a significant percentage of the welders were inadequately trained and that in some cases the cad welds on the rebars were not properly welded.

Would you care to comment on that, Mr. Such? Or Mr. Hicks?

Mr. CRIBBEN. I think, Mr. Such.

Mr. SUCH. As far as the cad welds, that wasn't from our local union, who had done the welding part of that. I'd rather not comment on that. As far as welders not being properly trained, I don't agree with that.

I believe that the welders are properly trained. In order to become a welder for that project, first of all, they must have 4 years' experience in the pipewelding, pipefitting industry. When they have gained that experience they become a journeyman, or else they have to go through a special program. Before they can go

to work in the project they are tested out there. They are not all at the same level, but the tests that they are given, they weld to that qualification. So I do believe that the people out there are properly trained.

Mr. SEIBERLING. How do you explain these mistakes? What is your understanding of what caused these deficient welds? Do you have any knowledge of that?

Mr. SUCH. As far as the deficient welds, I think that—this is my own opinion, we are saying good and bad welds—I actually believe that possibly we are talking the difference between a nearly perfect weld and a good weld. This is the distinction that should be made.

Mr. SEIBERLING. Do you feel that quality control is adequate?

Mr. CRIBBEN. At Midland?

Mr. SEIBERLING. The company's quality control program?

Mr. SUCH. I really don't have that much to do with the quality control program, the way it is set up. With our dealings with quality control people there, we always had a good relationship; and anything that they said was not up to standard, we fixed.

Mr. SEIBERLING. That's reassuring.

Mr. Hicks, do you feel that the emphasis on quality control by the company is adequate?

Mr. HICKS. I think in our relationship to the quality control, whenever a system is completed by the contractor and turned over to the company as a completed project, our members are then assigned to test operate the system and make sure that it is adequately installed or constructed, as the case may be. In those instances where they find anything that is not to their satisfaction, the project is returned to the contractor, the repair is made, it is retested until they are satisfied that it is proper.

Mr. SEIBERLING. I see.

Mr. HICKS. It is not really part of the formalized quality assurance program, but at least when those systems are finally accepted as operational, they are fully tested by people who are qualified and know what they are doing.

Mr. SEIBERLING. Is there a zero-defects philosophy in the company?

Mr. HICKS. It is now. I can't say that it has always been there, but it is there now, yes.

Mr. SEIBERLING. Mr. Such this is more to Mr. Cribben. I thought you made an excellent statement. Are you familiar with the record in the Zimmer plant?

Mr. CRIBBEN. I have read some of the testimony before your committee on Zimmer, but not in any great detail.

Mr. SEIBERLING. That's really a horror story.

Mr. CRIBBEN. Yes; in some ways.

Mr. SEIBERLING. Quite a few ways, I'm sorry to say. There were stories about fudged records and fudged X-rays and deficient welds. How do you account for that?

Mr. CRIBBEN. I can't account for it. Part of it is not in our jurisdiction, so to speak, the inspections themselves.

Mr. SEIBERLING. The welders were highly criticized.

Mr. CRIBBEN. The judge partially answered that——

Mr. SEIBERLING. I'm not talking about the Midland plant.

Mr. CRIBBEN. Zimmer, where there was a greater number of welds.

Mr. SEIBERLING. There were talks about all kinds of shenanigans from prostitution and gambling——

Mr. CRIBBEN. I'm sure that didn't involve our members.

Mr. SEIBERLING. It did. Since you are here, I just wondered how familiar you are with that situation, since it is certainly at odds with the picture you have presented, which I'm sure represents the vast majority of your members. But obviously something is radically wrong at the Zimmer plant, presumably with the welds. They are having to go through every single pipe and check them out all over again.

Mr. CRIBBEN. I'd be happy to get something back to you on Zimmer from the international perspective.

Mr. SEIBERLING. We didn't have anybody from the union testify there and there were some very serious charges leveled at the workmanship of the welders.

Mr. CRIBBEN. That's one of the reasons we wanted to be here today, because of the that kind of charge that wasn't answered adequately.

Mr. SEIBERLING. If you can give us any enlightenment on that, while it has no direct bearing on this hearing today, it certainly has a bearing on our feeling about the safety of these plants.

Mr. CRIBBEN. We'll make sure that we get back to you on Zimmer.

Mr. SEIBERLING. Thank you very much. I think your testimony has been helpful. At this point I'm going to let everybody heave a sigh of relief and declare that this hearing is now adjourned.

[Whereupon, at 2:20 p.m., the hearing was adjourned.]

APPENDIX

THURSDAY, JUNE 16, 1983

ADDITIONAL MATERIAL SUBMITTED FOR THE HEARING RECORD

STATEMENT BY
JOHN D. SELBY
Chairman, President and CEO Consumers Power Company
before
The Subcommittee on Energy and the Environment
of the
House Committee on Interior and Insular Affairs
June 16, 1983

I. Introduction

Mr. Chairman and members of the Committee, my name is John D. Selby. I am Chairman of the Board, President and Chief Executive Officer of Consumers Power Company. I am pleased to have the opportunity to speak to you about Consumers Power Company's Midland Nuclear Cogeneration Plant.

Consumers Power Company is a public utility that supplies electricity or gas, or both, to a service area in the State of Michigan with more than 5.3 million residents, including suburban Detroit and most other metropolitan areas in Michigan's Lower Peninsula except Detroit itself. Industries in the territory served by Consumers Power Company include automobiles and automotive equipment, primary metals, chemicals, fabricated metal products, pharmaceuticals, machinery, oil refining, paper and paper products, food products, and a large agricultural segment.

Consumers Power Company has been one of the nation's leaders in developing commercial nuclear power. The Company's Big Rock Point Plant, a 63 megawatt boiling water reactor located near Charlevoix, Michigan, has been operating safely and reliably since 1962. The Palisades Nuclear Plant, a 757 megawatt pressurized water reactor, achieved commercial operation in 1971. During 1982, Palisades and Big Rock Point accounted for 18.7% of the Company's electric generation.

Consumers Power Company's Midland Plant consists of two pressurized water reactors presently under construction just south of the City of Midland, Michigan. The nuclear steam supply system vendor is Babcock and Wilcox; the engineer/constructor is Bechtel Power Corporation. The plant is 83% complete. When finished, the Midland Plant will provide a total of 1337 MW of reliable electricity for consumers in the State of Michigan at a cheaper production cost than that available from any of our fossil-fueled plants. The Midland Plant is unique in that it is a nuclear cogeneration facility: the heat generated can be used not only to produce electrical energy but also to produce large amounts of process steam for the adjacent Dow Chemical Company Plant. Because of the cogeneration feature, the Midland Plant will be one of the most efficient nuclear plants in the United States if not the world.

The State of Michigan is just emerging from the most severe period of economic distress since the Great Depression. Its long term economic health, like that of the rest of the industrial Midwest, depends on the availability of a competitive and stable energy supply. The Midland Plant is a vital part of the State's energy future.

The Midland Plant is also an important part of Consumers Power Company's future. When completed, the Plant is expected to cost approximately 4.43 billion dollars. This enormous sum is greater than the total value (at original acquisition cost) of all of the Company's other electric assets put together.

With so much at stake in a construction project, no responsible corporate management could possibly be indifferent to design and construction quality; after all, the result we are striving for is a licensable plant which will operate reliably at high capacity factors. Nevertheless, there have been construction problems, particularly the inadequate completion of the full

material upon which several safety related structures are founded, either wholly or partially.

Primarily because of the soils problem, the NRC in testimony before this Subcommittee on November 1981 identified Midland as one of five nuclear construction projects having serious quality assurance problems with broad project repercussions. Historically, most of the construction problems at the Midland Plant have been detected as a result of Consumers' and Bechtel's own quality assurance programs. Moreover, the problems we have detected have been properly reported to the NRC. In addition, over the past few years we have actively solicited information concerning any possible construction deficiencies from site workers through our quality assurance program, which includes procedures for protecting the identity of any informants who request confidentiality.

Consumers Power Company's response to the quality assurance problems which have been identified has been positive and comprehensive. In a series of steps we have assumed direct responsiblity for most quality assurance and quality control functions for the project. We have continued to increase the management attention and other resources devoted to the project. We have hired independent, technically qualified third-party reviewers to assess the adequacy of construction to date and to provide another layer of audit and overview for future construction. The NRC too has maintained significant oversight and control over plant design and construction. All of these activities are being exhaustively litigated before an NRC Atomic Safety and Licensing Board which is currently reviewing the adequacy of Consumers Power Company's proposed remedial soils measures, its quality assurance program and its proposed Construction Completion Plan in contested adjudiatory hearings.

The Licensing Board is expected to issue its partial initial decision on these matters this year.

Quite simply, every effort is being taken to ensure that the Midland Plant when completed will meet all regulatory requirements.

. .

I came to Consumers Power Company in 1973 as president and chief operating officer after a career in engineering and management at General Electric Company, a major US nuclear vendor. Since 1980, I have attended bi weekly briefings at the Midland site through which I am kept informed on all aspects of the project, including quality assurance. Based on my familiarity with the project and my background in the nuclear industry, I know that a total commitment to improving regulatory performance at Midland can be successful. Consumers Power Company has proved this at Palisades. In the early and mid 1970's that plant was one of the first pressurized water reactors to experience steam generator corrosion. Through changes in operating procedures and diligent attention to water chemistry limits we have been able to minimize further corrosion and postpone and perhaps even eliminate the need for costly and difficult steam generator replacement. In the late 1970's and early 1980's, Palisades was troubled by a series of regulatory noncompliances and personnel errors which led the NRC Region III to consider shutting the plant down. Instead, we proposed and the NRC issued an order confirming certain actions designed to improve regulatory performance. These included organizational and management changes, dedication of more company resources, improved training and discipline for plant employees, and an independant third-party review of corporate and plant management. The results have been gratifying. After two years of close review Mr. James Keppler, Director of NRC Region III, commented in January of this year that for the period July 1, 1981 to June 30, 1982, "the improvement in

the Palisades regulatory performance represented the largest single improvement by a utility in Region III". Subsequently, on March 23, 1983 Mr. Keppler stated:

> "We have concluded that your programs to improve regulatory performance have been successful, and there is reasonable assurance that safety-related activities will continue to be conducted in accordance with applicable regulatory requirements."

My testimony describes the specific steps which Consumers Power Company is taking to achieve similar success in meeting regulatory requirements at the Midland Plant. I also describe the independent, third party reviews which will confirm the safety of construction completed to date and provide additional assurance that future construction meets all regulatory requirements. Finally, my testimony includes a brief description of the major remedial measures being carried out to correct the soils-related problems at the Midland site.

II. Consumers Power Company's Construction Completion Program for the Midland Plant

On December 2, 1982, Consumers Power Company initiated a comprehensive program, the Construction Completion Program (CCP), which is applicable to most remaining construction work at the Midland Plant. The overall objectives of the program are: (1) to improve project information status, (2) to improve implementation of the quality assurance program, and (3) to assure effective and orderly conduct of the remaining project work. Beyond these three general goals, we have formulated more detailed objectives which directly and comprehensively address the underlying or root causes of

the problems experienced by the project. The plan entails a number of major changes in the conduct of the final stages of the construction process.

The Company initiated the CCP by halting most safety-related work being performed by Bechtel (necessitating the lay-off of approximately 1,100 workers). The major elements in the Construction Completion Plan are:

1. Consumers Power Company's quality assurance organization has taken over the management of the engineer/constructor's quality control function at the site. As part of this change-over, the quality control inspectors are being retrained and recertified and the inspection process itself is being strengthened.

2. We are performing a thorough review to verify, through reinspections and other means, that the quality of work completed and inspected prior to December 2, 1982 is acceptable.

3. We are reorganizing construction production forces into teams with responsibilities for designated systems or areas of the plant. As a first step, these teams will completely survey the plant to develop an accurate and up-to-date report on construction status. The same teams will then direct the completion of construction of those systems or areas for which they prepared status reports.

4. Consumers Power Company has established a comprehensive system of independent third-party reviews which will provide additional assurance of construction design and quality.

Consumers Power Company's decision to undertake the CCP was prompted by two major factors: (1) an awareness on our part that some areas were not

fully meeting our own and NRC expectations for the appropriate level of disciplined adherence to procedures and requirements, and (2) an increasing level of emphasis and expectation regarding quality assurance on the part of the NRC as a result of events in the industry in the last 18 months. The Nuclear Regulatory Commission's scrutiny of nuclear plant construction quality has always been substantial, but the emphasis and expectations of the Commission regarding quality assurance at construction sites has increased in the last 18 months. Consumers Power has responded to the challenge put forth by Chairman Palladino in his testimony before this Subcommittee in October 1981 and in his December 1981 speech before the Atomic Industrial Forum by improving our quality assurance organization and adopting the CCP.

The details of the Construction Completion Plan can be summarized as follows. All remaining work will be done in two conceptual steps, which are referred to as Phase 1 and Phase 2. The objective of Phase 1 is to obtain a definitive picture of the current status and condition of construction work and quality inspections conducted prior to December 2, 1982. In this step,. Consumers Power will do a complete construction and inspection status assessment of all work covered by the program and will verify the adequacy of completed inspections on prior work. We will do this through a combination of reinspections and documentation reviews. The objective of Phase 2 is simply to execute the remaining work. The plant will be divided into many distinct modules and the CCP sequence will be applied to each module.

To carry out the remaining work more efficiently, we have created a team structure for production work on a system or area basis. The Quality Assurance Department will be directly represented on the various teams through a team quality representative. The program is designed to ensure that the proper independence between production and quality functions is maintained.

Some activities that have demonstrated effectiveness in quality program implementation have been exempted from the Construction Completion Program and will continue during the CCP. These activities include, for example, the soils remedial work and the remaining nuclear steam supply system work being performed by B&W Construction Company.

Since the CCP execution takes place in two phases, there is specific planning for each phase. The Phase 1 planning, which is essentially complete, consists primarily of: (1) planning a team organization to assess the installation and inspection status of Q-Systems and other components within major safety-related structures as previously noted, and (2) planning for the program to verify the adequacy of previously completed inspections. During Phase 1 planning, project construction has established team organizations ready to inspect and assess particular systems for installation status. Also, the Quality Assurance Department has developed the process and procedures necessary to ascertain inspection and status and implement the quality verification program.

As part of Phase 1 planning activity, Consumers Power has also developed a plan to verify that quality inspections previously performed on completed work were done correctly. The first step was to review the Project Quality Control Instructions, which are the inspection plans, in order to improve the total inspection performance and support the verification program. This effort is targeted on improving the clarity and specificity of the inspection plans. The second step is to initiate a 100% reinspection of accessible attributes and a review of documentation for inaccessible attributes within the plant. At some future date, once the quality level of completed work has been established, Consumers Power Company will make a

recommendation to the NRC as to whether or not further verification efforts can appropriately be based on a statistical sampling plan.

The Phase 2 planning effort develops the work procedures that will be used by the team organizations to complete work on systems and areas. Procedures have been established to integrate the quality program and requirements into the on-going completion work. Training of team members will be expanded to cover systems completion work and teams will be assigned to a specific scope of work and held accountable for the overall completion within this scope. In this effort, Consumers Power will increase emphasis on implementation in accordance with design documents and on proper handling of design changes or field modifications.

The final part of the Phase 2 planning activity will be planning for the quality assurance/quality control effort necessary to inspect the construction activities planned for Phase 2. A new in-process inspection program is being established. This program requires that inspections be directly integrated with future installation schedules to ensure that inspection points are integrated with the construction process.

The results of each planning phase will be the subject of management reviews before execution of that phase's work on a designated system or area will be allowed to proceed. In a similar manner, the key site managers will review and release each new piece of Phase 2 work only after having assured themselves that Phase 1 requirements have been met and that a proper disposition of any findings has been initiated.

As part of the Construction Completion Plan, Consumers Power Company has formulated an extensive Independent Third-Party Review Program. One of the third-party reviews will consist of an Independent Design Verification

(IDV). A second third-party review will involve a Construction Implementation Overview (CIO). We also utilized third party consultants to review the entire job in the fall of 1982 as part of the INPO-supervised construction project evaluation program. In addition, as described in the next section of this statement, a third-party review is currently being performed to independently assess the soils remedial work for the auxiliary building and service water pump structure underpinning. This assessment provides additional quality assurance in the remedial soils area, which is not covered by the CCP.

The IDV will consist of an evaluation of historical and current aspects of the design and construction of the Midland Unit 2 Auxiliary Feedwater System, the emergency electric power system and the habitability aspects of the control room heating, ventilation, and air conditioning. Any IDV findings with generic implications will be given full consideration. Consumers Power Company has retained TERA Corporation, a well respected engineering consulting firm, to perform this independent design verification. The NRC staff has reviewed and approved TERA's technical qualifications and their independence.

The Construction Implementation Overview will consist of an independent third party observing and evaluating the construction activities being performed at the Midland jobsite. The purpose of the CIO is to ensure the site work is being performed in accordance with appropriate procedures and requirements and that the commitments made in the CCP are being fulfilled. The independent contractor will field a site team to monitor the effectiveness of the CCP and other site activities. The team will assess the adequacy of and compliance with CCP procedures and inspections plans and review aspects of construction activities which relate to the performance of the quality control inspection program. Audits of the management reviews of the CCP will also be

covered by the CIO. Consumers Power Company has proposed Stone & Webster, an engineering and construction company with extensive experience in nuclear power plant construction projects, for this work. Stone & Webster has participated in other third party reviews, including the design verification for Diablo Canyon. In addition, with NRC approval Stone & Webster is presently performing an independent assessment of the auxiliary building underpinning work at the Midland site. We hope to receive NRC approval of Stone & Webster for the CIO role shortly.

The CCP is a comprehensive response by my company to the problems which have been encountered in completing the Midland Plant. Many of the provisions of this plan, particularly the independent third party reviews, go well beyond the requirements of current NRC policy. I am confident that the Construction Completion Plan, which incorporates many of the same concepts which have been effective in allowing the soils remedial work on the auxiliary building to proceed without major problems, is a sound and practicable approach to completing the plant.

III. Summary of Soils-Related Issues at the Midland Nuclear Plant

Soils-related problems were first identified in August 1978 when the settlement monitoring program carried out by the Company detected excessive settlement of the diesel generator building (DGB). The DGB is a reinforced concrete structure which houses four diesel generators which supply electric power needed to shut down the plant if the normal sources of electric power are lost. The building had settled 3.5 inches at the point of greatest settlement, compared to design predictions of 3 inches for the 40 years of expected plant operation. Shortly thereafter, the Company orally reported the matter to the NRC site inspector, and formally reported it under 10 CFR 50.55(e) in September 1978.

The plant design called for the placement of foundations for certain structures and portions of others on approximately 30 feet of compacted fill material overlying the natural soils at the site. Soil placement activities were conducted largely from 1975 to 1977. Specifications governing the placement and compaction of fill material required typical controls over moisture content, lift thickness, compactive energy, and in situ testing by the traditional soils engineering methods. As was later determined, controls in the areas of both placement and testing were deficient.

The foundation construction of the DGB, for which construction was started in October 1977, rests entirely on plant fill material. The Company's initial response after discovering the settlement problem in 1978 was to halt DGB construction, pending investigation. Drs. R B Peck and A. J. Hendron, Jr., two of the nation's leading experts in soils engineering, were retained. Dr. Peck has worked on a variety of nuclear and non-nuclear soils and foundation engineering matters over a 45 year career. In 1974 the President of the United States awarded him the National Medal of Science "for his development of the science and art of subsurface engineering." Dr. Hendron is a professor of civil engineering at one of this country's finest engineering schools, the University of Illinois. In addition he is a nationally-recognized consultant in soils engineering. Both the NRC and the Corps of Engineers have relied on Dr. Hendron's services in the past.

Based on results of soil boring samples taken from under the DGB, the Company concluded that the soil beneath the DGB was inadequately compacted. The consultants recommended in November 1978 that we "preload" or "surcharge" the structure. This involved placing a 20-foot layer of sand around the perimeter of and within the structure to accelerate settlement, or more

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accurately, to "consolidate" the fill material. The surcharge began in January 1979.

In August 1979, results from the preload indicated to our satisfaction and to the satisfaction of our consultants Dr. Peck and Dr. Hendron that the fill beneath the DGB had been adequately consolidated. The NRC Staff was fully informed of this conclusion. We began removing the surcharge in August 1979. The removal operation was completed within a month. The NRC Staff and Consumers have subsequently reached agreement on the amount of future settlement which the DGB can be expected to experience. Subject to a monitoring program, the NRC Staff's position is that the DGB is acceptable.

Meanwhile in 1979, while the surcharge was in place, the results of an extensive boring program elsewhere on the site showed inadequately compacted soil under the electrical penetration areas of the auxiliary building and under the overhang portion of the service water pump structure (SWPS) which rests on plant fill. The auxiliary building houses electrical and mechanical equipment necessary to operate the Midland reactors. The SWPS is located at the edge of the cooling pond and contains pumps which supply emergency cooling water. Both buildings are safety related. Neither building has undergone greater than expected settlement. Nevertheless, we decided to underpin portions of both structures to obtain adequate predictability of structural behavior under the unlikely conditions which must be postulated for design and licensing of nuclear power plants, such as the occurrence of an earthquake in central Michigan.

The NRC staff review of Consumers' soils proposals was delayed by the Three Mile Island accident. Late in 1979, the NRC staff retained the U.S. Army Corps of Engineers as its consultant. On December 6, 1979, the Staff issued an order halting all remedial construction until such time as we could

prove to the staff that our proposed and completed remedial actions were technically sound and would file an application for an amendment to the construction permits. As provided for in the Order, Consumers requested a hearing. The legal effect of this request was to suspend the effectiveness of the NRC Staff's December 6, 1979 Order. Nevertheless, we voluntarily agreed not to undertake further remedial construction without concurrence of the NRC staff. On April 30, 1982 the NRC Atomic Safety and Licensing Board, which has been hearing soils-related issues since July 1981, made this agreement formal by ordering that Consumers Power Company obtain explicit NRC staff approval before undertaking further remedial work.

On October 14, 1980, the NRC staff changed its position concerning the maximum earthquake which should be postulated for the Midland site. The new Staff position was that a significantly larger earthquake should be considered than the one approved by the NRC as a design basis for the plant when construction permits were issued in 1972. The NRC staff and Consumers Power Company have since reached agreement on the size of the earthquake to be considered. As a result, Consumers Power Company agreed to revise its design basis for the underpinning for the SWPS and auxiliary building in order to incorporate this larger earthquake. This revision has significantly increased the magnitude and complexity of the remedial work. Consumers Power Company has also retained Structural Mechanics Associates, one of the leading structural engineering firms in the country, to perform a Seismic Margin Review of the entire Midland Plant to determine the safety margins in essential plant structures and equipment if this larger than design basis earthquake should occur.

In the spring of 1982, we presented our completed and proposed remedial soils activities at a meeting of an ad hoc subcommittee of the

Advisory Committee on Reactor Safeguards. The ACRS subcommittee was chaired by Dr. Chester Siess, an ACRS member who very highly regarded in the field of civil engineering. Based upon our submissions and that of the NRC staff, the subcommittee determined that the basic approach we have adopted, and the NRC staff's review of remedial actions, are acceptable; and in fact, the transcript of that meeting illustrates the thoroughness and conservatisms that had been incorporated in the engineering of the remedial soils fixes.

In October 1982, the NRC staff issued a Supplemental Safety Evaluation Report (SSER) documenting its detailed review and approval of the various design proposals relating to soils remedial activities. This approval was issued only after a thorough audit by the NRC Staff of Bechtel's structural design calculations in Ann Arbor. Nevertheless, pursuant to the Licensing Board's April 30, 1982 Order, the NRC staff (Region III) is still reviewing and approving, on a step by step basis, each remedial work activity before any construction can take place.

The most significant soils remedial work at the Midland site is the underpinning of portions of the auxiliary building. Such underpinning, while unique for a nuclear power plant, is a widely used, well-understood technique of building support while foundation or other subsurface changes are made. The underpinning is being performed by experienced consultants and contractors who have worked on many such projects, including the underpinning of the U.S. Capitol during construction of the Rayburn Office Building subway.

The auxiliary building at Midland is a large reinforced concrete structure with foundations on several different levels. It has not undergone any unexpected settlement or experienced any structural distress to date. One of the technical challenges at Midland arises because the auxiliary building is almost completely surrounded by other structures, including the reactor

containments and the turbine building. To carry out the underpinning, a tunnel must be dug from two access shafts to the east and west of the building. The total length of the tunnel from east to west will be about 400 feet. It will proceed underneath the Turbine Building (a non-safety related structure) along the south face of the auxiliary building, which rests on plant fill. From this access tunnel reinforced concrete piers will be constructed down through the plant fill to competent glacial till material. These piers will have a cross section of about 3 ft by 6 ft at the top (they are belled out at the bottom to provide a larger bearing surface) and will be up to 45 feet deep. Steel beams will run horizontally from some of these piers underneath the underpinned portions of the auxiliary building to the reactor containment buildings. The weight of the underpinned portion of the auxiliary building will be carried by these piers and beams while the remaining plant fill beneath the auxiliary building (about 32,000 tons) is removed and replaced with a continuous reinforced concrete wall. When completed the permanent continous underpinning wall (i.e. the new foundation) will transfer the structural loads from the underpinned portions of the auxiliary building to the same competent glacial till material on which the main portion of the auxiliary building is founded.

The other technical challenge is to do the underpinning without disturbing the auxiliary building and adjacent safety-related structures. The underpinning process has been planned so that at each step a minimum of soil is removed from beneath the buildings. Underpinning piers are created to compensate for the loss of soil support, and then the underpinning piers are tested and shown to be adequate before further excavation is allowed to proceed. Instrumentation capable of detecting structural movement of a few thousands of an inch has been mounted on the structures and is continuously monitored. This instrumentation is so sensitive that we can see the buildings

react to temperature changes during the day. Stringent acceptance criteria have been proposed by Consumers and approved by the NRC Staff to protect the buildings.

Work will proceed slowly because of the constricted work space and because of the measures taken to minimize stresses to the structures. Only four or five people can work at one time on a single pier. The entire work crew at each access shaft may be only twenty to twenty-five people. The underpinning work began in December 1982 and will take about two years from then to complete.

Because of the importance and complexity of the underpinning work and to obtain NRC authorization to proceed, Consumers has taken extraordinary measures to ensure design and construction quality. Virtually every aspect of the work has been brought under the quality assurance program, even construction related items which have no demonstrable relationship to the safe operation of the Midland Plant once the underpinning is accomplished. Other measures include:

1. Taking over the quality control function for auxiliary building and SWPS underpinning work by integrating soils-related QC into MPQAD;

2. Creating a "Soils" project organization with dedicated employees and single-point accountability to accomplish all remedial soils work;

3. Establishing new and upgraded training activities, including a special quality indoctrination program, specific training in underpinning activities, and the use of a mock-up test pit for underpinning construction training; and

4. Retaining the firms of Stone & Webster Inc and Parsons, Brinkerhoff, Wade and Douglas to conduct an independent audit of design, construction, and quality assurance for the auxiliary building and SWPS underpinning. The NRC staff has carefully reviewed the independence and technical competence of these third party reviewers and also the scope of their contract. This independent assessment effort was underway by September 30, 1982 and continues. The assessment incorporates reviews of the

physical work in progress, as well as both construction and quality assurance implementing procedures.

In December 1982, NRC Region III specifically approved the excavation and installation of a portion of the auxiliary building underpinning. Prior to that date, the only work which had proceeded was preparatory in nature. Since that time the underpinning work has progressed in installments under the close scrutiny of both the NRC Region III Staff and the Stone & Webster/Parsons Independent Assessment Team. At the completion of the first 90 days the Stone & Webster/Parsons Independent Assessment Team found that:

> "(U)nderpinning work at the Midland Nuclear Plant was performed in accordance with design intent. During this period, four access pits, approximately 60 feet of access drifts, and excavation and concrete placement for two 35-foot deep piers was completed. In addition, load transfer at one of the piers was near completion and excavation of two additional piers was well underway. Construction procedures and practices were in accordance with project documents, and with the exception of a few instances* described below, in accordance with good industry practices. The quality of the final products was also in keeping with the standards defined by project documents. Instrumentation monitoring of the structures

* These instances relate to delays in completing a portion of the work and to the spacing of lagging, used to frame excavations. The report concludes that the underpinnings to date are "in compliance with design documents and are of high quality." According to the report, "minor modifications to the [spacing of] future lagging ... would improve the overall quality of the work." This has been accomplished. The report also concludes that the delays have not impacted the quality of the work to date.

being underpinned has shown that there has been no detrimental structural movement...

The Assessment Team is satisfied with the qualifications, training, and ability of the Midland Plant Quality Assurance Department (MPQAD)-soils personnel. This group has a good understanding and appreciation of the intent and philosophy of quality assurance and quality control. In addition, implementation of the MPQAD inspection plans and reports has been satisfactorily accomplished."

The report also concludes:

"The Midland Plant Quality Assurance Department (MPQAD) has demonstrated its ability to perform as an effective quality organization..."

So far the NRC has also concluded that the work has been carried out without major quality assurance problems. As a result, the NRC is allowing the work to continue.

We believe that the process of step by step NRC staff approval of underpinning work is administratively cumbersome and can eventually be dispensed with as underpinning progresses successfully. The extraordinary level of attention being devoted by Consumers Power Company, the independent third party auditors, and the NRC will continue to guarantee that this soils remedial work will be carried out in accordance with all regulatory requirements. Moreover, we believe that the acceptable performance to date in the underpinning effort shows that the Construction Completion Plan, which

incorporates many of the same concepts, is sound and will ensure design and construction quality in the remainder of plant construction work.

IV. Conclusions

I am confident that the Midland Plant, when completed, will conform to Nuclear Regulatory Commission requirements. The construction problems which have arisen are manageable and are being dealt with responsibly. We at Consumers Power Company are responsible for and directing all aspects of the job. We and our contractors have brought in the best managers we could find as well as some of the world's leading consultants and most experienced subcontractors to help complete the plant. We have stopped work and taken other significant steps to ensure that construction is completed in an orderly and satisfactory manner. We have undertaken a comprehensive system of third-party reviews by independent, technically qualified firms to confirm and document the adequacy of past and future design and construction. The NRC is closely monitoring our performance. Therefore, there is reasonable assurance that the plant will be completed properly and, when completed, will be safe to operate.

Thank you, Mr Chairman, for this opportunity to testify before you.

TESTIMONY OF
MARY P. SINCLAIR
BEFORE THE
SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT
OF THE
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
UNITED STATES HOUSE OF REPRESENTATIVES
WASHINGTON, D.C.

JUNE 16, 1983

Introduction

My name is Mary Sinclair. I have participated in the Midland licensing proceedings since the construction license was announced in 1970. I appreciate the honor of appearing before this distinguished committee and I applaud your taking an interest in the grave problems at the Midland nuclear plants which one inspector has described as "unprecedented at any other facility."[1]

Summary

The testimonies that Billie Garde, of the Government Accountability Project, who represents the concerned citizens and whistleblowers of the Midland area in Washington, and of Barbara Stamiris and myself as citizen participants in the Midland operating licensing hearings, are intended to provide this Committee with a historical perspective of the severe quality control problems at Midland which have become worse with time instead of showing improvement.

Our information will demonstrate how various practices of the Nuclear Regulatory Commission (NRC) contribute to quality control breakdowns, and how their vascillation and accommodation of utilities diminishes their "overriding responsibility to protect the public health and safety."[2]

Through our experience in the Midland licensing proceedings, we have discovered serious deficiencies in NRC's licensing process that foster quality assurance (QA) breakdowns and lack of safety. We also have arrived at recommendations for possible remedies for these deficiencies which can be valuable to this Committee.

Our experience has gained insight into other problems with the NRC as follows:

-- The Commission's answers to specific questions by members of Congress which bear on safety, quality control, and risk assessment are often not only treated carelessly or ignored, but are actually contradicted in practice by the Staff.[3,4]

-- The concerns and recommendations of field inspectors are overruled by NRC management. Instead, NRC management performance

demonstrates that utility interests are too often placed ahead of public health and safety, and that this contributes to QA breakdowns.

-- NRC's practice of allowing a utility "to proceed at its own risk" results in unacceptable, unsafe situations that the NRC then tolerates because of the huge amounts of money that have been spent, as in the case of the diesel generator building at Midland.[5]

-- The defects of the present quality control "get well" plan at Midland make it as vulnerable to failure as all other plans have been in the past.

-- When NRC inspectors find serious QA deficiencies on site and write a confirmatory action letter to the utility, they can be overruled by NRC management which allows the utility to write an identical "reverse confirmatory action letter" on their letterhead which is then sent to the NRC regional office. This proves embarrassing to the NRC inspectors in the field who are deprived of a QA disciplinary measure. This can only weaken the attention to QA on the part of the utility.[6]

-- A recent decision by the Office of Investigation of the NRC to conduct criminal investigations without allowing any conclusions or recommendations to be drawn on the facts, emasculates the procedure and weakens the regulatory functions of the people in the field.[7]

-- Very recently, on May 6, 1983, the chief soils engineer at Midland, Dr. Ross Landsman, testified to the fact that attempting to force a a natural flood plain area into a nuclear plant site had resulted in poor and unacceptable soils engineering in the initial design at Midland. Safety related buildings were designed to set on both natural glacial till and artificially compacted soil which would inevitably result in differential settlement and cracking. With the poorly compacted soil on site, this has manifested itself very quickly. Dr. Landsman was asked by a Consumers Power Co. attorney--"If fill material had been placed properly and compacted properly and all proper quality assurances had been followed. the Midland facility could be operated with due regard to public health and safety?" Dr. Landsman's answer was--"Personal opinion as a soils engineer, no."[7a] But construction and costs continue at Midland with no resolution of such a fundamental issue that affects public health and safety.

HISTORY OF QUALITY CONTROL PROBLEMS AT THE MIDLAND NUCLEAR PLANTS 1 & 2

Midland has a long history of quality control problems.

An original contention in the construction license proceedings at Midland stated that Consumers Power Co. "is incapable of, and cannot be relied upon to perform adequate quality assurance and quality control." That contention, based on the poor record in quality assurance of the Consumers Power Co. and the architect-engineer, Bechtel, at the Palisades nuclear plant, and construction work at Midland that had gone on as allowed prior to the construction license hearings, remains as true today as when it was first written in 1970.

Consumers Power Co. filed a $300,000 law suit against Bechtel and others for negligence in construction at Palisades on August 28, 1974. In spite of this, Consumers Power Co., inexplicably, hired that firm as architect-engineer for Midland also.

In the siting of the Midland nuclear plants, the Atomic Energy Commission bent its own rules in 1969 by approving the location of the Midland nuclear plants one mile from Main Street of Midland surrounded by a populated area, with an elementary school close to its entrance gate, and across the small Tittabawassee River from the Dow Chemical Company for which the plants were to supply steam and power.

Since it began construction at Midland in 1969, Consumers Power Co. has failed to implement its own quality assurance (QA) program.

When the construction permit was appealed in 1972, the Appeals Board exacted a promise from Consumers Power Co. to improve its quality control performance as a condition of reaffirming the license because of the "deplorable QA performance which the record revealed had obtained during the construction work under the exemption." (Exhibit A)

Subsequent inspection reports after construction was resumed in April, 1973 showed that these promises were ignored by Consumers Power Co.

Region III did not act on these reports of violations, but the attorney for the citizen intervenors, Myron Cherry, read the inspection reports and brought them to the attention of the Appeals Board, pointing out that Consumers Power Co. was not honoring its promises for improved quality control.

On November 26, 1973, the Appeals Board finally wrote an irate letter to L. Manning Muntzing, who was then the Director of Licensing, and said they felt "constrained to record their extreme dismay respecting this latest development."

The Appeals Board emphasized the poor "track record" of Consumers Power Co. even at that early date, as follows:

> "A few weeks ago, two of the members of this Board requested and obtained a meeting with you and several other regulatory officials to explore the question of the extent to which the QA "track record" of an applicant or architect-engineer is taken into account by the staff in its appraisal of applications for construction permits. While that discussion was wholly generic and intentionally was not addressed to any specific reactor, it obviously has a special significance to the present situation regarding Midland. If we recall correctly, we were told that the point might be reached where the staff would be compelled to conclude that incorrigibility was involved, and then to act accordingly. Whether or not we would agree that a bad "track record" should come into play only in such extreme circumstances, this case would seem to meet your own test. What we have here is a pattern of repeated, flagrant and significant QA violations of a non-routine character -- coupled with an unredeemed promise of reformation." (Exhibit A)

The Staff subsequently issued an Order to suspend construction until Consumers Power Co. could demonstrate why their license shouldn't be suspended.[7b] In a short time, the Order to halt construction was lifted because of political pressure. After an uncontested hearing, approval of the license was renewed.

Quality control problems have continued throughout the construction of these plants.

Rebar omissions in concrete, a bulge in the Unit 2 containment, failure to compact soil properly sitewide resulting in cracking and sinking of buildings, heating and ventilating installation deficiencies, piping suspension and welding deficiencies, errors in installation of electrical cables, these are some of the major breakdowns that have occurred at Midland in the past 10 years.

Of special significance is the fact that the reactor vessel of Unit 1 was installed with a major bad weld which both Consumers Power Co. and the NRC knew would shorten its useful lifetime to 15-18 years and would make it susceptible to pressurized thermal shock.[8] More recently, cracks have been found in the Unit 1 containment building.

Because of the increasing problems at Midland which coincided with the special problems found at Zimmer, Region III formed an Office of Special Cases to conduct indepth inspections at both Zimmer and Midland. In October and November, 1982, this NRC inspection team found such extensive and widespread design and construction deficiencies as well as serious quality control breakdowns that the Staff recommended shutdown and a civil penalty.[8a]

Subsequently, Mr. James Keppler's enforcement letter of February 8, 1983, stated to the Applicant--"The breakdown was caused by personnel who failed to follow procedures, drawings, and specifications; by first line supervisors and field engineers who failed to identify and correct unacceptable work; by construction management who failed to call for quality control inspections in a timely manner, allowing a backlog of almost 16,000 inspections to develop; and by quality assurance personnel who failed to identify the problems and ensure that corrective actions were taken. As a result, you failed to fulfill your primary responsibility under Criterion I of Appendix B to 10 CFR 50 to assure the execution of a quality assurance program. In addition, of particular concern to the NRC is the fact that quality control (QC) supervisors instructed QC inspectors to suspend inspections if excessive deficiencies were found during the performance of inspections. Consequently, not all observed deficiencies were reported, and complete inspections were not performed by all QC inspectors after the reported deficiencies were corrected."

As a result, in December, 1982, Consumers Power Co. halted most of the safety-related work in the diesel generator building, the auxiliary building and the two reactors, reduced the work force by 1,100 people until building cleanup and system layup is completed and all safety-related systems are reinspected. Over 150,000 reinspections of potential safety, design and construction deficiencies must be made.

The Dow Chemical Co. Connection

In 1976, Joseph Temple, who was then general manager of the Michigan Division of the Dow Chemical Co., wrote a memo to Paul Orrefice, President of Dow, that he had come to the conclusion, because of escalating costs and construction uncertainties and problems, "that the nuclear project will be most likely to be disadvantageous to Dow to the Midland Plant (Dow) and to our employees in this community."

When Dow Management met with Consumers Power Co., the utility said they would sue Dow for $600 million if they broke the contract. In his notes, Lee Nute, the Dow attorney, reporting on the meeting called this "pretty damn close to blackmail." He also reported that Consumers Power Co. believed that Mr. Cherry, attorney for the intervenors, would not show up for the hearings because the intervenors had no funds, and that they could "finesse" the Dow-Consumers continuing dispute past the Licensing Board.[9]

Mr. Cherry did show up, however, and among the key documents in his discovery request were the memo of Joe Temple and Lee Nute's reporting notes.

Under the prevailing circumstances, the Dow Chemical Co. renewed its contract but recently in a newspaper interview, Dow has stated that they have alternative plans if the nuclear plants don't go on line.[10]

NRC Places Cost and Construction Schedule Ahead of Safety

Cost and construction schedule pressures which have been major factors behind the quality control problems at Midland include the Dow Chemical Co. steam contract deadline, December, 1984, and the Public Service Commission's policy that "not until a plant is deemed used and useful in its basic purpose can its construction costs be passed on to the ratepayers."

While the NRC claims that they are concerned only with safety-not costs--the fact is that the record shows that their efforts to accommodate cost and construction schedules has led them to accept many questionable practices that have compromised safety.

For example, in July 12, 1981, Joseph Kane, NRC's chief geotechnical engineer, in answering a question as to whether in retrospect removal and replacement of the diesel generator building in 1978 would have been a better option than preloading said: "The answer depends on the facts that must be addressed. When you are considering it from the standpoint of safety alone, it is my opinion that removal and replacement is a better solution. If you are considering the other facets--that is, the cost, the impact on schedule, and these are facets that engineers must address-then it may not be the superior option."[11] But, of course, the diesel generator building was not removed or replaced.

Darl Hood, Midland Project manager has also testified under oath that absent cost and schedule considerations that removal and replacement was a superior option for the diesel generator building.[12]

Mr. James Keppler, Director of Region III of the NRC, permitted soils work to go ahead in December, 1982, even though the special inspection team had just discovered in October and November, 1982, the extraordinary extent of quality control breakdowns and quality control practices used sitewide that were seriously defective.

Mr. Keppler testified that soils work was allowed to go ahead because he had confidence in the third party review and the fact that Dr. Ross Landsman, his soils expert, had urged him to let it go forward.[13] However, Dr. Landsman, in his testimony, denied he had ever urged management to go forward with the soils work.[14] In fact, he stated that he had urged the project be shut down in September, 1982, because of its long history of serious problems.[15]

On two occasions, in recent licensing hearings at Midland, it was demonstrated that what the Commission has stated in response to specific questions from Congress on matters important to public health and safety, were, in one case reversed by the Staff, and in the other instance, the Staff ignored what the Commission had pledged would be done in their communications to members of Congress.

In one case, the question of risk assessment and probabilities of serious accidents which is being raised in numerous licensing proceedings, was also raised in Midland. In a letter dated December 27, 1982, the Commission repled to questions raised with Congressman Udall by Myer Bender, of the Advisory Committee on Reactor Safeguards (ACRS), on the use of WASH-1400 as the basis for risk assessment. The Lewis Committee Review had found deficiencies in WASH-1400 which were accepted by the Commission on January 18, 1979, with the specific direction that, "in light of the Review Group conclusion on accident probability, the Commission does not regard as reliable the Reactor Safety Study's numerical estimate of the overall risk of reactor accident."[16]

In their letter to Congressman Udall, the Commission reaffirmed their decision of January 18, 1979, on the use of WASH-1400 as subject to the findings of the Lewis Report.[16a]

However, contrary to this position, the NRC Staff testimony on Midland, stated, "Thus the Reactor Safety Study (WASH-1400) is more accurate today than we believe it to have been for the '70's in its assessment of accident likelihood."[17]

Another Staff member who testified, Lewis Hulman, who is none other than the Chief of the Accident Evaluation Branch of the NRC, even questioned whether the letter from the Commission to Congressman Udall signed by John Ahearne as acting chairman was indeed the position of the Commission. That letter contained the statement of the Commission reaffirming their support of the Lewis Report and was approved by all the Commissioners' Offices.[18]

In the second case, the Commission was asked to define the criteria for third party review at a construction site in response to a letter from Congressmen Ottinger and Dingell following the seismic design errors found at Diablo Canyon.[19] Subsequent cross-examination indicated that the selection process for third party review did not follow the criteria and was inadequate.

Deficiencies in the Licensing of Nuclear Power Plants

We have identified serious deficiencies in the licensing process in the Midland proceedings which we believe apply generically to the licensing process. This information should be of great interest to this Committee.

These discoveries may explain why significant problems have been discovered at other nuclear plants after licensing hearings and an ACRS review have been completed. Three embarrassing examples for the NRC are the Three Mile Island #2, Browns Ferry, and the Diablo Canyon nuclear plants.

In addition, the ACRS operating license review and virtually all of the operating license proceedings were completed at Zimmer before a multitude of serious quality control breakdowns were disclosed by a whistleblower through the work of the Government Accountability Project.

In Midland, we have a good example as to how this can come about. The extensive deficiencies that were found through the inspection by the Office of Special Cases in October and November, 1982, demonstrated that the Safety Evaluation Report filed for Midland in May, 1982, was mythology. Yet, the Safety Evaluation Report is the basis for the NRC's operating license recommendation according to standard NRC practice. In the case of Midland, that report was not based on what was actually constructed at the plant site at all. It was created in Washington headquarters by persons who relied primarily on paper descriptions of design and construction. These same Washington-based people are also being sent to testify in support of the NRC Staff position at the public hearings giving assurance that all is built as stated in their reports when, in fact, they have no knowledge of what actually has been built at all.

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In other words, the Safety Evaluation Report issued for the operating license of a nuclear plant which is supposed to reflect the state of the completed plant does not, in fact, reflect the "as built" conditions of the plant, but is merely a design review of a theoretical plant. The Licensing Board has admitted this is so.

The Licensing Board at Midland refused to acknowledge the significance of the major inspection by the Office of Special Cases, that halted most of the safety-related work at the Midland plant in December, 1982. They insisted on going ahead with the operating license scheduled to begin in February, 1983, even though much of the construction of the plant is now in question as far as its safety systems are concerned. NRC Washington-based witnesses at the February hearings gave bland assurances as to the safety of each part of the plant being questioned on the assumption that it had been built properly as designed. Therefore, we asked each witness at the conclusion of his testimony whether he had confirmed that what he had testified to under oath was in fact what was constructed at the nuclear plant. Not one witness could attest to that fact. Yet, the central mission of the operating license hearings is to determine what is actually out there in the plants and whether it is licensable as built.

When we protested to the Board about going forward in this manner, we were told that the operating license hearings were held to determine adequacy of the final design, and that Region III would make sure that the plant was constructed properly. Yet, the Board also stated that the evidentiary record of the hearings was the basis for making a decision on granting a license. When Mr. James Keppler testified and was asked about how operating license approval was made, he said that Harold Denton, the Director of Nuclear Regulation, makes the final decision on a license.

There is obviously a great deal of confusion and "buck-passing" in the process of approving an operating license for a nuclear plant. If the operating license hearing record is to have any credibility, the only persons to testify should be those who can personally vouch for how the plant has actually been constructed.

The Safety Evaluation Report should also be reviewed by those persons who have direct personal knowledge of what is actually at the nuclear plant site. Dr. Ross Landsman, for example, stated that he had not commented on the Midland Safety Evaluation Report even though he is the chief soils engineer for Region III.[20]

When the NRC inspectors testified in recent weeks (May and June, 1983), their testimony was most revealing about the actual conditions at the plant. This testimony confirms our position and recommendation that only those persons should testify at the operating license hearings of nuclear plants who have direct, personal knowledge of what is actually constructed at the site. Otherwise the record is misleading to the utility management, Licensing Board, and the public.

Another deficiency in the licensing process is the manner in which the ACRS conducts their review for the operating license of plants.

In conducting their review, the ACRS sub-committee holds a hearing where the nuclear plant is located and listens to a summary of the plants' construction by the Staff and the Applicant. The NRC and the Applicant are thus able to summarize and present to the ACRS their version of the facts, in order to obtain the necessary letter of approval. While many issues are explored by members of the Committee, there is also much of grave importance that can be and is omitted from the presentations of both the Staff and Licensee.

In the Midland case, this is exactly what happened when the ACRS sub-committee met in Midland on May 21, 1982. In order to overcome this limited and controlled information base, I decided to provide an objective third party review for the ACRS when the full committee met in Washington to consider Midland for an operating license. I compiled various statements of NRC inspectors, made under oath, copied from the transcripts of hearings and attached them as exhibits to document a statement that I presented to the ACRS Committee in Washington on June 4, 1982. This demonstrated to the ACRS how seriously the summaries of both the Staff and the Applicant had misrepresented the real state of affairs at Midland during their presentations to the sub-committee.

Among the examples brought to the attention of the ACRS was the testimony in July, 1981, during the soils hearings of Eugene Gallagher, a Region III inspector, who said under oath, "You're talking about a plant 70% complete that is crippled."[21] He also said the problems at Midland were unprecedented at any other site.[22]

As noted earlier, Joseph Kane, NRC's geotechnical expert, said that if safety was the prime consideration, the diesel generator building would have to be removed and replaced.[23]

I brought numerous other serious safety problems at Midland to the attention of the ACRS, including the underground stressing of piping due to uneven settlement, and the existence of some unusual corrosion problems, none of which had been disclosed by the Staff or the Applicant.

I have been working on the problems at Midland for fourteen years, because I recognized how serious they were from the start. I was in a position to know the many problems which the NRC Staff and Consumers Power Co. summaries had concealed or misrepresented.

The outside concern of intervenors was a factor in the ACRS not giving approval for an operating license as they have in the past with few exceptions. Instead, they took the unprecedented step of requesting "a report which discusses design and construction problems, their disposition, and the overall effectiveness of the effort to assure appropriate quality."[24]

Clearly the ACRS review as it is presently structured without some third party overview, is inherently flawed. It relies on a controlled and limited information base. It gives the public a false assurance of security which is worse than no assurance at all. As it is now conducted, the ACRS review is simply another promotional tool for the nuclear industry made at public expense. Its reviews and its directions should be changed.

A body of experts such as the ACRS could be a useful agency to serve the public if its members, who have expertise in areas being litigated at specific plants sites, served as consultants to the Licensing Board and citizens when those issues are considered. They should spend less time in Washington and should be more involved in decisions on design and construction problems at the construction sites where they are encountered and resolved.

If these changes are made, then the ACRS final review letter could be based on first hand accounts of actual "as built" conditions that their own members can vouch for. It would be a credible and valid letter that they can send to the Commission.

The presence of citizen intervenors at a site would also guarantee an objective third party overview for the ACRS. Citizens in the vicinity of a nuclear plant bear the greatest risk to their homes and property values and their families from a nearby nuclear plant. They are your best watchdogs for nuclear safety. They are seeking a basic constitutional right--equal protection under the law--and it should not be denied them by Congress as is now the case. Both the Rogovin and Kemeny Reports have advocated funding of attorneys and expert witnesses for citizen intervenors. This review of the deficiencies in the present licensing process demonstrates how the presence of outside third party information from whistleblowers or citizen intervenors can contribute to safety.

References

[1] Tr. 2463

[2] In the Matter of Consolidated Edison Co. (Indian Point #1, 2, 3) - CLI - 75 - 8 - NRC - I - 7518, 173, 175 (1975)

[3] Tr. 13466-68

[4] F. Rowsome Testimony, Tr. 13477-83 March 18, 1983, p. 4

[5] Tr. 4209-10

[6] Tr. 17656

[7] Investigation Summary, Sept. 14, '82 R. Warnick & C.H. Weil

[7a] Tr. 16319

[7b] Show-Cause Order on QA, Dec. 3, '73

[8] Safety Evaluation Report, May, 1983, C-10

[8a] Tr. 161204-5

[9] Exhibit 25, Suspension Hearings, Midland #1 & 2, Dec. 1, 1976

[10] Detroit News, April 3, 1983

[11] Tr. 4209-10

[12] Tr. 4461

[13] Tr. 15310

[14] Tr. 16001-2

[15] Tr. 14931-41

[16] Commission Statement on Lewis Report, January 18, 1979

[16a] Commission Letter to Congressman Udall, Dec. 27, 1982

[17] Rowsome Testimony, Mar. 18, '83, p. 4

[18] Tr. 13477-81

[19] Letter from Commissioner Palladino to Congressman John Dingell, Feb. 1, '82

[20] Tr. 16320

[21] Tr. 2466

[22] Tr. 2463

[23] Tr. 4209-10

[24] ACRS Interim Letter, June 8, 1982

UNITED STATES
ATOMIC ENERGY COMMISSION
ATOMIC SAFETY AND LICENSING APPEAL PANEL
WASHINGTON, D.C. 20545

EXHIBIT A

November 26, 1973

L. Manning Muntzing
Director of Regulation

QUALITY ASSURANCE DEFICIENCIES ENCOUNTERED
AT MIDLAND FACILITY

The Appeal Panel recently received a copy of the November 13, 1973 Notification of an Incident or Occurrence issued by the Directorate of Regulatory Operations in connection with the Midland Plant, Units 1 and 2. This notification relates to a Region III inspection of the Midland facility which took place on November 6-8, 1973 and "identified serious deficiencies associated with Cadweld splicing of concrete reinforcing bars". It is stated that "[t]hese deficiencies involved inadequate procedures for installing Cadweld splices, for material control, and for documenting required quality parameters".

In addition, the notification reveals that the inspectors determined that "inspection techniques were inadequate and acceptance criteria used for quality requirements were being misapplied". We assume that this was intended to be a diplomatic way of reporting that the first line quality assurance inspectors were allowing items to pass their inspection which, in fact, did not meet applicable QA standards.

The notification points out that Consumers Power has suspended all Cadweld splicing operations at the site and that those operations would not be resumed until certain specified corrective action had been taken. It is further indicated, however, that "[o]ther unrelated work will continue at the site".

The Midland construction permit proceeding is, of course, no longer before the Appeal Board which had been assigned to it. Indeed, the period of time allotted for Commission review of the last Appeal Board decision in the proceeding has now elapsed, with the result that there has been final agency action (which is subject, of course, to the outcome

of the judicial review which is now in progress). Accordingly, the Midland Appeal Board clearly lacks jurisdiction to take official cognizance of the irregularities disclosed by the inspection, let alone issue any orders with respect thereto.

Nonetheless, in view of the record that was adduced during the course of the adjudicatory proceeding as well as of certain rulings which were made therein, the members of the Midland Appeal Board feel constrained to record (1) their extreme dismay respecting this latest development; and (2) their firm belief that more drastic action against Consumers Power and its architect-engineer should be promptly considered. In this connection, had the construction permit proceeding still been before our Board at the time that the results of the November 6-8 inspection were announced, it is a virtual certainty that we would have ordered forthwith a cessation of all construction activities -- to continue in effect at least until such time as properly trained quality assurance inspectors, fully independent of the construction organization, were available on site.[1] We shall briefly outline the reasons why we would have taken that action.

1. As you will recall, in ALAB-106, RAI-73-3 182 (March 26, 1973), we dealt specifically with the contention of one of the intervenor groups (the Saginaw Intervenors) that the evidence of record established that the applicant is "incapable of, and cannot be relied upon to, perform adequate quality assurance and quality control". Based upon our review of the evidence relating to the work at the Midland site performed under an exemption, we made the express finding that "neither the applicant nor the architect-engineer has provided reasonable assurance that the QA program will be implemented properly * * * . They have in this project not demonstrated their concern with maintaining QA programs in synchronization with their construction programs, nor have they demonstrated that they will have properly trained people on site to implement the QA program". Id. at 185. One of the considerations which led to this finding was the disclosure in one inspection report of record that "the QA and QC inspection personnel present at the concrete pour location did not promptly identify and correct apparent deviations from the ACI-301 Standard regarding consolidation of concrete". Ibid.

Because of the "no reasonable assurance" determination found to be compelled by the record, we gave serious thought to revoking the construction permits which had been issued under the Licensing Board's authorization. We did not do so only because (1) the prior failures of the applicant and the architect-engineer to observe required QA practices and procedures had occured in 1970 (before the construction work under the exemption had terminated); and (2) we had the solemn assurance of the applicant that all of those prior deficiencies were being rectified as construction was being resumed under the permits. In the circumstances, we thought it would be enough to impose specific reporting conditions which were designed to make certain that the applicant was making good on its promise and that there would be an adequate QA program for the resumed construction.

On the basis of one of the reports called for by ALAB-106, and a number of inspection reports supplied by the staff in response to a later order of the Board (and a request of one of its members), we denied in ALAB-147, RAI-73-9 636 (September 18, 1973), the motion of the Saginaw Intervenors to revoke, or stay the effect of, the construction permits pending a definitive determination that the applicant and the architect-engineer were complying and would continue to comply with the QA regulations in constructing the Midland facility. We found that "there is now a reasonable assurance that appropriate QA action is being taken by the applicant" and also that, apart from a deficiency which we perceived in its QA organization, there was no QA problem pertaining to the architect-engineer requiring a direction of corrective action. Id. at 637, 640 (Fn. 10).

2. Against this background, our present concern should not be difficult to understand. The only reasonable conclusion which we can draw from the disclosures of the November 8-8 inspection is that the assurances which we had received from the applicant were false and that, in point of fact, it and the architect-engineer still have not manifested both an ability and a willingness to take the steps necessary to insure proper QA activities. Indeed, the QA deficiency referred to in the notification bears a startling resemblance to the deficiency referred to in ALAB-106 respecting the QA and QC personnel present at the

concrete pour location (which is mentioned above). It would thus appear, with the benefit of hindsight, that it was not enough for us simply to impose reporting conditions in ALAB-106. It also seems evident that, contrary to our finding in ALAB-147 (which necessarily was founded on the materials then before us), there is not a reasonable assurance that appropriate QA action is now being taken. If anything, there is a solid assurance that exactly the opposite is the case.

3. A few weeks ago, two of the members of this Board requested and obtained a meeting with you and several other regulatory officials to explore the question of the extent to which the QA "track record" of an applicant or architect-engineer is taken into account by the staff in its appraisal of applications for construction permits. While that discussion was wholly generic and intentionally was not addressed to any specific reactor, it obviously has a special significance to the present situation regarding Midland. If we recall correctly, we were told that the point might be reached where the staff would be compelled to conclude that incorrigibility was involved, and then to act accordingly. Whether or not we would agree that a bad "track record" should come into play only in such extreme circumstances, this case would seem to meet your own test. What we have here is a pattern of repeated, flagrant and significant QA violations of a non-routine character -- coupled with an unredeemed promise of reformation.

The staff has dealt affirmatively with this most recently detected serious QA shortcoming by requiring the prompt suspension of all Cadweld splicing pending the taking of necessary corrective action. But there remains the unresolved question as to whether the same or equally serious QA shortcomings may be infecting other aspects of the construction work. It is difficult to understand how any construction activity can be allowed to proceed until that question is settled.

4. We would make only this one further observation. We expressly noted in ALAB-106 that the "staff's enforcement responsibilities are in no way limited by the [reporting] conditions herein prescribed, and the staff is free to take any remedial action over and above these conditions which it may deem necessary". RAI-73-3 at 186.

We did not (and, of course, could not appropriately) attempt to direct that, if a particular situation were to arise, the staff should pursue a specific course. Once the adjudicatory proceeding is over, the on-going supervision of construction activities is your function and not ours. But implicit in that statement -- and in the choice we made not to revoke the construction permit -- was the assumption that the staff would not countenance for long a continuation of the deplorable QA performance which the record revealed had obtained during the construction work under the exception.

Alan S. Rosenthal

John H. Buck

William C. Parler

cc: Commissioner William O. Doub

ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

December 3, 1973

Docket Nos. 50-329
50-330

Alan S. Rosenthal, Esq., Chairman
Atomic Safety and Licensing Appeal Board
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RE: QUALITY ASSURANCE DEFICIENCIES ENCOUNTERED AT MIDLAND FACILITY

Gentlemen:

This is in response to your memorandum on this subject dated November 26, 1973. We are also concerned as to quality assurance implementation at the Midland facility. It was for this reason that we initiated the action which led to the shutdown of cadwelding at that facility by Consumers Power Company. As a practical matter, the shutdown of cadwelding at this site severely limits Class I construction at the site in that cadwelding must be completed before additional Class I structural work can proceed.

A reinspection of November 20-21, 1973, revealed that that which the licensee believed to be sufficient with regard to cadwelding procedures still was inadequate. This raised doubts about the licensee's overall implementation of its quality assurance program.

We are today issuing to this licensee an order confirming the continuing suspension of the cadwelding and ordering the licensee to show cause why all activities under the construction permits should not be suspended.

L. Manning Muntzing
Director of Regulation

TESTIMONY OF BARBARA G. STAMIRIS
5795 N. RIVER
FREELAND, MI 48623

RE: MIDLAND NUCLEAR PLANT, UNITS 1 & 2

Before the Committee on Interior and Insular Affairs
Morris K. Udall, Chairman

June 16, 1983

Introduction

My name is Barbara Stamiris. I have been intervening in the "soil settlement" hearing at the Midland nuclear plant for the past three years. I welcome the opportunity to share my assessment of the regulatory process at Midland because I believe it has implications for nuclear power regulation nationwide.

The NRC is the sole body capable of preventing rather than reacting to a nuclear safety disaster. Congress has provided the NRC with the necessary regulatory tools to enforce their mandate of protecting the public health and safety, but these regulations are not being implemented properly. The grave safety problems at Midland today are the result of 10 years of regulatory lenience in the face of utility incompetence, mismanagement, and abuse of trust.

History of Soils Problems

From the beginning, the NRC has been unwilling to place public health and safety ahead of financial considerations of the utility. In 1969, the Midland plant was exempted from the NRC's usual siting standards in order to be located near its steam customer, the Dow Chemical Co. As a result, we have a nuclear plant situated in a floodplain whose foundation had to be built up with 35 feet of fill

soils. Consumers Power Company's disregard of quality assurance principles caused the improper placement and compaction of these fill soils. But, when the Administration Building settled and Consumers own follow-up audit revealed sitewide fill soil deficiencies in 1977, Consumers still chose to proceed with construction on these soils and began the neighboring Diesel Generator Building.

Today all the plants major safety structures, including two begun after the first settlement problems, have cracked and settled unevenly. Most recently the Containment itself, always thought to be exempt from the settlement problems, has been found to be cracked (NRC report 83-01). But, even more critical than the observable settlement problems is the damage to the underground cooling pipes, requiring complex monitoring devices. An extensive system of permanent dewatering wells must operate over the life of the plant in order to control ground saturation seeping from the plant's cooling pond.

Soils Remedial Measures

As complex and unusual as the soil settlement problems are at Midland, so too are the remedial fixes they require. And the "fixes" themselves are beginning to cause further damage and complications.

1. The Diesel Generator Building, whose excessive differential settlement has cracked its three foot thick concrete walls, was loaded with 37,000 tons of sand in an attempt to consolidate its subsoils. Consumers chose this experimental solution because in their words "it was the least costly feasible alternative" which would allow construction to continue and "minimize impact on the construction schedule" (50.54f q. 23). Initiated by Consumers prior to the first NRC meeting on the soils problems in 1978, the preload fix was allowed by the NRC with the explicit warning that it was undertaken entirely at Consumers own risk and would have to demonstrate in the end "that the original requirements of the construction permit had been met or exceeded."

But, five years later with the Diesel Generator Building complete, the NRC is unwilling to overlook the sunk costs and is compromising the original requirements. Further cracking, and stress to the building and to the piping below resulted from the sand preload and the adequacy of the consolidation effort remains in question. The integrity of the Diesel Generator Building is contested among the NRC technical experts, but the official NRC position is one of acceptance.

2. The worlds largest underpinning operation is required to shore up the foundations of the Auxilliary Building and Service Water Building (attachment 1). Mr. Keppler, NRC's Region III Director, has called this job in which rows of 50-foot deep concrete piers, and massive concrete walls are poured beneat' the completed structures, "the equivalent of building a third reactor onsite."

The NRC Inspector closest to the original soils problems expressed doubts in 1981 that these "highly sophisticated and in some cases unprecedented remedial actions" could be successfully accomplished by a company that "simply could not take soil material from one part of the site and place it in a sufficient manner to support the structures "on another" (tr. 2441)*.

And in 1982, Licensing Board Judge Harbour cautioned that the intricate underpinning operations, which must hold building movement to under 1/8 of an inch, had "the potential for producing irreversible damage to safety class structures" and said "this board does not want to be hearing the remedial measures on the remedial measures at some future date" (tr. 7124).

Yet, after only six of the 57 underpinning piers have been placed, these fears seem to be coming true. The Feedwater Isolation Valvepits have cracked during a jacking operation, one of the piers (11 w) has failed to accept the load as anticipated, the Auxilliary Building wings are unexpectedly rising, the soil

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*All transcript pages refer to 50-329, 50-330 OM-OL soils proceeding.

bearing capacity has been found to be 1/2 that expected, and groundwater seepage threatens the integrity of the concrete piers.

3. The permanent dewatering system is expected to reverse groundwater flow patterns surrounding the site (FSAR), and recent reports indicate that nearby residential wells are drying up. Extra dewatering undertaken to control groundwater in the underpinning shafts may be affecting the foundation soils of the nearby containment and causing the cracking there. And chemical wastes stored for years in abandoned wells and underground cavities by Dow Chemical Co. are subject to migration associated with 40 years of constant dewatering.

The Soil Settlement Hearings

On December 6, 1979, the NRC issued an Order Modifying Construction Permits which sought to suspend the soils related work at Midland "until the related safety issues (were) resolved." But, Consumers requested a hearing to contest that order. So the quality assurance deficiencies and cost/schedule priorities which caused the original soil problems and continue to cause the soils remedial work problems remain unresolved today--but the work goes on.

Quality assurance hearings and NRC assurances that quality assurance improvement would follow have been a part of this project from the beginning. As early as 1973, an appeals board at Midland considered revoking the construction permits, but "did not do so only because of the solemn assurances of Consumers that their prior QA deficiencies were being rectified." They later concluded that "the assurances we received were false" because neither Consumers nor Bechtel have "manifested an ability or willingness to insure proper QA activities" (ALAB 106 p. 185 and 11-23-73 letter). The import of these words in 1983 is a chilling indicator of the failure of both the utility and the regulators to resolve the problems at Midland over the past ten years.

But in the soil settlement hearing, the NRC went one step further than they had before. For this time the NRC not only repeated their reasonable assurance

that QA would be appropriately implemented in the future, but they did so as part of a pre-hearing agreement designed to resolve the very issue the hearing was about. The June 5, 1981, QA Stipulation exchanged the NRC's "reasonable assurance" conclusion for Consumers agreement not to contest the soils QA breakdown, thereby eliminating the need to litigate what the NRC and Consumers considered past QA problems (attachment 2). Only favorable testimony about the revised QA program was to be submitted.

My FOIA requests for the confidential terms of this QA Stipulation sent to the NRC by Consumers have been denied on the grounds that the document contains "commercial information" and "damaging and unevaluated information which may threaten to distort an administrative judgement" (FOIA 81-227, 82-477). Yet, the planning for this stipulation involved both Consumers and Region III top management.

Invited by Consumer's James Cook to personally visit the site to inspect the revised QA program, Mr. Keppler came with a team of NRC inspectors in May of 1981. Despite citing noncompliances in eight of the eighteen areas inspected (Report 81-12), Mr. Keppler formed a judgement of improved QA implementation on which the QA Stipulation was based. Mr. Keppler later testified that the QA Stipulation did not represent a lawyer's bargain, and led by Consumers' attorney, denied that he was even aware of its existance when he formed his reasonable assurance judgement (7-13-81 tr. 2057). Mr. Keppler changed that testimony the following day when reminded of a conversation with me about his involvement in the QA Stipulation (7-14-81 tr. 2118), and it was later determined that even the NRC inspectors conducting the May inspection had copies of the proposed QA Stipulation with them during the inspection (tr. 2223, 2445)

As a result of the QA agreement, the NRC was now arguing in essence that their own Order should not be upheld, and on the first day of the hearing allowed the first soils remedial work to begin. Based on a single, well-anticipated inspec-

tion, the NRC was willing to wipe the slate clean and forget about the five years of QA breakdown which caused the soils problems. The NRC once again predicted that QA implementation was on the road to recovery.

1982 Quality Assurance Assessments

But as soon as the underpinning preparations began, so too did the QA problems. When Midland's second Systematic Appraisal of Licensee Performance (SALP) Report was issued in April of 1982, the SALP Board drew a very different conclusion of QA deficiency, for the same 1980-81 time frame as Mr. Keppler's favorable testimony (attachment 3). Troubled by this conflict and saying that he was afraid he had misled the Licensing Board in 1981, Mr. Keppler sought to have the QA record reopened in the soil settlement hearing. Expressing his extreme disappointment at another negative SALP report, especially the low rating in soils, Mr. Keppler said he guessed his inspectors were trying to tell him something.

His inspectors were trying to tell him something again with the Deisel Generator Building inspection (82-22) of late 1982 (attachment 4). Undertaken as an in-depth look at the most recent construction work, the inspectors found problems everywhere they looked in this inspection. Internal notes revealed that the Midland inspection team unanimously supported an NRC shut-down as a result of their findings. But this time Consumers agreed to stop most safety related work, so that the critical soils underpinning work could begin.

The quality assurance breakdown involving deliberate violations of QA/QC principles, and significant discrepancies between the design and as-built condition of the plant resulted in a $120,000 civil penalty fine. But, on December 9, 1982 in the midst of NRC enforcement deliberations regarding the latest QA breakdown, Consumers Power Co. was given the long awaited and desparately needed green light to begin the two year underpinning operation.

The soil settlement hearing established to decide whether the soils remedial work should be permitted, would now continue well after the work in question was

irreversibly underway. Despite continuing and escalating QA deficiencies, the NRC has allowed what is perhaps the most difficult work ever undertaken at a nuclear plant to go forward at Midland.

The Licensing Process

Both the NRC and the Licensing Board defend this course of action by maintaining that the plant will not be granted an operating license in the end unless all original design requirements are met. Therefore, construction is allowed to proceed "at the utility's own risk," while regulatory judgements await plant completion. The public is asked to believe that ultimate safety judgements about the adequacy of the plant will be made without regard for the utilities financial interests. But in the real world of billion dollar sunk costs and completed plants, it is the original safety requirements which are modified in an effort to license the plant--not the completed structures.

Knowing that a completed plant is likely to be licensed by the NRC, and knowing that only by completing the plant will Michigan law allow construction costs to be passed on to the ratepayers, Consumers Power Co. is unable to objectively weigh cost versus safety decisions. The only real risk remaining at the end of these "proceed at your own risk" arrangements is that to the public who must bear both the cost and safety burden of this unsafe plant.

The NRC has the regulatory tools to ensure the safe construction of a nuclear plant. But, at Midland these tools have not been used. Licensing proceedings are resolved on promises of reformation, not performance records--on words not actions. Orders modifying construction permits are made, then ignored. Material false statements are established, then overlooked. O.I. investigations are conducted with instructions to avoid conclusions. Design documents are modified after the fact to match as-built construction, and accepted by the NRC. And quality assurance deficiency is tolerated while construction proceeds.

1983 NRC Testimony

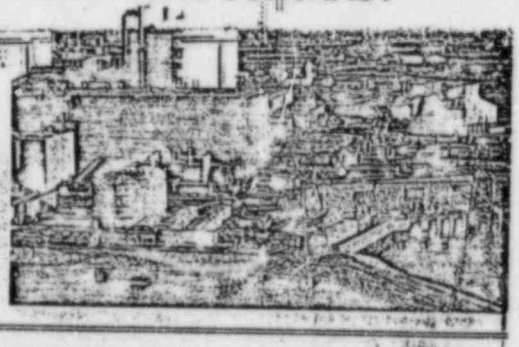
There are men within the NRC who seem to have finally reached the last straw. There are inspectors and technical experts who are trying to make their voices heard. In the recent soil settlement hearings, the Midland team of inspectors testified that they lacked confidence and trust in Consumers Power Company management, and their ability to implement QA properly.

Yet, the 1983 QA improvement plan (CCP), the reinspection of past safety work, and the thrid party reviews in which Mr. Keppler places his confidence are still going forward under Consumers' control. And the reliance placed on reviews which are truly independent, or on increased NRC controls to get the job done, miss the salient point. It is Consumers Power alone who must be evaluated, for they alone will operate the licensed plant. If they cannot be trusted to construct the plant safely, how can they be trusted to operate it safely?

The NRC can no longer avoid their responsibility to decide whether this utility has the capability and reliability necessary to safely complete and operate a nuclear power plant. For only the NRC can make this judgement before it is too late.

[ATTACHMENT 1]

MERGENTIME CREWS ON WORLD'S LARGEST UNDERPINNING CONTRACT



GROUNDWORK
Company Newsletter
Volume 1, Number 6, December 1982
Published by
Mergentime Corporation
Engineering Contractors
PO Box 662
Flemington, New Jersey 08822

Company crews moved into Midland, Michigan in January to start the largest and most complex underpinning job ever let in construction history: underpinning portions of the auxiliary building of Consumers Power Company's 1,300-Mw Nuclear Cogeneration Plant—a first in the nuclear industry.

Mergentime was selected for the job by Bechtel Power Corporation, prime contractor for Consumers Power, because of Mergentime's widely recognized skills. The underpinning will serve as foundations for the control tower, for electrical penetration areas connecting the tower to the two reactors, and for two feedwater isolation valve pits.

Underpinning is required to meet the Nuclear Regulatory Commission's (NRC) higher earthquake design criteria imposed in October of 1980, and to resolve soils problems discovered in 1978.

Before work could begin, Mergentime had to exclude ground water from the excavation areas. The Company had Moretrench American Corp. install a 1,184-linear-foot freeze wall. A total of 123 observation and ejector wells within and outboard the freeze wall complete the dewatering system.

To provide access to the underpinning area, Mergentime is excavating two 20 x 26 x 63-foot deep shafts, one at each side of the plant's turbine building. A 6 x 6 x 428-foot long hand-dug tunnel will connect the shafts and allow workers to progressively install a temporary support system of 57 cast-in-place concrete piers and 24 grillage beams. As the work proceeds the building weight will be transferred onto the temporary support with jacks.

Excavation of the remaining 14,000 cubic yards of fill will be done in three stages: Workers will first dig down 20 feet, then excavate and remove residual concrete buried under the building, and finally excavate to glacial till, 36 feet beneath the auxiliary building.

In the last phase of underpinning, Mergentime will place 430 linear feet of concrete shear walls up to 20 feet thick for a permanent foundation for both structural as well as seismic loads. "After we transfer the building load to the new foundation with jacks, we'll do a load test which will take between 45 and 90 days," says Tom Goedjen, Mergentime Project Manager.

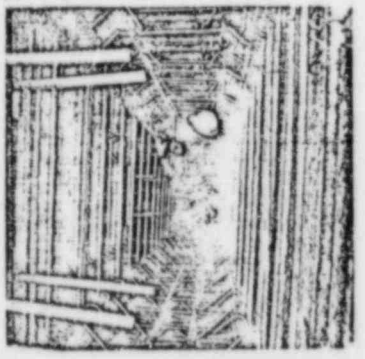
The 57 temporary support piers have bell bottoms, 12 of them with an average diagonal distance of 19.6 feet. Hand-dug pits with bells installed as deep as 53 feet below existing foundations in 3 x 6-foot

Administrative staffers from left are, Paul Pierson, Leslie Postel, Brenda Ault (seated), Diana Alexander, Larry Rowold, M.J. Bohrer, William Glasgow and Mark Shattuck. Missing are Mona Tracy and Georgia Kapetas.

Project Manager Tom Goedjen, center, holds a foundation pier model. Standing from left, are John Westberg, James Colonna, Nizamuddin Syed, Robert Herriman, Luke Heffernan, Ray Oberstinar and Mike Lutz. Seated are Howard Ackerman, Mark Schaub, William Dean, Frank Vella and William Vanhouten. Missing is William Williams.

A section of the 1,184 linear-foot freeze wall pen of necessary dewatering system

A 26-foot foundation pier test pit with lagging in place gets finishing touches on the rebar before concrete pour



pits, will require 3,916 cubic yards of concrete and 383,000 pounds of rebar. Morgenstime will dig at least two piers at a time, in an engineered sequence from each end.

Steel lagging for the pier pits is unique and was created by Morgenstime Vice President Charles Gould out of the necessity to meet NRC requirements that it be nonorganic and nonbiodegradable. "A thorough search proves that no commercial material was available in the strength needed," Gould reports.

Everything on the project is being reviewed by the NRC and must meet strict Midland Project quality assurance requirements. Gould's lagging design was approved without changes after careful study by independent consultants contracted by Bechtel. The high strength 12-gauge steel will handle one kip psi in a 9-foot span with less deflection than an equivalent wood section. Some 40,000 square feet are presently fabricated by Morgenstime forces.

Gould designed the bearing-set corner connectors to accommodate four inches of lateral movement of the steel lagging.

Because underpinning is unprecedented in the nuclear industry, a client quality assurance program is followed to insure design and construction procedures. Company workmen are receiving training by first simulating all critical work prior to the start of construction.

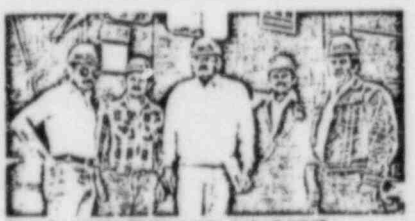
A truncated 40-foot plywood tunnel, built to match the one planned under the bridling, was used to exhibit how the grillage beams will be moved through it without machines and without damage. A crew also dug a 26-foot deep steel lagged pier pit, placed reinforcing steel, and poured the concrete through a 200-foot slick line, simulating all underground conditions. Additional training was established to set steel bearing plates, grouting and jacking.

Goedjen says, "A demonstration program is new to us. We're used to doing quality work on schedule, but since it had to be, we used the training program to hone our techniques and check our production rates."

Goedjen has a construction, engineering and administrative support staff of 45. Peak manloading will be 350 construction workers divided into two daily 10-hour shifts.

Conceptual and detailed designs for the underpinning were developed by Morgenstime Corporation assisted by Hanson Engineers, Inc.

Unique steel lagging, designed by Morgenstime, meets NRC requirements for nonorganic, nonbiodegradable material. Also see cover.



General Superintendent Ted Merwin, center, stands with, from left, superintendents Tom Pierryga, Byron Kennedy, Humberto Amador and Jim Mordy. Missing is Mike Gint.

[ATTACHMENT 2]

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of		
CONSUMERS POWER COMPANY	Docket Nos.	50-329-OM
		50-330-OM
(Midland Plant, Units 1 and 2)		50-329-OL
		50-330-OL

NUCLEAR REGULATORY COMMISSION STAFF/CONSUMERS POWER COMPANY QUALITY ASSURANCE STIPULATION

1. Prior to December, 1979, there were quality assurance deficiencies related to soil construction activities under and around safety-related structures and systems at the Consumers Power Midland Plant construction site ("Midland") in that (i) certain design and construction specifications related to foundation-type material properties and compaction requirements were not followed; (ii) there was a lack of clear direction and support between the contractor's engineering office and construction site as well as within the contractor's engineering office; (iii) there was a lack of control and supervision of plant fill placement activities which contributed to inadequate compaction of foundation material; and (iv) corrective action regarding nonconformances related to plant fill was insufficient or inadequate as evidenced by repeated deviations from specification requirements.

2. Consumers Power agrees not to contest the NRC Staff's conclusions that the events referred to in paragraph 1 constituted a breakdown in quality assurance with respect to soils placement at Midland and constituted an adequate basis for issuance of the order of December 6, 1979.

3. The quality assurance program satisfies all requisite NRC criteria. Further, as a result of revisions in the quality assurance program, the improved implementation of that program, and other factors discussed in testimony submitted by James G. Keppler, the NRC has reasonable assurance that quality assurance and quality control programs will be appropriately implemented with respect to future soils construction activities including remedial actions taken as a result of inadequate soil placement.

Michael I. Miller
One of the Attorneys for
Consumers Power Company

William D. Paton
One of the Attorneys for the Staff
of the Nuclear Regulatory Commission

Date: June 5, 1981

[ATTACHMENT 3]

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE [SALP]

I. INTRODUCTION

The NRC has established a program for Systematic Assessment of Licensee Performance (SALP). The SALP is an integrated NRC Staff effort to collect available observations and data on a periodic basis and evaluate licensee performance based upon these observations. SALP is supplemental to normal regulatory processes used to insure compliance to the rules and regulations. SALP is intended from a historical point to be sufficiently diagnostic to provide a rational basis: (1) for allocating future NRC regulatory resources, and (2) to provide meaningful guidance to licensee management to promote quality and safety of plant construction and operation.

A NRC SALP Board composed of managers and inspectors who are knowledgeable of the licensee activities, met on October 23, 1981 and March 23, 1982, to review the collection of performance observations and data to assess the licensee performance in selected functional areas.

This SALP Report is the Board's assessment of the licensee safety performance at Consumers Power Company's Midland Nuclear Power Plant, for the period July 1, 1980 to June 30, 1981.

The results of the SALP Board assessments in the selected functional areas were presented to the licensee at a meeting held April 26, 1982.

II. CRITERIA

The licensee performance is assessed in selected functional areas depending whether the facility is in a construction, pre-operational or operating phase. Each functional area normally represents areas significant to nuclear safety and the environment, and are normal programmatic areas. Some functional areas may not be assessed because of little or no licensee activities or lack of meaningful observations. Special areas may be added to highlight significant observation.

One or more of the following evaluation criteria were used to assess each functional area.

1. Management involvement in assuring quality.
2. Approach to resolution of technical issues from safety standpoint.
3. Responsiveness to NRC initiatives.
4. Enforcement history.
5. Reporting and analysis of reportable events.
6. Staffing (including management).
7. Training effectiveness and qualification.

However, the SALP Board is not limited to these criteria and others may have been used where appropriate.

Based upon the SALP Board assessment each functional area evaluated is classified into one of three performance categories. The definition of these performance categories is:

Category 1. Reduced NRC attention may be appropriate. Licensee management attention and involvement are aggressive and oriented toward nuclear safety; licensee resources are ample and effectively used such that a high level of performance with respect to operational safety or construction is being achieved.

Category 2. NRC attention should be maintained at normal levels. Licensee management attention and involvement are evident and are concerned with nuclear safety; licensee resources are adequate and are reasonably effective such that satisfactory performance with respect to operational safety or construction is being achieved.

Category 3. Both NRC and licensee attention should be increased. Licensee management attention or involvement is acceptable and considers nuclear safety, but weaknesses are evident; licensee resources appear to be strained or not effectively used such that minimally satisfactory performance with respect to operational safety or construction is being achieved.

III. SUMMARY OF RESULTS

Functional Area Assessment	Category 1	Category 2	Category 3
1. Quality Assurance		X	
2. Soils and Foundations			X
3. Containment and other Safety-Related Structures		X	
4. Piping Systems and Supports			X
5. Safety-Related Components		X	
6. Support Systems	X		
7. Electrical Power Supply and Distribution			X
8. Instrumentation and Control Systems		NOT RATED	
9. Licensing Activities		X	
10. Fire Protection	X		
11. Preservice Inspection		X	
12. Design Control and Design Changes			X
13. Reporting Requirements and Corrective Action			X

[ATTACHMENT 4]

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF PUBLIC AFFAIRS, REGION III
799 Roosevelt Road, Glen Ellyn, Illinois 60137

NEWS ANNOUNCEMENT 83-08
CONTACT: Jan Strasma 312/932-2674
Russ Marabito 312/932-2667

NRC STAFF PROPOSES $120,000 FINE FOR QUALITY ASSURANCE VIOLATIONS AT MIDLAND NUCLEAR POWER STATION

The Nuclear Regulatory Commission's Region III Office has proposed a $120,000 fine against Consumers Power Company for an alleged breakdown in the quality assurance program at the Midland Nuclear Power Station construction site in Midland, Michigan.

An NRC inspection of equipment installation in the plant's diesel generator building between October 12 and November 25, 1982, identified numerous items of noncompliance with NRC Quality Assurance requirements.

The proposed fine consists of two alleged violations, each carrying a $60,000 penalty.

The first violation is for multiple examples of plant personnel failing to follow procedures, drawings and specifications in the installation of equipment. In one instance, an inspection program was not established to ensure the segregation of electrical cables in accordance with design requirements. In other cases, changes in drawings or specifications were made without proper authorization.

The second violation was the result of the NRC's determination that quality control supervisors instructed quality control (QC) inspectors to suspend inspections when excessive numbers of deficiencies were observed.

The construction being inspected was then turned back to the construction staff for rework. The intent of this practice was to improve construction quality prior to the QC inspections. In some cases, however, the follow-up QC inspections focused only on the previously identified deficiencies, instead of conducting a full reinspection. This practice, therefore, provided no assurance that unreported deficiencies were later identified or repaired. Reinspections will be required for those areas where this QC practice was utilized.

This inspection practice also resulted in incorrect data being fed into the licensee's Trend Analysis Program, thereby inhibiting the utility's ability to determine the root causes of deficiencies and to prevent their recurrence.

In a letter to Consumers announcing the proposed fine, Regional Administrator James G. Keppler said the violations demonstrate the company's "failure to exercise adequate oversight and control" of its principal contractor (Bechtel Power Corporation), which had the responsibility for executing the QA program.

Keppler added that the QA breakdown, in part, caused Consumers to halt some safety-related construction work at the plant last December, and to take "other significant actions to provide assurance that safety-related structures and systems are constructed as designed."

As part of its corrective action, Consumers has proposed a "Construction Completion Program," outlining the steps it will take to complete the Midland plant. It includes a reinspection of safety-related systems, third-party reviews to monitor project performance, and QA/QC organizational changes, among other things.

Consumers also will be required by the NRC to determine the extent to which QC supervisors instructed inspectors to limit their findings of deficiencies and to inform the NRC of what corrective action will be taken to prevent this from occurring in the future.

The licensee has until March 10, 1983, to either pay the fine or to protest it. If the fine is protested and subsequently imposed formally by the NRC staff, Consumers Power may request a hearing.

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February 8, 1983

TESTIMONY

of

Billie Pirner Garde
Director,
Citizens Clinic
Government Accountability Project
Institute for Policy Studies
Washington, D.C.

before the

SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT
of the
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
United States House of Representatives

June 16, 1983

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE:

INTRODUCTION

On behalf of the Government Accountability Project (GAP) of the Institute for Policy Studies, it is an honor and a privilege to appear before you today. I am especially pleased by your invitation because this committee has remained steadfast in its commitment to insuring the health and safety of the American people through its vigilence in providing reasonable regulation of the nuclear power industry.

Your persistence in monitoring Quality Assurance problems at nuclear power plants throughout the nation is indicative of your dedication to maintaining the government's accountability to its citizens. It is our hope that this hearing on the Midland Nuclear Power Plant will begin to address some of the grave problems at this seriously troubled nuclear construction site — a site recognized by the Nuclear Regulatory Commission (NRC) as one of the most problematic plants in the nation.

It is only fitting that this panel should commence with the testimonies of two women who are here not because it is their job to testify, but because they believe it is their duty. Mrs. Barbara Stamiris and Mrs. Mary Sinclair have voluntarily devoted a large part of their personal lives to participating in the Atomic Safety and Licensing Board proceedings on the Midland plant. These women are neither lawyers nor engineers; rather, they are concerned citizens of a community who are exercising their moral duties and legal rights in exposing the Midland facility's design, construction and management deficiencies. They have been subjected to untold and undeserved criticism by Consumers Power Company (CPCo), they have spent thousands of their own dollars to present and disclose controversial

issues, and they have achieved results. If and when the Midland Nuclear Power Plant opens, it will be a far safer facility than it would have been without their participation.

Ms. Sinclair's and Ms. Stamiris' experiences should be of interest to this committee. Certainly they can testify first hand about the questions that were raised during the February Oversight Hearings of the NRC's budget request for 1984 and 1985. As you recall, one of the issues that was brought up in the hearing was the public's lack of confidence in the nuclear power industry and the NRC itself. This committee mentioned Midland as one of the plants under construction that had Quality Assurance breakdowns or design problems that went undetected for years by the NRC. Certainly the problems at the Midland facility are not new to Ms. Sinclair, Ms. Stamiris or the GAP.

In further keeping with the objectives of our organization, GAP is conducting a major independent investigation of the Midland facility. We have interviewed numerous workers and concerned citizens, analyzed auditing proposals that Consumers Power Company has made to the NRC staff (in response to the July, 1982 Advisory Committee on Reactor Safeguards letter to Chairman Palladino), and scrutinized Consumers' plans to resolve numerous questions that remain unanswered regarding the "as built" condition of the Midland plant. With each new piece of information that GAP gathers, we become increasingly concerned about the plant's safety and more skeptical about Consumers' ability to identify and rectify the plant's blatant design, construction, and management deficiencies. We are testifying today with the hopes of obtaining answers to our concerns -- answers that the NRC has not yet been able to provide.

This testimony will examine two major issues: first, it will detail the NRC's failure to recognize or deal effectively with the magnitude of the problems at Midland; and second, it will explain that the solution proposed by the utility on the eve of acceptance by the NRC cannot restore public confidence in the safety of the Midland plant.

Consumers' answer to the plethora of flaws is the Construction Completion Plan (CCP), which is intended to remedy the previous abuses at the Midland plant. It is GAP's belief that although the CCP identifies problems, it is inherently and empirically inadequate and it cannot successfully mitigate or solve the serious consequences of QA/QC deficiencies. The plan is fundamentally flawed at the onset because it calls for Consumers to evaluate itself and to identify its own problems through a Quality Verification Program. The legitimacy of such a program is compromised by conflicts of interest. As Chairman Udall stated at the September 14, 1982 Oversight Hearings on the William H. Zimmer Power Station in Ohio:

> It seems unrealistic that the Committee or the public would have confidence that the company that neglected Quality Assurance for so many years will, on its own, fully uncover deficiencies resulting from its neglect.

Our lack of confidence in a self-evaluation is further diminished by President of CPCo Mr. John D. Selby's recent admission that the Midland plant's failure will signal the financial collapse of his company. In GAP's opinion, the only way to assure adequate identification of the facility's flaws is to eliminate structural conflicts of interest by creating a legitimate, independent, third-party review.

Mr. Keppler acknowledges that he intends to allow the utility to identify its own problems through self-examination. His reasoning is confusing -- he claims that <u>if</u> the NRC cannot trust the utility to identify its own

problems then it cannot be trusted to operate a nuclear power plant. Yet members of the Midland staff do not trust Consumers' Midland management team.

The reasoning of Mr. Keppler is the ultimate in optimism, but it is not realistic. The public's health and safety depend on the actual condition of the plant -- not on the unsubstantiated hopes and dreams of Mr. Keppler.

BACKGROUND

A brief description is in order concerning who we are, how we became involved with the Midland plant, and the major events leading up to this hearing to better identify and illuminate the issues we believe the Committee might wish to address.

The Government Accountability Project is a project of the Institute for Policy Studies, Washington, D.C. The purpose of its program is to broaden the understanding of the vital role of the public employee in preventing waste and corruption, to offer legal and strategic counsel to whistleblowers, to bring meaningful and significant reform to the government workplace, and to expose wasteful or repressive government actions that pose a threat to the health and safety of the American public. Presently, the Project provides a program of multi-level assistance for government employees who report illegal or improper actions by their agencies. GAP regularly monitors governmental reforms, offers expertise to Executive Branch offices and agencies, and responds to requests by Congress and state legislatures for analysis of legislation to make government more accountable to the public.

The Government Accountability Project also includes a Citizens Clinic for Accountable Government. The clinical program assists and instructs citizens groups and individuals who seek to uncover government misconduct, monitor government investigations or force regulatory agencies to recognize

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significant public health and safety dangers. It is the Citizens Clinic, with GAP investigators, that has adopted the Midland case.

In January, 1982, GAP was contacted by the Lone Tree Council of Midland, Michigan. They informed us that workers — some anonymous, some named — had been contacting their organization and disclosing serious problems at the Midland site. They alleged that the citizen intervenors had similar experiences and that as the allegations became more serious they decided to seek help in directing these workers. They were referred to the Government Accountability Project by other Washington-based public interest groups.

In March, 1982, after interviewing numerous workers and concerned citizens and preparing an extensive review and analysis of the history of problems at Midland, two GAP investigators went to Michigan. They reviewed documentation from the Nuclear Regulatory Commission, court transcripts, and testimony from public hearings. GAP representatives made a second investigative trip in May, 1982 during which they questioned witnesses, conducted verification studies, and researched technical issues. Subsequently, GAP submitted workers' affidavits to the Region III Inspection and Enforcement Office of the NRC. From these preliminary investigations the Clinic identifies nine major areas of concern about the Midland Nuclear Power Plant. To summarize:

1) The cost of the plant: At the time of the study, the plant was 1200% over its original cost projections — now reaching 4.43 billion dollars. That cost will be passed on to Consumers' customers only when the plant is deemed "useable and useful." Attorney General estimates the electric bills for consumers will go up 47% -- and the electricity isn't needed anyway.

2) The soil settlement issue: Major safety related buildings have literally sunk and subsequently cracked as a result of poorly compacted soil. Some buildings have sunk up to eight inches. The deisel-generator building has numerous wide cracks that pose critical safety problems. The NRC technical experts are divided about the safety of the DGB during a seismic event. One expert testified the DGB was

a "pile of concrete held together by metal rebars."

3) The location of the plant: The Midland Nuclear Power Plant is located within the city limits of a town of 51,400. There are 2,000 industrial workers within ½ mile of the site, the cooling pond property border an elementary school, and numerous homes surround the plant.

4) The environmental impact: The plant will emit extraordinary amounts of dense fog from the cooling pond in which the routine and accidental radioactive releases will be entrapped. This fog will "rainout" and "iceout" heavily populated areas. Also included is the unresolved issues of high level waste storage on site and the waste discharge into the already overly contaminated Tittabawassee River.

5) The allegations of plant workers: Midland nuclear site workers have come forward and exposed numerous defects in the facility. Worker affidavits that GAP submitted to the NRC reveal dozens of allegations regarding plant safety and mismanagement. Yet the most serious allegations are yet unrecorded because of the intense Bechtel/Union control over its workers.

6) Inadequate Nuclear Regulatory Commission oversight: NRC actions have been characterized by a decade of giving the "benefit of the doubt" to the utility even in the face of repeated failures of the utility to live up to its promises of reformation. In addition, the NRC Region III director has failed to acknowledge his staff's recommendations and allegations concerning design, construction and management deficiencies.

7) A Quality Assurance breakdown: An intense NRC investigation in the fall of 1982 confirmed the ongoing Quality Assurance problems on the site. Repeated QA/QC program deficiencies have led to fines, investigations, and audits since 1973. The QA program continues to have major structural flaws that rely on decision makers who have a built-in conflict of interest.

8) Intimidation and reprisals against workers: Workers are being fired and/or threatened for exposing site problems and pursuing their allegations. All of Bechtel's employees are required to sign an intimidating statement of non-disclosure and CPCo recently imposed a "gag order" on its employees for talking to to NRC.

9) Contract: Consumers Power Company is under contract to produce steam by December, 1984 for the Dow Chemical Company. Consumers now cannot meet that contractual obligation.

Furthermore, GAP discovered that a number of systems in the plant are virtually in shambles: unqualified welders have been working since 1980;

there is a major materials traceability breakdown; electrical cable trays are overloaded and tightly spaced; documentation was discovered back-logged for months; the plant's paper work is out of control; and the "as built" condition of the plant is, at best, indeterminant.

As a result of our investigation and our failure to convince the NRC to take adequate remedial measures about the Midland plant we have turned to this Committee and the Commissioners directly. On Monday we requested that the Commission:

1) Modify the Construction Permit (Midland Nuclear Power Plant, Units 1 and 2) to include mandatory "hold points" on the balance-of-plant (BOP) work and incorporate the current Atomic Safety and Licensing Board (ASLB or Board) ordered "hold points" on the soils remedial work into the Midland construction permit.

2) Require a management audit of Consumers Power Company (CPCo) by an independent, competent management auditing firm that will determine the causes of the management failures that have resulted in the soils settlement disaster and the recently discovered Quality Assurance breakdown.

3) Reject the Construction Completion Plan (CCP) as currently proposed, including a rejection of Stone and Webster to conduct the third party audit of the plant. Instead a truly independent, competent, and credible third party auditor should be selected with public participation in the process.

4) Remove the Quality Assurance/Quality Control function from the Midland Project Quality Assurance Department (MPQAD) and replace them with an independent team of QA/QC personnel that reports simultaneously to the NRC and CPCo management.

5) Increase the assignment of NRC personnel to include additional technical and inspection personnel as requested by the Midland Section of the Office of Special Cases (OSC); and,

6) Require a detailed review of the soils settlement resolution as outlined in the Supplemental Safety Evaluation Report, incorporating a technical analysis of the implementation of the underpinning project at the current stage of completion.

Mrs. Sinclair and Mrs. Stamiris have testified about the problems on the plant site -- a Quality Assurance breakdown, unknown hardware problems, and serious design deficiencies. GAP has concentrated on evaluating the

adequacy of the solution to those problems.

On April 8, 1981 Region III management over-ruled its investigative staff's recommendations to suspend construction at the William H. Zimmer Nuclear Power Station near Cincinnati, Ohio. Instead, the NRC issued an Immediate Action Letter which, inter alia, required the Cincinnati Gas and Electric Company to develop a Quality Confirmation Program (QCP). On November 12, 1982 the utter failure of the QCP forced the Commissioners to suspend all safety-related construction at Zimmer. Unfortunately CPCo's Construction Completion Plan (CCP) proposed for Midland bears a striking resemblance to the key flaws that doomed the QCP. In some cases, the CCP exacerbates the painful mistakes of Zimmer.

More specifically, the Construction Completion Plan is doomed to failure if the following specific problems are not resolved prior to the resumption of construction on the site:

1. Inherent Conflict of Interest

If the CCP adequately recognized that it is the same Consumers Power Company management that has failed to supervise and control the Engineer/Contractor throughout the life of the Midland Project perhaps the CCP would have a chance to resolve the quality problems. But the "QA/QC Organization Changes" outlined by the CCP simply legitimizes the very structure that has failed to implement the past QA/QC reorganization plans.

2. Failure to Specify Inspection Procedures and Evaluation Criteria

The QA/QC Reorganization fails to include or explain the critical Quality Control inspection plans. The technical content and requirements of such plans are promised at some undisclosed future time, although QC will be responsible for implementing these unknown, unexplained methodologies

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which hold the key to future quality at the Midland plant.

MPQAD even plans to continue to use Bechtel's Quality Control Notices Manual (QCNM) and Quality Assurance Manual (BQAM) "as approved for use on the Midland Plant." (6-3-83, at 12) The solution may be convenient, but it fails to explain how a QA/QC system that produced the In-Process Inspection Notification (IPIN) and Deficiency Report (DR) system could be adequate for a new Midland commitment to quality.

3) Program Implementation Weaknesses

Historically it has been the implementation of any QA/QC program that has been CPCo's Achilles heel at the Midland Plant. Similarly it is the implementation of the current edition of the CCP that concerns GAP staff working on the Midland project. Under Implementation the following statement raises serious concern about the CPCo commitment to following its own professed work plan:

> Correction of identified problems will be given priority over initiation of new work, as appropriate, and the completion teams will schedule their work based on these priorities, (emphasis added).

There is no discussion of who will decide what is and what is not appropriate to correct before new work is started, nor how that determination will be made. Those critical decisions simply must be made by someone other than CPCo and their Bechtel Engineer/Contractor.

4) Lack of Organizational Freedom for the Quality Assurance Department

The organizational premise of the CCP is a "team" concept that integrates construction, engineering and quality assurance personnel. GAP reserves judgement on the operation of the "team concept" as an appropriate construction concept for nuclear power plants until such time as a utility can demonstrate that there can be organizational freedom for QA functions.

5) Lack of Comprehensiveness

CCP reinspections will cover only "accessible" completed construction. The Regional staff has indicated that this is acceptable to them, although there is no indication in any of the submittals of the percentage of work that is not accessible. Further the CCP continues to define out from CCP coverage the soils work, the HVAC work, the electrical cable reinspection, the NSSS work, and other problem areas that have required individual programs to resolve deficiencies.

This piecemeal approach effectively surrenders any pretentions that the CCP will provide a definitive answer to the Midland QA problems, even if the program were otherwise legitimate. The necessity for reinspection results from the inaccuracy of current quality records in the first place. Paperwork reviews are simply not dependable at the Midland Project.

6) The CCP Fails to Require the Minimum of a Credible Reinspection of the As-Built Condition of the Plant

The meat of the reinspection program is the Quality Verification Program. Our analysis is ongoing, however, there are a number of obvious flaws. These include, but are not limited to:

-- Exclusion of 31,890 questionable closed Inspection Records (IRs) for HVAC and soils work, Cable routing and identification and ASME hanger programs,

-- Incomplete review by the NRC of the Project Quality Control Instructions (PQCI's) to be used for reinspection,

-- Non-compliance with the 100% reinspection request, substituting a 100% reinspection effort based on a "systems/area orientation," and supplemented by a "random plant-wide inspection" to provide a valid quality baseline on an expeditious basis. (In other words manipulate the requirement to get beyond the 100% hardware inspection as quickly as possible.),

-- Exemptions for rebar, components, and other materials that are inaccessible but indeterminate because of materials traceability problems,

-- Excessive responsibility for the Executive Manager of MPQAD to have overall responsibility for the QVP,

-- Critical PQCIs to be verified by Review of documentation only.

Inadequate Independent Auditor

At the February 8, 1983 public meeting Mr. Keppler said that the NRC "told CPCo that comprehensive programs needed to be developed and put into place in order to: (1) Provide assurance that completed construction work was sound, and (2) Provide assurance that future work would be effectively controlled."

Evidently Region III's assurance will come from CPCo's own audit of the plant. Since February GAP staff members have tried every reasonable approach to convince Region III that their philosophical view of industry self-examination has failed at Midland. Although Mr. Keppler boldly maintains that his "reasonable assurance" of the Midland plant can only now be maintained with adequate third-party reviews, in fact, the third party review amounts to nine professionals overviewing the work of over 5,000 construction employees.

To date the NRC has announced that there will be no response to public concerns about CPCo's selection of S&W as the third party auditor. Nor will there be an opportunity to review the methodology by which S&W is to perform its function. Instead, according to an April 5, 1983 letter from Mr. Keppler to Billie Garde, the S&W work will be looked at only after a problem is found:

> We have not reviewed S&W methodologies and do not plan to unless we find significant problems which they have missed.

The letter confirms that there will be no public meeting to consider public comments about either S&W or to review the adequacy of their plan. This continues the long history of regulation by default at Midland. Unfortunately

for the public this theoretical approach to governmental regulation is both dangerous and expensive. At this stage Region III is as guilty as CPCo of failing to recognize the conceptual flaws that will prevent any realistic solution to the problems at Midland.

These problems are at least as serious as Diablo Canyon and Zimmer. They touch on every area of design and construction. For almost 14 years there has been a total lack of commitment to a QA program which has left the plant 85% complete in an indeterminate state. The long trail of continuing revelations, potential safety problems, hardware problems, design flaws, major construction defects, astronomical price increases, and broken promises have totally eroded the public confidence in CPCo and in the NRC to ensure the quality of the plant's construction.

Only a truly independent, comprehensive audit will assuage the public's well-founded fears that Midland is not safely constructed.

1. Evaluation of the Stone and Webster Proposal

The concerns about S&W's independence would be somewhat academic if S&W had presented a minimally adequate audit proposal to address the scope of the QA breakdown. But it didn't. Although the plan is too sketchy to evaluate — a brief three page outline — the number of personnel planned for the audit removes any doubt about credibility or dependability. S&W proposes nine auditors for the Midlands project!

At a minimum, the NRC should recognize that any CCP must be based on the results of completed third-party findings, as well as a commitment to stay for the duration of the project. The third party program must provide a comprehensive view of the as built condition of the plant by an independent auditor, as well as an independent assessment of all future construction -- the CPCo,

CCP, and S&W plan does not do either. Like the soils audit the S&W program will only run until CPCo and the NRC have confidence in the adequacy of the implementation of the QA Program for the Midland plant. This is not a third party audit by any stretch of the imagination.

2. Lack of Independence

Midland needs, and the Region has committed to a verification program by a truly independent company with no stake in the outcome of its audit. This independent third party must serve not only CPCo, but also the public interest by ensuring the quality of construction at the plant.

Stone and Webster fails under both a literal and realistic reading of the Commission's primary financial criteria, that the third party not have any direct previous involvement with the Company. S&W directly fails this test. In September 1982 S&W was hired by CPCo to be the overviewer on the soils QA implementation. If the Commission's independence criteria are to be taken seriously they must be applied.

Ironically, it is the independence criteria that NRR uses as a basis to reject the other CPCo nomination, the TERA Corporation.

3. Lack of Public Participation in the Selection Process

Even if the independence criteria could be met for S&W the lack of public participation in the selection process destroys its legitimacy.

Although the February 8, 1983 meeting attracted several hundred Midland residents there was no discussion or input from the public about the third party auditor, or the methodology by which the audit would be conducted. Instead Mr. Keppler and Mr. Eisenhut strenuously asserted that an independent audit would determine the adequacy of the Midland plant but failed to disclose enough of the elements of the audit to satisfy concerned citizens.

Within days the NRC and CPCo were in "closed door" sessions over the acceptability of the CCP, the auditor, and the various scopes and methodologies.

Unless Mr. Keppler and the Commission have rewritten the policies of the agency, the Diablo Canyon model -- which set the precedent for increased public participation in resolving the issues of how the Commission chooses independent auditors -- should be used.

At Midland, by contrast, Region III has chosen to ignore the seriousness of the situation by eliminating many of the most useful means of public participation employed at Diablo Canyon. When GAP protested the series of "closed door" meetings pertaining to the independent audit we were told that there would be no public meetings about S&W, but that all written comments would be considered. Instead of the NRC acting to allay the fears of the public Mr. Keppler's position of "resisting shared decision making" has only served to reinforce the fears of an already skeptical public in central Michigan.

Stone and Webster may be capable of addressing the problems at Midland, but neither S&W nor CPCo have bothered to acknowledge the importance of public trust in a third party auditor. The selection of S&W would completely undermine the NRC's credibility at Midland.

CONCLUSIONS

In the fall of 1982 an NRR staff person recorded (in a log recently obtained by GAP through FOIA requests) the following summary of the ACRS request - formalized through their June 8, 1982 letter to Chairman Palladino; and NRR management response.

> The ACRS asked for a report of design quality and construction adequacy. They are looking for assurance that with all the QA problems at Midland in specific areas that we have not overlooked problems in other areas that have not yet reared their head. Is CPCo addressing this only through the AFW review?

But the INPO effort addresses "work in progress" only!

BUT WHEN INTEGRATED WITH TERA EFFORT, YOU GET _____(undecipherable)

Only for the AFW system!

SERVES AS A "SAMPLE" (AUDIT)

But it doesn't answer Oakrent's problem with hidden problems. INPO goes from today and does only address forward fit. They do not investigate what happened previously.

TERA LOOKS BACKWARD TOO.

But only for the AFW system! (We've come full circle).

Dr. Oakrent's problem with hidden problems is the same as GAP's concern about hidden problems. In the past year both CPCo and the NRC have managed to avoid the key question about the Midland Plant — What is really out there? Until that question is answered completely, competently, and credibly there can be no assurance about the safety of the Midland plant.

Midland Investigation Staff contributing to this Project: Lynne Bernabei, Tom Devine, Louis Clark, Marya Young, Paul Peloquin, John Richards, Debbie Smolover. Debbie Kringle, Robert Dess, Johnathon Smith

Statement of Victor Gilinsky
Commissioner, U.S. Nuclear Regulatory Commission
before the Committee on Interior and Insular Affairs
Subcommittee on Energy and the Environment
on the Midland Nuclear Project
June 16, 1983

Mr. Chairman, Members of the Subcommittee,

Thank you for the opportunity to participate in your hearing on the Midland nuclear project.

I should say at the outset that I am testifying in an individual capacity. The agency's testimony will be delivered by the head of our Region III Office, Mr. Keppler.

In preparation for this hearing, I visited the plant about a week ago, in the company of many of the witnesses scheduled to appear today: our resident and regional inspectors; the various intervenors; and the Chairman of Consumers Power and members of the Consumers Power organization. I came away with a number of impressions, some of which I would like to share with you.

History of Problems

The Midland project has a troubled history. It was begun in 1969, and for the next fourteen years encountered one difficulty after another. Some were beyond the control of the owners; others were of their own making. In those days work could start before a Construction Permit was granted.

Work was stopped for over two years following the Calvert Cliffs decision; work was stopped again for over a year because the company was short of money; and certain areas of work have been stopped on a number of occasions because of construction quality deficiencies. Most recently, after an NRC inspection which turned up numerous quality assurance deficiencies, the company halted much of the safety-related work in 1982. Following this, Consumers Power developed an elaborate inspection program including third-party reviews, to check the safety-related work that has been done, and to ensure that future work is done correctly.

Foundation Problems

What sets Midland apart from the other half-dozen or so trouble-plagued projects with which this Committee is familiar, is that Midland was discovered, in the late 1970's to be sited on inadequately mixed and compacted fill. Among other things, this requires excavating under the reactor structures, while supporting them on temporary supports, and rebuilding part of the foundation. As you can imagine, this is a very large undertaking. All in all, I expect that Midland will be one of the most expensive plants per kilowatt of capacity.

After the discovery of the soil problems, the NRC staff issued an Order in 1979 which modified the Construction Permits and required the halt of construction in certain

areas. Unfortunately, the view of our staff lawyers in those days was that construction problems did not justify immediate enforcement action. This meant the licensee could prevent the Order from becoming effective, and thus continue construction, by requesting a hearing. This the company did: the plant continued construction, and has been in hearing ever since. It is a useful reminder that it isn't just intervenors who take advantage of hearings.

Ongoing Hearing

I should mention that the NRC staff's formal participation in the current hearing does not fall into the usual pattern which I have criticized recently; our staff cannot be accused of lining up with the utility. At the same time, the involvement of the staff in a formal adjudication greatly complicates staff-Commission communication on the important issues. I think this argues again for ending the NRC staff's role as a formal party in these hearings.

In 1982, the Licensing Board, taking an unusually active role, issued its own Order which put the plant's construction under the step-by-step control of the NRC staff. The Board order was not taken up by the Commission.

Need for Closer Commission Oversight

It is unfortunate that the Commission itself has had so little to do with NRC action on this problem-plagued

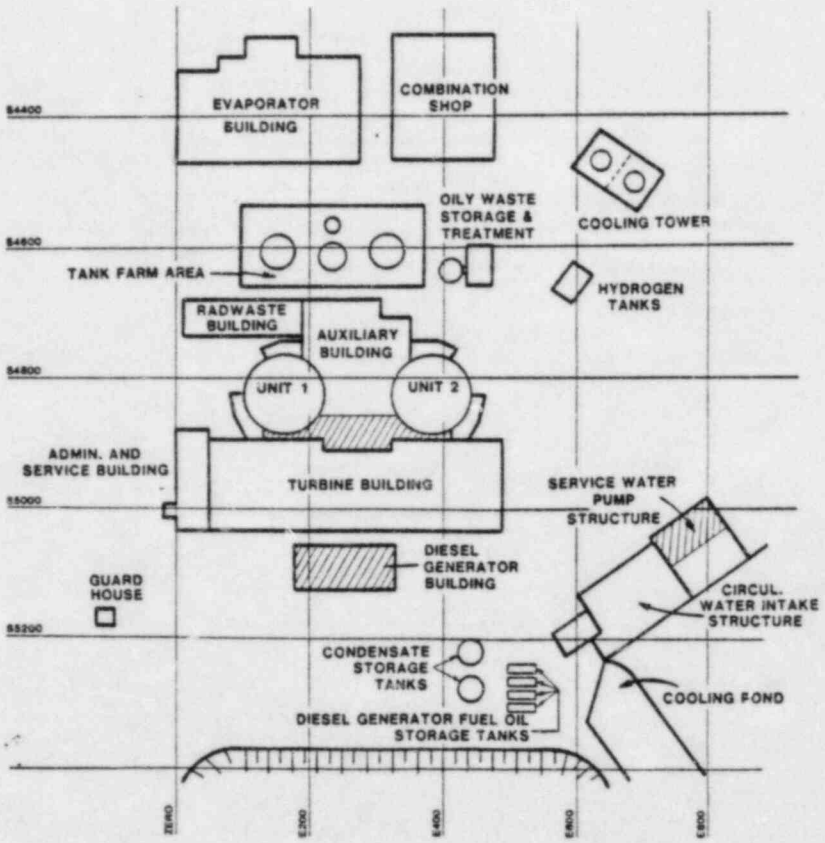
project. So far as I could tell, the Commission had never had a meeting on safety problems at Midland. Until yesterday, the last meeting of any kind on Midland was in 1978, and that was on a personal dispute between the staff and intervenor lawyers. Upon my return, I recommended to the Chairman and Commissioners that the Commission address itself to the safety problems at Midland.

We had the first meeting on this subject yesterday. It shows that the prospect of a Committee hearing is a very useful way of concentrating Commission attention. My own feeling is that given the scale of the problems, the enormous sums involved (sums which are ultimately paid for by consumers) the complex interaction of the project with the NRC through a Licensing Board and headquarters and Regional staffs, it is essential that the Commission be confident that the agency is dealing properly with Midland. We need to be sure the company is complying with our regulations, and that we are assuring such compliance in a sensible manner.

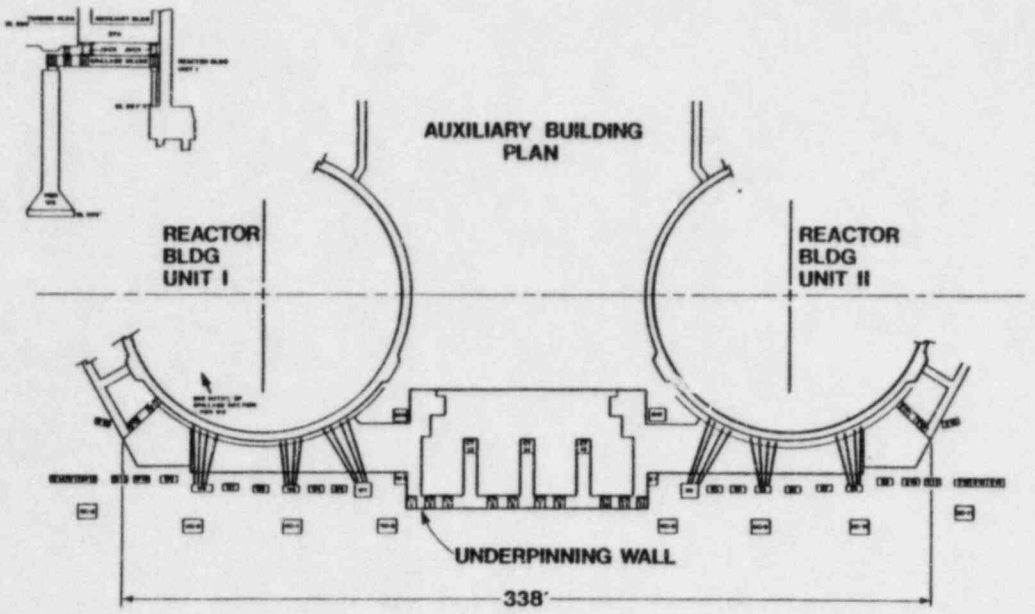
In reviewing this record I am troubled that our systems for assuring safety -- both the utility's and the NRC's -- turn up very serious problems so late in the construction process and that the solutions are so slow in coming. There has got to be a way of spotting problems earlier and dealing with them more promptly.

That is all I have to say at the moment, except to introduce Mr. Keppler, the Administrator of our Region III.

MIDLAND PROJECT
SITE PLAN

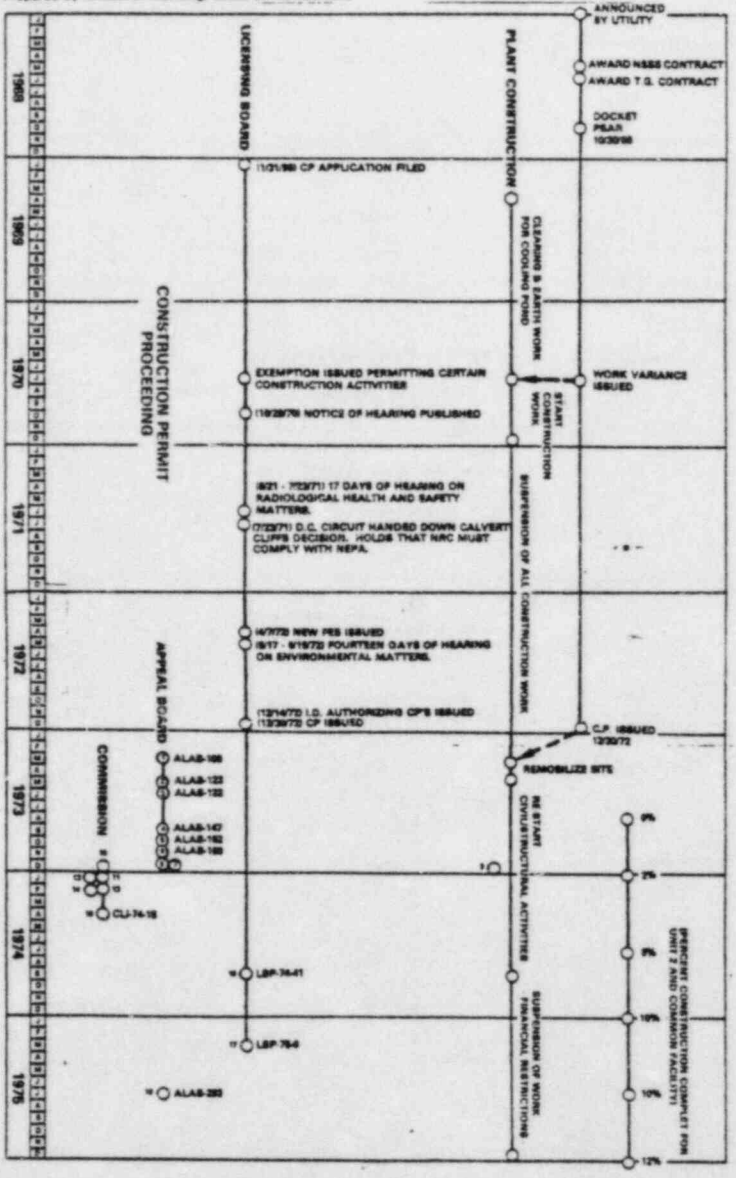


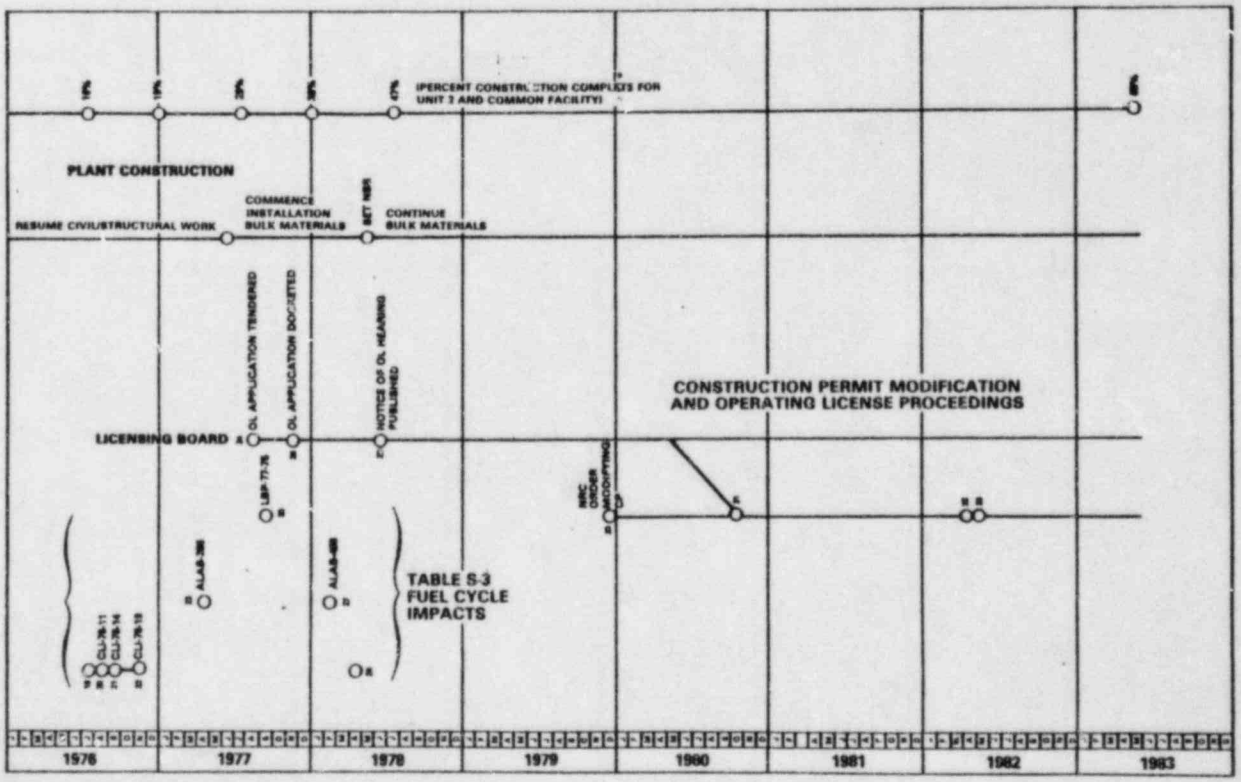
MIDLAND PROJECT
AUX. BUILDING SOILS REMEDIAL WORK



MAJOR FEATURES OF THE MIDLAND CONSTRUCTION PERMIT, CONSTRUCTION PERMIT MODIFICATION, AND OPERATING LICENSE PROCEEDINGS

Supplement to the Testimony of Victor Gilinsky, Commissioner, U.S. Nuclear Regulatory Commission, before the Committee on Interior and Insular Affairs, Subcommittee on Energy and the Environment, June 16, 1983
Prepared by William J. Manning, based on NUREG-0646




PERCENT CONSTRUCTION COMPLETE FOR UNIT 3 AND COMMON FACILITY)
PLANT CONSTRUCTION
RESUME CIVIL/STRUCTURAL WORK
COMMENCE INSTALLATION BULK MATERIALS
SET NSR
CONTINUE BULK MATERIALS
OL APPLICATION TENDERED
OL APPLICATION DOCKETED
NOTICE OF OL HEARING PUBLISHED
CONSTRUCTION PERMIT MODIFICATION AND OPERATING LICENSE PROCEEDINGS
LICENSING BOARD
LBP 77-76
NRC ORDER MODIFYING
ALAB-386
ALAB-409
CLI-76-11
CLI-76-14
CLI-76-19
TABLE S-3 FUEL CYCLE IMPACTS
1976
1977
1978
1979
1980
1981
1982
1983

Construction Permit Proceeding

Appeal Board Actions

(1)	March 26, 1973	- ALAB-106 issued modifying I.D. with respect to quality assurance and control.
(2)	May 18, 1973	- ALAB-123 issued affirming remainder of I.D.
(3)	June 28, 1973	- ALAB-132 directing the staff to take certain actions and report to the Appeal Board on quality assurance matters.
(4)	September 18, 1973	- ALAB-147 issued following staff's report pursuant to ALAB-132. Staff directed to insure revision of QA organization. Intervenor motion to stay or revoke CP denied.
(5)	October 5, 1973	- ALAB-152 issued denying applicant's and staff's motion to reconsider ALAB-147. Relief ordered in ALAB-147 modified.
(6)	November 26, 1973	- ALAB-160 issued; intervenor's motion for clarification of ALAB-123 in light of Commission's ruling in *Nine Mile Point 2* on energy conservation referred to Commission.
		- Appeal Board memo to Director of Regulation noting QA deficiencies and urging rigorous enforcement.
(7)	December 3, 1973	- Staff issues Order to Show Cause on QA deficiencies, suspending certain activities.
(8)	December 4, 1973	- ALAB-162 issued denying intervenor's motion to enforce ALAB-152, noting that the Appeal Board no longer had jurisdiction.
(18)	July 30, 1975	- ALAB-283 issued affirming LBP-74-71.

Commission Actions

(9)	December 17, 1973	- Staff permits resumption of suspended activities.
(10)	December 20, 1973	- CLI-73-28 issued denying intervenors' motion to set aside staff action of December 17.
(11)	January 24, 1974	- CLI-74-3 issued denying licensee's motion to dismiss the Order to Show Cause, intervenor's motion to revoke the permits, and granting intervenor's request for a hearing.
(12)	January 24, 1974	- CLI-74-5 issued denying intervenor's motion to reopen the hearing on energy conservation.
(13)	February 5, 1974	- CLI-74-7 issued denying intervenor's motion to reopen the hearing on changed circumstances relating to the cost of the project and Dow Chemical's intent to purchase steam from the plant.
(14)	February 20, 1974	- CLI-74-8 issued denying reconsideration of CLI-74-7.
(15)	April 11, 1974	- CLI-74-15 issued reviewing Dow Chemical's contractual obligation to purchase steam and electricity from the plant and refusing to reopen the record.

Licensing Board Actions

(16)	September 25, 1974	- LBP-74-71 issued terminating Show Cause proceeding and allowing CP to remain in effect.
(17)	March 5, 1975	- LBP-75-6 issued denying intervenor's motion to reopen the Show Cause proceeding in light of licensee's damage suit against architect-engineer, alleging that the suit raised quality assurance issues.

23-822 O—83——11

Construction Permit Proceeding

Table S-3 - Fuel Cycle Impacts

(19) July 21, 1976 - D.C. Circuit issues *Aeschliman v. NRC* remanding case to NRC in light of its invalidation of portions of Table S-3 (environmental effects of the fuel cycle), for consideration of intervenor's energy conservation contentions, Dow Chemical's obligations to purchase steam, and for clarification of the ACRS letter concerning the plant.

(20) August 16, 1976 - CLI-76-11 issued directing that a hearing board be convened to determine whether the CP should be continued, modified, or suspended pending adoption of an interim Table S-3

(21) September 14, 1976 - CLI-76-14 issued denying licensee's motion to reconsider CLI-76-11, denying intervenor's motion to halt construction, and directing the hearing board to consider all issues remanded by the D.C. Circuit.

(22) November 5, 1976 - CLI-76-19 issued directing hearing board to defer consideration of fuel cycle matters pending the adoption of an interim Table S-3; hearing of other issues to continue.

(23) April 29, 1977 - ALAB-396 issued, pursuant to Commission delegation, denying licensee's motion to stay proceeding in light of Supreme Court's grant of *certiorari*, and denying intervenor's motions to halt construction and for financial assistance.

(25) September 23, 1977 - LBP-77-57 issued refusing, after extensive hearing, to suspend CP pending resolution of issues remanded by D.C. Circuit

(27) February 14, 1978 - ALAB-458 issued affirming LBP-77-57.

(28) April 3, 1978 - Supreme Court issues *Vermont Yankee Nuclear Power Corp. v. NRDC* reversing D.C. Circuit's *Aeschliman* opinion.

Construction Permit Modification and Operating License Proceedings

(24) August 31, 1977 - OL application tendered.

(26) November 18, 1977 - OL application docketed.

(29) May 4, 1978 - Notice of opportunity for hearing on OL application published.

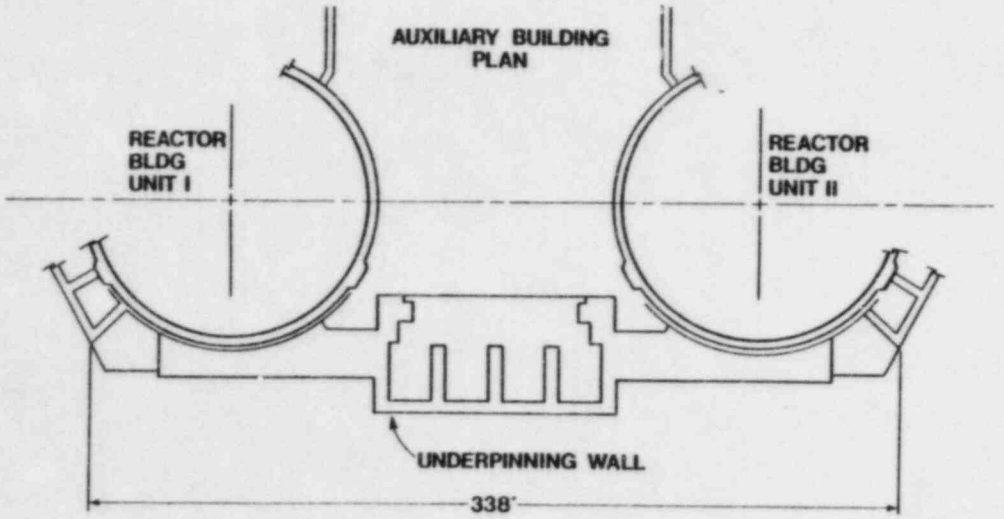
(30) December 6, 1979 - NRC issues Order modifying construction permits. Consumers Power requests a hearing. Effectiveness of Order stayed pending outcome of hearing.

(31) October 24, 1980 - Consolidation of soils issues in OI proceeding with Order for Modification proceeding.

(32) April 30, 1982 - Licensing Board Order requiring NRC staff approval for soils-related construction activities.

(33) May 26, 1982 - Construction permits amended to incorporate requirements imposed by April 30, 1982 Licensing Board Order.

MIDLAND PROJECT
AUX. BUILDING SOILS REMEDIAL WORK



TESTIMONY OF

JAMES G. KEPPLER

REGIONAL ADMINISTRATOR

REGION III (CHICAGO) OFFICE

BEFORE THE

SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT

OF THE

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

UNITED STATES HOUSE OF REPRESENTATIVES

WASHINGTON, D.C.

JUNE 16, 1983

Good morning Mr. Chairman and members of the Subcommittee. My name is James Keppler and I am Regional Administrator of the Nuclear Regulatory Commission's Region III (Chicago) office. I am appearing before this Subcommittee today in response to your May 6, 1983 request to present testimony on behalf of the NRC staff concerning remedial soils problems and the Quality Assurance program at the Midland Nuclear Power Plant.

You have requested in your letter that we address the NRC's procedures for handling construction quality issues at Midland, and the NRC's regulatory actions relating to the remedial soils problems and the Quality Assurance program. Let me state at the beginning that we recognize that there have been significant problems at Midland. Before the NRC will issue Operating Licenses for Midland, we will be satisfied that the plant has been properly constructed and can be safely operated.

You will recall, Mr. Chairman, that at this Subcommittee's Hearing of November 19, 1981, on the subject of quality assurance, Chairman Palladino identified Midland as one of several facilities where there have been serious quality assurance breakdowns with broad repercussions. Since the inception of this project in 1970, there has been a series of quality assurance problems. The most significant of these have been:

1. inadequate control of concrete work in 1970,

2. inadequate control of design and procurement activities in 1973,

3. inadequacies in welding of concrete reinforcing steel in 1973,

4. inadequate control of concrete rebar installation in safety-related structures in 1976,

5. omission of containment tendon sheathes in 1977,

6. failure to properly compact soil under safety-related structures, identified in 1978, and

7. deficiencies in the heating, ventilating and air conditioning system in 1979.

Furthermore, as recently as 1982, a comprehensive NRC inspection of systems and components within the Diesel Generator Building identified many construction problems which resulted from a breakdown in the implementation of the quality assurance program.

Contrary to the Zimmer case where the NRC staff did not recognize the quality assurance problems as they unfolded, the NRC staff

attempted to deal with the QA problems as they occurred at Midland. In this regard, many licensee actions were initiated to correct QA deficiencies and upgrade the QA program as a result of NRC's concerns regarding implementation of the Midland QA program. Specifically, many enforcement related meetings took place with top licensee management, stop work actions were initiated, civil penalty action was taken and NRC Orders were issued. Perhaps the most significant of these was the 1979 Order related to the settlement of safety related structures, which was contested by the licensee. As a result, this matter is the subject of a pending proceeding before an Atomic Safety and Licensing Board (ASLB). That same Board has before it Consumers Power Company's application for operating licenses for the Midland plants and the breakdown of quality assurance, in general, is also being considered in this pending proceeding.

In 1981, I provided testimony to the ASLB. I testified on the more significant quality assurance problems that had been experienced in connection with the Midland project and the corrective actions taken by Consumers Power Company and its contractors. I stated that, while many significant quality assurance deficiencies had been identified, it was the NRC staff's conclusion that the problems experienced were not indicative of a breakdown in the implementation of the overall quality assurance program. I also noted that while deficiencies had occurred which should have been identified earlier, the

licensee's quality assurance program had been generally effective in the ultimate identification and subsequent correction of these deficiencies. Furthermore, I discussed the results of Region III's special quality assurance inspection, of May 18-22, 1981, which I had initiated to determine whether modifications made to the QA Program in August 1980, were effective. The results reflected favorably on the Midland Quality Assurance Department, formed in August 1980 to improve QA performance. The thrust of my testimony was that I had confidence that the licensee's quality assurance program, both for the remedial soils work and for the remainder of construction, would be implemented effectively.

It was not until April 1982, that I was made aware that additional significant quality assurance problems were being encountered. This concerned me in view of my 1981 testimony to the ASLB. As a result I notified the ASLB that this previous testimony would be modified, directed staff evaluations to assess the cause and correction of these problems, and created a special Section within the Region III Office solely to handle the Midland Facility. After reviewing the facility status, this Section recommended and then conducted the comprehensive inspection of systems and components within the Diesel Generator Building. They also provided more intensive inspection of remedial soils activities.

As a result of the problems found in intensive inspection of the components and systems within the Diesel Generator Building, similar findings by the licensee in other areas, and our evaluation of the concerns identified to me in April 1982, a number of actions have been or are being taken:

1. all safety related work was stopped on December 2, 1982 by Consumers Power Company except the following: (1) nuclear steam supply system installation work, performed by Babcock & Wilcox; (2) heating, ventilating, and air conditioning installation work performed by Zack Company; (3) post system turnover work; (4) hanger and cable reinspection; (5) design engineering; (6) system layup activities and (7) remedial soils work.

2. the ASLB ordered in April, 1982 that safety related remedial soils work must be reviewed and approved in advance by the NRC staff.

3. all ongoing safety related remedial soils work is being overviewed by an independent third party (Stone and Webster Corporation).

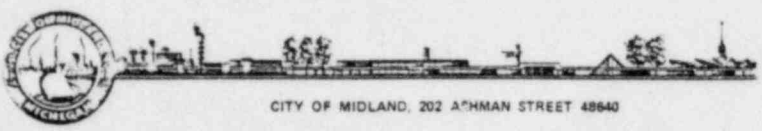
4. a Construction Completion Program (CCP) has been developed by Consumers Power Company and is being reviewed by the NRC staff. This CCP will require an evaluation of the quality of construction completed to date and an upgrading of the

licensee's quality assurance program for future work. Furthermore, a separate review of the design and construction of two safety related systems will be performed by an independent third party (Tera Corporation). Although these actions are encouraging and should lead to an acceptable quality assurance program and assurance of plant quality, the NRC will require an additional third party overview of the CCP until the NRC has determined that the licensee's quality assurance program is effective on a sustained basis.

5. a civil penalty of $120,000 was proposed for two violations related to the findings from the inspection of the systems and components within the Diesel Generator Building

From the technical standpoint, the remedial soils work required to correct the settlement of safety related structures at Midland is complex and unique in the nuclear industry. The design and construction methods for the necessary underpinning to properly support the Safety Related Structures has been carefully reviewed and evaluated by the NRC staff, and is provided in the Safety Evaluation Report related to the operation of Midland Units 1 and 2, NUREG-0793, Supplement No. 2, (copy enclosed).

I have attempted to be responsive to the issues raised in your letter, Mr. Chairman. It should be understood that I am speaking only on behalf of the NRC staff, not on behalf of the ASLB presiding over the Midland proceeding nor on behalf of the Commission insofar as they may review any order in the proceeding. I will be happy to respond to questions concerning the Midland project.



CITY OF MIDLAND, 202 ASHMAN STREET 48640

Prepared Remarks of Joseph R. Mann
Mayor, City of Midland, Michigan

June 16, 1983

Before the Subcommittee on Energy and the Environment of the U.S.
Representatives Committee on Interior and Insular Affairs
Morris K. Udall, Chairman

Mr. Chairman: The City of Midland appreciates your invitation to appear today. You have asked for my views as Mayor on the NRC's procedures for handling construction quality at the Midland Nuclear Power Plant.

I, of course, cannot testify as to the quality of the actual construction. I cannot speak on the internal resources needed by the quality assurance program. I can speak to the perceptions of quality as viewed by local governmental leaders. I can offer my recommendations on what the NRC's objectives ought to be.

I'd like to give a quick sketch of my community. Spread over 28 square miles of central Michigan countryside, Midland is a city of approximately 37,000 containing many of the amenities of cities far larger in size. Midland has thousands of highly trained and scientifically oriented people. The outstanding research laboratories and scores of production plants of The Dow Chemical Company and the Dow Corning Corporation are a significant resource not only for our state but for our nation. The citizens of Midland, the people I represent, have come to Midland from throughout the world. They are generally professionals with a keen appreciation for science.

Protecting the health, safety and general welfare of City residents is my sworn responsibility. And in connection with the construction of the Midland

nuclear facility, everyone agrees that the regulatory process must ensure that a safe plant is built.

It is obvious that a construction project of this size is extremely complex. Thousands of skilled workers and engineers are applying their knowledge in the installation of millions of feet of cable, miles of piping, thousands of valves, gauges, monitors and instruments. In addition, this plant has a unique feature in the cogeneration of steam.

In any undertaking of this magnitude, errors will be found during the construction process. Sound judgment dictates that after errors are discovered that they be reviewed, that corrective action be determined and that corrections be completed in an orderly and timely fashion. Compounding the foregoing, however, it is apparent that specifications and rules are being changed on a continual basis; and this has inevitably lead to some misinterpretation and confusion.

The safety record of the American nuclear power industry is a clear indication that the quality assurance which was applied in operating nuclear plants is successful. This industry has over 700 reactor years of operational experience. Their safety record is outstanding, when compared to any other industry. Even taking into account events such as the Three Mile Island incident, the overall safety performance of the nuclear industry as regulated by the AEC and NRC over the past 30 years demonstrates that the nuclear power industry has done an excellent job in protecting public safety and health.

In this context, is reasonableness currently being applied to the nuclear power industry? My impression is that the regulatory agencies responsible for the Midland plant have been extremely responsive to any complaint made against Consumers Power Company or the contractors. They have "bent over backwards" to be fair. However, multi levels of quality assurance personnel appears to be a structure which promotes delay and confusion, particularly when they are in disagreement with one another. Delays appear to have been longer than necessary to appropriately rectify these problems. While the final result must be a system which provides appropriate and stringent enforcement of safety regulations within a reasonable time, it is an open question in my mind as to whether this is being accomplished within a reasonable time.

only and final arbitrator for the approval and continuance of work on safety related systems.

Not withstanding the foregoing, we are convinced that the problems that have come up thus far are being taken care of conscientiously by the NRC and that the plant can be finished in accordance with the applicable standards. We also believe that it will be possible to operate this plant after it is licensed, with safety.

Confidence, character, and reputation are qualities that are earned. Consumers Power has been a reliable provider of power and a quick responder in emergencies to the City of Midland for most of this century. To shake that confidence, to doubt that character, to impugn that reputation would require a lot more evidence than the problems that have surfaced up til now in connection with this construction project.

A diversified energy supply is essential to the economic security and well being of our nation and the State of Michigan. Industry in the hard-hit northeastern industrial region of our nation needs long term competitive electric and steam power. Nuclear power must be a part of that energy supply. We must realistically recognize the limitations of our natural resources and energy demands of not only ourselves but the world. Nuclear power may represent the best hope for the abatement of acid rain, and a stable energy source during the interruption of other energy sources. It is essential that the Midland plant be completed and completed safely and soon.

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[ATTACHMENT 1]

Midland Daily News

Vol. 126, No. 34 38 Pages Friday, June 10, 1983, Midland, Michigan

City officials meet with GAP on nuclear plant testimony

By JAMES ISELER
Daily News staff writer

After meeting with city leaders, a Government Accountability Project official said Thursday, "we agreed more than we disagreed" on what should be done about problems at the Midland nuclear plant.

GAP's Billie Garde met Wednesday night with Mayor Joseph R. Mann and City Manager Clifford R. Miles to discuss Mann's upcoming testimony before a congressional subcommittee conducting hearings on problems at the plant.

Mann said Thursday no specific action came out of the meeting at City Hall and that his presentation will be a "composite view" of the council and city administration.

"She didn't make any requests that we say anything specifically," Mann said. "We, of course, were there to listen."

Ms. Garde, coordinator of GAP's investigation at the Midland site, said she was positive about the meeting.

"Their position, like our position, is that if this plant's gonna be built, it's gotta be built safe," Ms. Garde said.

Mann also said that although his testimony before the House Energy and Environment Subcommittee may contain feelings expressed by plant opponents, it probably will voice the City Council's support for the project.

But, Mann said, "it'll be stated and that's it." The 10-minute presentation likely will not contain lengthy arguments in favor of the plant, he said.

Instead, Mann said, he will keep his speech on the topic of quality control.

"We'll present a point of view of the staff and the council as we perceive it," he said.

Ms. Garde said she requested the meeting to put Midland's nuclear plant "in perspective" with problems at other plants around the United States, such as the Zimmer plant near Cincinnati and Diablo Canyon in California.

"I just wanted them to make sure they were aware of the whole story," she said.

Before the meeting, Ms. Garde expressed concern that Mann intended to tell the committee, chaired by Rep. Morris Udall, D-Ariz., that "everything's wonderful. We want the plant, we need the plant."

"His statements to date in the paper have reflected the party line of the City Council and the Chamber of Commerce but it hasn't reflected the reality of how bad things are at the plant," she said.

Mann's statement is being written by himself, Miles, City Attorney John F. Rae and City Clerk David W. Wirth. Mann said it will not be approved by the council but that council members' input was sought.

Citizens also have expressed points which they want Mann to include in his speech.

Former councilwoman Wilma Diesen, 3502 Flasmoor, recently told the council Mann's presentation should express the concern of local opponents to the plant, as well as its supporters.

Not all those points will be included in the speech, Mann said.

"We're not going to pick out different points from everyone," Mann said. But, "we're listening to different people's viewpoints."

[ATTACHMENT 2]

THURSDAY, JUNE 9, 1983 The Saginaw NEWS 3B
METRO

Mayoral input on N-plant sought

BY SUSAN BENKELMAN
News Staff Writer

A Washington-based citizens group plans to inform area government officials outside of Midland that they can speak their minds to a congressional committee meeting next week on the Midland Nuclear Plant.

Billie Garde, speaking for the Government Accountability Project, said she will urge the mayors of Saginaw and Bay City to submit statements to the committee for the June 16 hearing.

Ms. Garde already has talked with Midland Mayor Joseph Mann about the hearing. Mann was invited to the hearing by the House Interior and Insular Affairs Committee, chaired by Rep. Morris Udall, D-Ariz.

GAP, an arm of the Institute for Policy Studies, is a citizens group that hears the complaints of "whistle blowers" and takes action on them. The group is deeply involved in licensing proceedings on the Consumers Power Co. facility.

The Udall hearing is one in a series on construction of nuclear facilities and Nuclear Regulatory Commission participation in them.

But because Midland isn't the only community affected by the plan, Ms. Garde said she also will approach Mayor Ronald Bushey and officials from Bay City about submitting testimony to the committee, since they have not specifically been asked to testify.

"Obviously the people of Saginaw and Bay City and the Tri-County area, all the rural areas and townships as well, are as much affected by the Midland Nuclear Plant as the people of Midland," Ms. Garde said.

"And they're also going to be affected by the cost," she said of the $4.4 billion Consumers estimates it will cost to build the twin-reactor facility.

GAP may also write letters to townships in the area to let them know that the committee will take written testimony even after the actual hearing is over, she said.

Bushey said today he had not been contacted, nor has he plans to submit a position on the issue. He said he would wish to be received more information on the hearing, and "if need be, we may take a trip to Washington."

Last November, the Saginaw City Council went on record as opposing the nuclear plant's opening, arguing that they did not have enough assurance that the facility would be safe.

Earlier this week, NRC Commissioner Victor Gilinsky visited the Midland Plant in preparation for the Udall hearing. Gilinsky's visit was the first by a member of the five-member federal panel which oversees the nuclear power industry.

Ms. Garde pointed out that officials from Cincinnati showed a great interest in the Zimmer Plant, which is 27 miles from the city — "farther than Saginaw is from the Midland plant." The NRC halted work at that plant pending an analysis of construction defects.

PREPARED STATEMENT OF MARSHALL HICKS, SECRETARY-TREASURER, UTILITY WORKERS UNION OF AMERICA

THE UTILITY WORKERS UNION OF AMERICA REPRESENTS APPROXIMATELY 250 OERATING AND MAINTENANCE EMPLOYEES OF THE CONSUMERS POWER COMPANY WHO ARE CURRENTLY ASSIGNED TO THE MIDLAND NUCLEAR GENERATING PLANT. IN ADDITION, IT REPRESENTS APPROXIMATELY 5,000 OTHER OPERATING, MAINTENANCE AND CONSTRUCTION EMPLOYEES OF THIS EMPLOYER, ALL OF WHICH ARE LOCATED WITHIN THE STATE OF MICHIGAN.

THE UTILITY WORKERS UNION OF AMERICA HAS REPRESENTED OPERATING AND MAINTENANCE EMPLOYEES OF NUCLEAR GENERATING PLANTS AT CONSUMERS POWER COMPANY AND AT OTHER COMPANIES LOCATED IN VARIOUS PARTS OF THE COUNTRY.

THE UWUA MEMBERS LOCATED AT THE MIDLAND PLANT ARE WELL TRAINED AND EXPERIENCED IN THEIR PARTICULAR CRAFT OR ACTIVITY; ALL HAVING BEEN TRANSFERRED FROM OTHER OPERATING NUCLEAR OR FOSSIL FUEL PLANTS OWNED AND OPERATED BY THE CONSUMERS POWER COMPANY, AND ALL HAVE BEEN IN TRAINING FOR THIS PARTICULAR PLANT FOR A CONSIDERABLE PERIOD OF TIME.

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THE WORKERS REPRESENTED BY THE UTILITY WORKERS UNION OF AMERICA ARE NOT INVOLVED DIRECTLY IN THE CONSTRUCTION OF THE PLANT OR THE INSTALLATION OF THE EQUIPMENT, THEY ARE HOWEVER, VERY CONCERNED WITH THE QUALITY OF THE WORK AS IT WILL BE THESE WORKERS WHO WILL REMAIN ON THE SITE AFTER THE CONSTRUCTION IS COMPLETE TO OPERATE AND MAINTAIN THE FACILITY. AS VARIOUS SYSTEMS AND COMPONENTS OF THE PLANT ARE COMPLETED AND TURNED OVER TO CONSUMERS POWER COMPANY UWUA MEMBERS TAKE OVER AND PARTICIPATE IN THE OPERATION AND TESTING OF THOSE SYSTEMS AND COMPONENTS AND ARE ACTIVELY INVOLVED IN THE OPERATION AND MAINTENANCE OF THOSE SYSTEMS AND COMPONENTS FROM THAT TIME FORWARD. A NUMBER OF THE SYSTEMS AND COMPONENTS HAVE BEEN TURNED OVER TO CONSUMERS POWER COMPANY AND ARE CURRENILY BEING OPERATED AND MAINTAINED BY THE UWUA MEMBERS WHILE THEY CONTINUE TRAINING FOR EVENTUAL FULL OPERATION OF THE PLANT.

AS WE PREVIOUSLY STATED, THE WORKERS AT THE MIDLAND PLANT WHO ARE REPRESENTED BY THE UTILITY WORKERS HAVE MORE THAN A PASSING CONCERN FOR THE QUALITY OF THE CONSTRUCTION AND THE SAFETY OF THE PLANT ONCE IT IS PLACED IN FULL OPERATION AS IT IS THEIR LIVELYHOOD AND PERSONAL SAFETY WHICH IS AT STAKE. THEREFORE, OUR MEMBERS HAVE NOT BEEN AND ARE NOT RELUCTANT TO REPORT TO THE MANAGEMENT ANY POSSIBLE DEFICIENCIES DISCOVERED IN THE CONTRUCTION OF THE PLANT OR THE INSTALLATION OF ANY OF THE EQUIPMENT.

THE MANAGEMENT OF CONSUMERS POWER COMPANY HAS BEEN VERY OPEN AND CANDID WITH THE LOCAL UNION OFFICERS AND THE WORKERS ASSIGNED TO THE MIDLAND PLANT. THE PROBLEMS ENCOUNTERED IN THE CONSTRUCTION PROCESS HAVE BEEN EXPLAINED AND THE MANAGEMENT HAS ENCOURAGED THE UNION AND THE EMPLOYEES INVOLVED TO REPORT ANY DEFICIENCIES OBSERVED SO THAT CORRECTIONS CAN BE MADE. WE CONSIDER IT TO BE MOST SIGNIFICANT WHEN THE CHAIRMAN OF THE BOARD OF CONSUMERS POWER COMPANY MEETS WITH THE UNION LEADERSHIP TO MAKE SURE THE UNION UNDERSTANDS MANAGEMENT'S COMMITMENT TO IMMEDIATELY RESPOND TO, AND MAKE CORRECTIONS WHERE NECESSARY WHEN SUCH REPORTS ARE MADE.

ON APRIL 26 OF THIS YEAR I WAS PRESENT FOR A FULL DAYS MEETING AT WHICH TIME THE PLANS FOR THE COMPLETION OF THE PLANT CONSTRUCTION WERE DISCUSSED IN FULL DETAIL WITH THE UWUA LOCAL UNION LEADERSHIP, INCLUDING THE INCREASED EMPHASIS ON THE QUALITY ASSURANCE PROGRAM. WE FEEL CONFIDENT AND OUR MEMBERS AT THE MIDLAND PALNT ARE EQUALLY CONFIDENT, THE MANAGEMENT'S COMMITMENT TO COMPLETING THE PLANT COSTRUCTION AND ITS DEDICATION TO THE EXCELLENT QUALITY OF THE WORK WILL ENSURE A SAFE AND SECURE WORK PLACE WHEN THE DELAYS ARE ELIMINATED AND THE FACILITY IS EVENTUALLY PLACED INTO FULL OPERATION.

TESTIMONY

OF

JOSEPH M. CRIBBEN

LEGISLATIVE AND RESEARCH DIRECTOR

OF THE

UNITED ASSOCIATION OF PLUMBERS AND PIPEFITTERS (AFL-CIO)

BEFORE THE

HOUSE SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT

JUNE 16, 1983

I AM JOSEPH M. CRIBBEN, DIRECTOR OF RESEARCH AND LEGISLATION FOR THE UNITED ASSOCIATION OF PLUMBERS AND PIPEFITTERS.

THE UNITED ASSOCIATION IS AN INTERNATIONAL UNION AFFILIATED WITH THE AFL-CIO AND IS ONE OF 15 UNIONS WHICH MAKE UP THE BUILDING AND CONSTRUCTION TRADES DEPARTMENT OF THE AFL-CIO.

I AM APPEARING HERE TODAY WITH THE APPROVAL OF GENERAL PRESIDENT MARVIN J. BOEDE OF THE UNITED ASSOCIATION AND OF PRESIDENT ROBERT A. GEORGINE OF THE BUILDING AND CONSTRUCTION TRADES DEPARTMENT.

WITH ME TODAY ON THIS PANEL IS MR. GEORGE SUCH, BUSINESS MANAGER--THE TOP ELECTED OFFICER--OF THE UNITED ASSOCIATION LOCAL UNION 85 IN SAGINAW, MICHIGAN. MR. SUCH, WHO WORKED AT THE MIDLAND PROJECT FOR SEVEN YEARS, MOST OF THAT TIME AS GENERAL FOREMAN, WILL TESTIFY AS TO THE SPECIFIC WORKING CONDITIONS AT MIDLAND RELATING TO THE QUALITY OF PIPING INSTALLATIONS, RELATIONSHIPS WITH QUALITY CONTROL INSPECTORS AND OTHER MATTERS CONCERNING THE MIDLAND PROJECT, PER SE.

BEFORE YOU HEAR FROM HIM, BOTH PRESIDENT BOEDE AND PRESIDENT GEORGINE FEEL IT WILL BE HELPFUL FOR THE COMMITTEE TO HEAR A BRIEF OVERVIEW OF CONSTRUCTION LABOR'S GENERAL ROLE AND POLICIES WITH RESPECT TO NUCLEAR POWER PLANT CONSTRUCTION.

PRESENTLY THERE ARE 62 NUCLEAR POWER PLANTS UNDER CONSTUCTION OR ON ORDER IN THE UNITED STATES.

WHILE THE MANHOURS OF WORK WILL DIFFER FROM PLANT TO PLANT, ON THE AVERAGE A 1,000 MEGAWATT NUCLEAR POWER PLANT PROVIDES ABOUT 8,400,000 MANHOURS OF WORK FOR THE CRAFTS REPRESENTED BY THE BUILDING AND CONSTRUCTION TRADES DEPARTMENT.

THE MEMBERS OF THE UNION I REPRESENT HERE, THE UNITED ASSOCIATION, TYPICALLY PERFORM ABOUT 28 PERCENT OF THOSE MANHOURS OF WORK. THOSE CONSTRUCTION WORKERS REPRESENTED BY THE LABORER'S INTERNATIONAL UNION ARE NEXT WITH 17 PERCENT OF THE MANHOURS, FOLLOWED BY ELECTRICIANS AT 12 PERCENT, CARPENTERS AT 9 PERCENT, IRON WORKERS AT 8.5 PERCENT, OPERATING ENGINEERS AT ABOUT 8 PERCENT AND BOILERMAKERS AT ABOUT 6.5 PERCENT. NO OTHER CRAFTS PERFORM AS MUCH AS 5 PERCENT OF THE MANHOURS OF WORK.

BY WAY OF COMPARISON, CONSTRUCTION OF A 1,000 MEGAWATT COAL-FIRED ELECTRICITY GENERATING POWER PLANT WOULD REQUIRE ABOUT 6,800,000 MANHOURS OF WORK AND BOILERMAKERS TOP THE MANHOURS LIST AT 18.7 PERCENT. THE UNITED ASSOCIATION IS NEXT AT ABOUT 18 PERCENT.

SINCE YOU ARE CONCERNED HERE TODAY ABOUT QUALITY CONTROL, AND SINCE THE QUALITY OF WELDS IS OF PRIME IMPORTANCE IT MAY BE USEFUL TO POINT OUT THAT NUCLEAR QUALIFIED WELDERS COMPRISE ABOUT 17 PERCENT OF THE TOTAL WORKFORCE ON NUCLEAR PLANTS.

ON UNION PROJECTS, MOST OF THOSE NUCLEAR-QUALIFIED WELDERS ARE PIPEFITTERS AND MEMBERS OF THE UNITED ASSOCIATION, ALTHOUGH OTHER CRAFTS, PARTICULARLY IRON WORKERS AND BOILERMAKERS ALSO PERFORM NUCLEAR-QUALIFIED WELDING PROCESSES.

NOW, I HAVE COMPARED NUCLEAR CONSTRUCTION MANHOURS WITH COAL-FIRED PLANTS. BUT I WANT TO ASSURE THE COMMITTEE THAT NEITHER MY UNION NOR ANY OTHER BUILDING TRADES UNION ADVOCATES ONE METHOD OF PRODUCING ELECTRICITY OVER THE OTHER.

WE BELIEVE THAT BOTH NUCLEAR AND COAL HAVE A ROLE TO PLAY IN

ENSURING ADEQUATE ELECTRICAL ENERGY NOW AND IN THE FUTURE. WE BELIEVE WE HAVE A RESPONSIBILITY TO PROVIDE THE SKILLED CRAFTSMEN, MECHANICS AND LABORERS FOR THESE PROJECTS REGARDLESS OF THE FUELING METHOD CHOSEN BY THE UTILITY.

TRAINING OUR PEOPLE IN THE SKILLS NECESSARY TO QUALIFY THEM FOR THEIR WORK IS ONE OF THE PRINCIPAL OBLIGATIONS OF THE UNION AT BOTH INTERNATIONAL UNION AND LOCAL UNION LEVELS.

AT THIS VERY MOMENT, MY OWN UNION HAS ABOUT 30,000 APPRENTICES IN TRAINING ON THE JOB AND IN CLASSROOMS AROUND THE COUNTRY AS WELL AS AN ESTIMATED 50,000 JOURNEYMEN IN SPECIAL TRAINING PROGRAMS TO KEEP THEIR SKILLS UP TO DATE.

THIS IS AN ONGOING PROCESS THAT WAS PUT IN PLACE MANY DECADES AGO, THROUGH COLLECTIVELY BARGAINED AGREEMENTS WITH OUR UNION CONTRACTORS.

OUR TRAINING PROGRAMS ARE SPONSORED, SUPERVISED AND FINANCED JOINTLY BY MANAGEMENT AND LABOR, UNDER THE CAREFUL SCRUTINY OF THE U.S. DEPARTMENT OF LABOR'S BUREAU OF APPRENTICESHIP TRAINING.

WITHIN THE PLUMBING AND PIPE FITTING INDUSTRY, BOTH THE CONTRACTORS AND THE UNION TAKE GREAT PRIDE IN THE TRAINING PROGRAMS WE HAVE DEVELOPED AND CONSIDER IT TO BE THE BEST, MOST COMPREHENSIVE AND MOST WIDELY RECOGNIZED TRAINING PROGRAM OF ITS KIND ANYWHERE IN THE WORLD.

WE HAVE A MOTTO THAT GOES LIKE THIS: "THERE IS NO SUBSTITUTE FOR A SKILLED CRAFTSMAN OF THE THE UNITED ASSOCIATION."

IT IS NOT AN EMPTY SLOGAN. IT IS A CONSTANT REMINDER OF THE FACT THAT OUR SUCCESS AS WORKING MEN AND WOMEN AND AS A TRADE UNION RESTS FUNDAMENTALLY UPON THE SKILLS OF OUR MEMBERS.

LOCAL UNIONS ORIGINALLY TIED IN THEIR TRAINING PROGRAMS WITH THE VOCATIONAL TRAINING PROGRAMS IN THE HIGH SCHOOLS IN THEIR AREAS. HOWEVER, AS THE LOCAL UNIONS GAINED STRENGTH, BOTH FROM A MEMBERSHIP AND A FINANCIAL STANDPOINT, THEY WERE ABLE TO BRING THE FORMAL APPRENTICE TRAINING PROGRAM UNDER THEIR OWN ROOF. WITH THE ESTABLISHMENT OF A UNION-INDUSTRY TRAINING TRUST FUND IN THE LATE 1950'S, THE LOCAL UNIONS WERE PROVIDED WITH FUNDS ON A NATIONAL BASIS TO ENABLE THEM TO PROPERLY EQUIP TRAINING FACILITIES, PROVIDE SUPPLEMENTS FOR SALARIES FOR APPRENTICE INSTRUCTORS, AND PURCHASE TRAINING MATERIALS. THIS FUNDING HAS ENABLED THE LOCAL UNIONS TO PROVIDE TRAINING IN ADEQUATE FACILITIES WITH A MINIMUM OF OUTSIDE INTERFERENCE. TODAY, THEREFORE, THE UNITED ASSOCIATION LOCAL UNIONS HAVE APPROXIMATELY 300 TRAINING SCHOOLS LOCATED IN THE VARIOUS AFFILIATED LOCAL UNIONS.

THE TRAINING PROGRAMS ARE FINANCED BY COLLECTIVE BARGAINING AGREEMENTS THAT ALLOCATE A CERTAIN AMOUNT OF MONEY FOR EACH HOUR WORKED BY UA MEMBERS. IF THERE WERE NO TRAINING PROGRAM, THIS MONEY WOULD GO INTO THE PAY ENVELOPES OF THE CRAFTSMEN INVOLVED. THEREFORE, WE HAVE A UNIQUE SITUATION IN WHICH THE JOURNEYMAN HIMSELF CONTRIBUTES FROM TEN TO TWENTY-FIVE CENTS AN HOUR TO TRAIN AN APPRENTICE WHO WILL EVENTUALLY COMPETE WITHIN THE SAME AREA OF WORK AS THE JOURNEYMAN.

THEREFORE, THE UA TRAINING EFFORT REPRESENTS A DEEP COMMITMENT TO THE FUTURE OF OUR CONSTRUCTION INDUSTRY AND OUR NATION. THIS DEEP CONCERN IS MATCHED BY THE COMMITMENT OF UNION CONTRACTORS WHO ALSO RECOGNIZE THE NEED TO TRAIN FOR TOMORROW'S NEEDS.

FOR THE PAST 30 YEARS, THE UNITED ASSOCIATION HAS OPERATED A SUMMER PROGRAM AT PURDUE UNIVERSITY TO PROVIDE INTENSIVE TRAINING FOR OUR JOURNEYMEN AND APPRENTICE INSTRUCTORS. AFTER FIVE YEARS OF ATTENDANCE AT PURDUE INSTRUCTORS ARE AWARDED A CERTIFICATE BY THE UNIVERSITY AS QUALIFIED INSTRUCTORS IN THE PLUMBING AND PIPEFITTING INDUSTRY.

OVER 1,200 INSTRUCTORS ATTENDED LAST SUMMER'S INSTRUCTORS PROGRAM AND OVER 2,000 HAVE RECEIVED THEIR 5-YEAR COMPLETION CERTIFICATES. MANY OTHERS HAVE ATTENDED SPECIALIZED PROGRAMS SUCH AS FOR HIGH-TOLERANCE WELDING OPERATIONS.

WITH ALL OF OUR 516 LOCAL UNIONS AND THEIR LOCAL CONTRACTORS INVESTING SO MUCH IN THEIR TRAINING PROGRAMS AND WITH OUR BIG NATIONAL CONTRACTORS SUPPORTING THESE PROGRAMS THROUGH OUR NATIONAL AGREEMENTS, I THINK YOU WILL SEE THAT OUR INVESTMENT IN TRAINING IS ENORMOUS. I CAN'T GIVE YOU A PRECISE DOLLAR FIGURE BUT YOU CAN BE SURE IT AMOUNTS TO MANY MANY MILLIONS OF DOLLARS OVER THE YEARS. AND OTHER BUILDING TRADES HAVE SIMILAR PROGRAMS.

WE FEEL THE COMMITTEE SHOULD BE GIVEN THIS BACKG SO THAT YOU MAY UNDERSTAND THAT THERE IS NO FLY-BY-NIGHT APPROACH TO SKILL TRAINING IN THE UNIONIZED CONSTRUCTION INDUSTRY.

OUR MEMBERS KNOW THAT THEIR SKILL IS THEIR STOCK-IN-TRADE. THEY TAKE GREAT PRIDE IN THEIR WORK AND, ON THE PRACTICAL LEVEL, THEY KNOW THAT TOP QUALITY PERFORMANCE ON THE JOB WILL MEAN INCREASED JOB OPPORTUNITIES IN THEIR WORKING LIVES.

IN VIEW OF THE SOMETIMES SCATHING AND SHOT-GUN ATTACKS ON NOT ONLY INSPECTIONS BUT ON THE QUALITY OF THE CRAFTSMAN'S WORK

ITSELF AT MIDLAND AND AT OTHER NUCLEAR CONSTRUCTION SITES, WE FEEL OUR PRESENCE AT THIS HEARING MAY HELP TO PUT OUR CONCERN ABOUT TOP QUALITY TRAINING PROGRAMS IN SHARPER FOCUS FOR THE BENEFIT OF THE COMMITTEE AND, PERHAPS TO PROVIDE A CERTAIN AMOUNT OF REASSURANCE FOR THE GENERAL PUBLIC.

FINALLY, LET ME SAY THAT MY UNION AND THE BUILDING TRADES DEPARTMENT OF THE AFL-CIO FULLY APPRECIATES THE WORK OF THIS COMMITTEE IN EXERCISING ITS OVERSIGHT RESPONSIBILITIES WHERE NUCLEAR POWER PLANT CONSTRUCTION IS CONCERNED.

WE BELIEVE THIS NATION NEEDS TO MAKE MAXIMUM SAFE USE OF ITS TWO MAJOR ENERGY RESOURCES--NUCLEAR AND COAL TO ENSURE AN ADEQUATE SUPPLY OF ELECTRICAL ENERGY IN THE FUTURE.

WITHOUT THAT SURE SUPPLY OF ENERGY WE FEAR FOR THE NATION'S ECONOMIC FUTURE. MANY OF OUR MEMBERS ARE INCLUDED AMONG THE MILLIONS WHO ARE JOBLESS TODAY.

ONLY SUSTAINED ECONOMIC RECOVERY WILL PUT THOSE MEN AND WOMEN BACK TO WORK.

AND RECOVERY WILL INEVITABLY BRING WITH IT INCREASED DEMAND FOR ELECTRICAL ENERGY. WE DO NOT WANT TO SEE ECONOMIC GROWTH STIFLED IN THE NEAR FUTURE BY OUR FAILURE TO MEET THAT DEMAND.

NOBODY IS MORE CONCERNED ABOUT SAFETY AT NUCLEAR POWER PLANTS THAN THE PEOPLE WHO ARE BUILDING THEM.

WE BELIEVE THAT SAFETY RECORD HAS BEEN OUTSTANDING AND WE APPLAUD THE WORK OF THIS COMMITTEE IN MAKING SURE THAT THE HIGHEST OF SAFETY STANDARDS WILL PREVAIL AT MIDLAND AND ELSEWHERE.

TESTIMONY

OF

MR. GEORGE R. SUCH

BUSINESS MANAGER

UNITED ASSOCIATION LOCAL UNION 85

SAGINAW, MICHIGAN

TO THE

SUBCOMMITTEE ON ENERGY AND ENVIRONMENT

U.S. HOUSE OF REPRESENTATIVES

WASHINGTON, D.C.

JUNE 16, 1983

THANK YOU VERY MUCH FOR GIVING ME THE OPPORTUNITY TODAY TO SPEAK BEFORE THIS COMMITTEE AND SHARE WITH YOU THE VIEWS OF THE BUILDING TRADESMEN AND WOMEN WHO ARE CONSTRUCTING THE MIDLAND NUCLEAR PLANT.

I AM SPEAKING ON BEHALF OF THE VAST MAJORITY OF NEARLY 2,000 CONSTRUCTION CRAFT WORKERS EMPLOYED AT THE MIDLAND WORKSITE WHEN I SAY THAT THERE IS A GREAT DEAL OF PRIDE, COMMITMENT AND DETERMINATION TO PERFORM OUR JOB PROPERLY. AS THE BUSINESS AGENT FOR UNITED ASSOCIATION LOCAL UNION 85 I HAVE DIRECT KNOWLEDGE ABOUT THE QUALITY OF THE WORKMANSHIP GOING INTO BUILDING THE MIDLAND NUCLEAR PLANT. PRIOR TO SERVING AS THE LOCAL UNION BUSINESS AGENT I WORKED AS A CRAFTSMAN, FOREMAN AND GENERAL FOREMAN AT THE PLANT FOR SEVEN YEARS. I BELIEVE THAT I HAVE FIRSTHAND PERSONAL KNOWLEDGE OF THIS PROJECT, PLUS AN UNDERSTANDING OF THE APPROXIMATELY 600 PIPEFITTERS AND WELDERS FROM MY LOCAL LABOR UNION CURRENTLY WORKING AT THE PLANT.

OUR HIGHEST PRIORITY AND RESPONSIBILITY IS TO FOLLOW REGULATIONS AND PROCEDURES PROPERLY TO ENSURE THAT WE ARE BUILDING A SAFE PLANT. MOST OF OUR CONSTRUCTION FORCE AT MIDLAND ARE LOCAL RESIDENTS. THEY ARE NOT GOING TO TAKE SHORTCUTS IN BUILDING THE PLANT THAT COULD IMPACT ON THEIR SAFETY AND THE SAFETY OF THEIR FAMILIES. THE CONSTRUCTION CODES AND REGULATIONS FOR BUILDING A NUCLEAR PLANT ARE STRICTER AND MORE DETAILED THAN FOR BUILDING ANY OTHER TYPE OF ELECTRIC GENERATION PLANT. WE SEE THIS DAILY IN THE PERFORMANCE OF OUR JOBS.

LIKEWISE THE TRAINING PROGRAM, CERTIFICATION PROCESS AND INSPECTION REQUIREMENTS FOR OUR CONSTRUCTION WORKERS AT MIDLAND

ARE MUCH GREATER THAN FOR ANY OTHER KIND OF WORK. THE WELDING AND THE PIPEFITTING I HAVE SEEN IN THAT PLANT IS OF THE HIGHEST QUALITY. THE MEN AND WOMEN WHO ARE PERFORMING THIS WORK ARE SKILLED, TRAINED AND CONSCIENTIOUS.

THE CRAFTSMEN FOLLOW STRICT QUALITY CONTROL AND QUALITY ASSURANCE RULES AND REGULATIONS AT THE MIDLAND PLANT TO ENSURE THAT SAFETY IS NOT COMPROMISED. WE HAVE IN PLACE AT THE LOCAL UNION A PROGRAM FOR OUR WORKERS TO TELL THEIR UNION LEADERSHIP IF THEY BELIEVE THAT SAFETY AND QUALITY ARE BEING COMPROMISED. THE BUSINESS AGENT OR LOCAL PRESIDENT IN TURN CAN MEET WITH THE CONTRACTOR OR UTILITY TO MAKE SURE THAT ANY PROBLEMS ARE CORRECTED. THE OVERWHELMING ATTITUDE OF OUR WORKERS IS THAT THEY BELIEVE THAT THE QUALITY OF THE MIDLAND JOB IS FIRST-RATE AND THE MOST COMMON STATEMENT HEARD FROM OUR WELDERS AND FITTERS IS THAT THERE PROBABLY IS AN EXCESS OF REGULATIONS AND OVERINSPECTIONS AT A NUCLEAR POWER PLANT CONSTRUCTION SITE.

OUR WORKERS KNOW THAT ON SITE PROGRAMS ARE IN PLACE, THAT THEY CAN GO DIRECTLY TO THE PROJECT QUALITY ASSURANCE DEPARTMENT, OR TO THE CONSUMERS POWER SITE MANAGER OR CONSTRUCTION SUPERINTENDENT IF THEY BELIEVE THAT QUALITY PROGRAMS OR SAFETY PROGRAMS ARE BEING COMPROMISED. THERE ARE PROGRAMS IN PLACE WHERE OUR LOCAL UNION STEWARDS MEET REGULARLY WITH THE PROJECT MANAGEMENT TO ENSURE THAT COMMUNICATION BETWEEN THE ORGANIZATIONS ON SITE IS EFFECTIVE AND THAT NO COVER-UPS EXIST. THE CRAFTSMEN ARE WELL AWARE OF INTERNAL UNION MECHANISMS AND ON SITE DIRECT COMMUNICATION CHANNELS TO MAKE SURE THAT THEY UNDERSTAND THEIR JOB, HAVE PROPER TRAINING AND EQUIPMENT OT PERFORM THEIR JOB, ARE AWARE OF CODES AND REGULATIONS TO FOLLOW IN COMPLETING THEIR JOBS AND UNDERSTAND THE NEEDS AND COMMITMENTS FOR THE OVERINSPECTION OF THEIR WORK.

I WANT TO REASSURE THIS COMMITTEE THAT THE MIDLAND NUCLEAR PLANT IS BEING BUILT SAFELY. THE CRAFTMEN AND WOMEN AT THE JOBSITE WOULD HAVE IT NO OTHER WAY. THE UNION LEADERSHIP OF MY LOCAL AND OTHER BUILDING TRADES LOCAL UNIONS WORKING AT MIDLAND ALSO WILL HAVE IT NO OTHER WAY.

○

NRC Participants

Darl Hood

Tom Novak

Jay Harrison

Bruce Burgess

Ron Cook

Ross Landsman

Ron Gardner

Wayne Shafer

Bert Davis

James Sniezek

Jim Keppler

Darrel Eisenhut

Bob Warnick

NRC Attendees

Jim Stone

Mike Wilcove

Bill Paton

Steve Lewis

Russ Marabito

CPCo/NRC Meeting - February 8, 1983 - 9:00 a.m.

Keppler's opening remarks and introductions.

Keppler - CPCo's implementation of program was not sound. Formalized CCP written by CPCo. Not approved by NRC. Purpose of meeting is to understand program and obtain public comment on it.

J. Cook - Soils work not covered in 1/10/83 letter. Treated separately. The program today excludes soils. Third party review will be discussed.

D. Miller - CCP Sources of Input (See attached sheet)

1. Evaluation of Systems
2. Transfer of QC to CPCo QA (MPQAD)
3. INPO Self Evaluations
4. 1981 SALP Report
5. October/November Diesel Generator Building Inspection
6. November NRC letter to ACRS
7. Need to place more emphasis on soils start

Eisenhut - What is problem you are addressing?

Miller - Novak letter to ACRS - validate past QC inspections, improve understanding of acceptance criteria.

QA/QC Implementation Improvement

1. Recertify QC inspectors
2. Integration of construction and inspection planning

Figure 1-1 - Schematic CCP

Davis/Shafer - Craft training questions

Miller - QC needs to be pushed down to craft personnel from supervisory personnel.

Eisenhut - Where is QC breakdown? Does the design say 3/8" or 1/2", etc.

Selby - Insufficient clarity, improper interpretation are the problems.

Miller - Figure 1-1

Gardner - Any rework during Phase 2?

Miller - No. No systems completion work.

Shafer - How will inspector know if room has been 100% inspected?

Miller - Rooms will be marked. Most critical systems will be done first, etc.

Eisenhut - Specs and drawings inspected to be accurate.

J. Cook - NRC never said CPCo had design problems.

Davis - Physical inspection fine - what about record verification?

Miller - Yes. You're right.

Keppler - Are you into Step 5 anywhere? (See schematic.)

Miller - No.

Miller - Section 2.0 Preparation of Plant

Roy Wells - Section 3.0

Shafer - How many inspectors are certified? When PQCI procedures change will inspectors be retrained?

Wells - Yes. Procedures are being simplified. Inspectors will be recertified to new procedures. A Level III will make that decision.

Landsman - Will old manuals be used at all?

Wells - They are being rewritten to incorporate Bechtel's/CPCo's

Sniezek - When these procedures are complete will there be any questions in the inspectors' minds?

Wells - None.

Shafer - What measures provide that once you get past system QC it won't ~~won't~~ be "business as usual"?

Figure 3.0 - MPQAD Organization Chart

Wells - Fine tuning being done now. There have been 200 additions since September.

Eisenhut/Keppler - Where have changes been made?

Wells - W. Bird, Manager, QA. Bird has offsite responsibilities. Wells has onsite responsibilities.

Eisenhut - Why is this change going to work? We need confidence. The leader sets tempo. What makes you qualified?

Selby - QC reported through Bechtel. Now QC does not. It is integrated with QA.

J. Cook - We looked at overall picture. Wells is the best man for the job. He has direct control over QC.

Selby - PQCI's being changed. Recertifications of inspectors, etc. All of these changes have been Wells' decisions.

Eisenhut - Are you going to have enough scheduling flexibility?

Wells - Naturally,

Keppler - Clarify statistics on behind inspections.

Rutgers, Bechtel - 16,000 still open.

Eisenhut - What is a desirable number?

Rutgers - No backlog in ideal world.

Eisenhut - How far behind are you?

Selby - 3100 behind. That seems a little high.

Figure 3.1

Landsman - Elaborate on reorganization.

Shafer - What measures have been or will be established to assure new organization will work?

Wells - Close supervision, continued monitoring. He'll (the supervisor) will review performances. We are revising trending program.

Keppler - One problem - timeliness of QC inspections. Personnel performance relfects supervision.

Wells - My people are well qualified. I'm keeping them.

System Team Organization - (See sheet)

Eisenhut - Make sure employee's concerns don't get lost in shuffle.

Gardner - Where are people going to come from?

Wells - Either CPCo, Bechtel or contract help.

Burgess - Will team supervisor be Bechtel employee?

Wells - Maybe.

BREAK

Wells - QC recertification

Eisenhut - Why did you need to go to a recert?

Wells - Written closed book exams now vs. old oral exams.

Sniezek - Did all inspectors pass new exam?

Wells - Not yet. 235 people have been tested. 24 have failed. Of the 24 who took the test a second time, 2 failed again.

Eisennut - No specific period of time between tests?

Wells - No, but each test is different.

Hood - What disposition has been made on the two who failed?

Wells - They've been reassigned.

Gardner - PQCI exams?

Wells - About 500 - 30 failed once. 3 failed twice.

Shafer - What about the three who failed twice?

Wells - They've been removed.

Sniezek - What is PQCI test?

Wells - Questions relate to how to perform inspections, etc.

Wells - Written test on technical inspection plan.

Shafer - Any feedback from PQCI staff?

Wells - Has not asked that question.

Harrison - Two people failed. Where are they now?

Wells - They are Bechtel employees. They are not being used in quality work.

Shafer - Performance demonstration - given by whom?

Wells -

Section 4.2 and 4.4

Don Miller - Benefits of Completion Team Approach (See sheet)

Eisenhut - Single point - who?

Miller - Quality representative.

Eisenhut - Same on last 2 bullets?

Miller - Yes.

Eisennut - QA/QC Manager responsible for inspection requirements? Why aren't governed by safety connotation of system?

Miller -

Novak - Team dedicated to one system?

Miller - Yes.

Shafer - How many teams?

Miller - About 25. No commitments. 850 total systems. Most of the systems turned over are electrical.

Sniezek - I thought program would be used at turnover.

Miller - They will do QC inspection. For systems that have been turned over we will do . Miller gives team endpoint.

Burgess - System done? What do you mean?

Miller - System missing pump (for example). Flush and check, start layup. When done, start testing.

Gardner - Phase 1 - Quality Rep is doing most of the work.

Miller - Still working on team interaction.

Eisenhut - All safety-related structure systems components will be reverified?

Miller - Yes.

Landsman - What is safety-related?

Miller - We live to FSAR.

Eisenhut - FSAR may be amended.

Keppler - We're taking issue with the FSAR.

System Team Development - (See attached)

Keppler - Project time frame?

Miller - Sometime mid-March

Keppler - Management reviews by March?

Miller - Yes.

Gardner - Status activities and quality verification parallel . . . . .
Now does team process identified nonconformances?

Miller - Working out details.

Shafer - Team not responsible for Appendix B?

Miller - Inspection of records done by QC

System Team Operations - (See attached)

Shafer - Can anyone write an NCR?

Miller - Yes.

Section 4.3 - Roy Wells

R. Cook - Does that include PQCI inspections?

Miller - Yes.

Inspection Plan (PQCI) Review and Revision - (See attached)

Eisenhut - First bullet - as opposed to safety-related? Explain difference between "important to safety" and "safety-related".

Wells - CPCo will look into Q-ness.

Gardner - No inspection due to backlog ever. Not a reinspection.

Wells - The team will do that.

Verification Program Concepts - (See attached)

Novak - System turned over - example.

Miller -

Sniezek - Rebar, anchor bolt not accessible for direct inspection - why not UT/

Wells - They are addressing. Not committing yet.

Shafer - QC inadequate in past. 153,000 inspections closed by those personnel.

Miller - They will continue. If can't document

Warnick - Problem with sampling - 100%.

Wells - We'll reinspect. We'll go 100% unless statistically can't be proven.

Davis - What confidence level?

Wells/Norris (MAC) -

Section 4.5 - Phase 2 - System Completion - (See attached)

Eisenhut - Return to Phase 2. Let's discuss independent third party.

Concepts of IPIN Program - (See attached)

Significant Inspection Process Improvement - (See attached)

Section 6.0 - Qualification Program Review - (See attached)

Gardner - Is completion of this a "hold point" for Phase 1 or 2?

Wells - No. We haven't identified significant programmatic problems. No predetermined hold points.

Sniezek - Are you looking at simply diesel generators?

Wells -

Shafer - Quality verification effort - when?

Wells - It will be factored into

Keppler - NRC will decide what is "Q" and what's not.

LUNCH

Section 8 - System Layup (See attached)

Section 9 - Continuing Work Activities - (See attached)

Miller - In process of doing 4-point proofload jacking. No soils work being done.

Third Party Independent Review - Keeley - (See attached)

Keeley - Self-initiated evaluation will be submitted to NRC by end of February. Items from MAC being factored into corrective action implementation.

Eisenhut - Characterize findings in report.

Keeley - Gave insight into how to improve implementation to have a better program.

Novak - HVAC system findings?

Keeley - Positive. CPCo took aggressive action. 14 people were here 4 weeks. More distinct instructions for craft personnel. MAC has not done any INPO audits. MAC found consistent or above average.

Independent Installation Implementation Overview (See attached)

Keeley - Status so far. Talking to TERA and Stone and Webster, drafting specs.

Keppler - NRCnever formally blessed Stone and Webster.

Eisenhut - NRC will pick system for design verification.

Keppler - CPCo feels made appropriate changes to QA, but wants a thrid party independent party overseeing.

Landsman - Stone and Webster does documentation review, makes sure implemented, does not do physical inspection.

Keeley - Geotechnical engineer.

Program Status - Tera Corporation - (See attached)

Eisenhut - Program plan has been submitted to CPCO, but not NRC.

Keeley - Their QA people must sign off.

Eisenhut - NRC may see program and changes made by CPCo. Asked to have NRC sent a copy to ensure independent effort.

Tera - Three years for auxiliary feedwater

Novak - Control aspect of AFW went to Bechtel?

Tera - Yes.

- Review of supplier documentation and review of storage and maintenance of documentation ongoing.

Gardner - Will you verify as-built configuration?

Tera - Yes Refers to a sample of supports.

Eisenhut - Is CPCo giving you free reign to go ahead and make checks?

Tera - Yes.

Eisenhut - Are they basically measurement checks? No independent NDE yet. It looks necessary. Schedule for AFW late March/early April.

J. Cook - Complete entire project, not just NRC concerns or QA concerns. CPCo is committed to completing the plan.

Keppler - Meeting was helpful. A lot to deal with. Steps are being taken in right direction, but NRC has been let down before. NRC feels strongly about independent design review and independent construction work. Ongoing inspection in soils and safety-related work. CPCo has covered a lot of bases not submitted in letter. NRC wants public comment and NRC review. Don't lock into anything on third party.

Eisenhut - Pleased with 1/10/83 letter. CPCo slowed down their own activity. Need to restore confidence in yourself and public and NRC. Third party review will play important part. Encouraged to see pieces fitting together. Cautious optimism.

Sniezek - Team concept - feedback to craft personnel. Craft need incentive. If they make a mistake let them bring it to their supervisor, inspectors don't need to find.

PUBLIC COMMENTS

Wendell Marshall

Unnamed speaker

Oswald Anders (See attached)

A G E N D A

Opening Remarks	JWCook
Construction Completion Program	
Introduction	DBMiller
Detailed Description	RAWells
Third Party Review	GSKeeley/TERA
Bechtel Comments	JARutgers
Closure	JWCook

CONSTRUCTION COMPLETION PROGRAM

SOURCES OF INPUT

1. Evaluation of systems completion
2. Transfer of QC to CPCo QA (MPQAD)
3. INPO self-initiated evaluation
4. 1981 SALP Report and subsequent discussions
5. The October/November Diesel-Generator Building inspection
6. November NRC letter to the ACRS
7. Need to place more emphasis on soils start

CONSTRUCTION COMPLETION PROGRAM

OBJECTIVES

IMPROVE PROJECT INFORMATION STATUS BY:

-PREPARING AN ACCURATE LIST OF TO-GO WORK AGAINST A DEFINED RASELINE.

-BRINGING INSPECTIONS UP-TO-DATE AND VERIFYING THAT PAST QUALITY ISSUES HAVE BEEN OR ARE BEING BROUGHT TO RESOLUTION.

-MAINTAINING A CURRENT STATUS OF WORK AND QUALITY INSPECTIONS AS THE PROJECT PROCEEDS.

IMPROVE IMPLEMENTATION OF THE QA PROGRAM BY:

-EXPANDING AND CONSOLIDATING CONSUMERS POWER COMPANY CONTROL OF THE QUALITY FUNCTIONS.

-IMPROVING THE PRIMARY INSPECTION PROCESS.

-PROVIDING A UNIFORM UNDERSTANDING OF THE QUALITY REQUIREMENTS AMONG ALL PARTIES.

CONSTRUCTION COMPLETION PROGRAM (CONTD)

ASSURE EFFICIENT AND ORDERLY CONDUCT OF THE PROJECT BY:

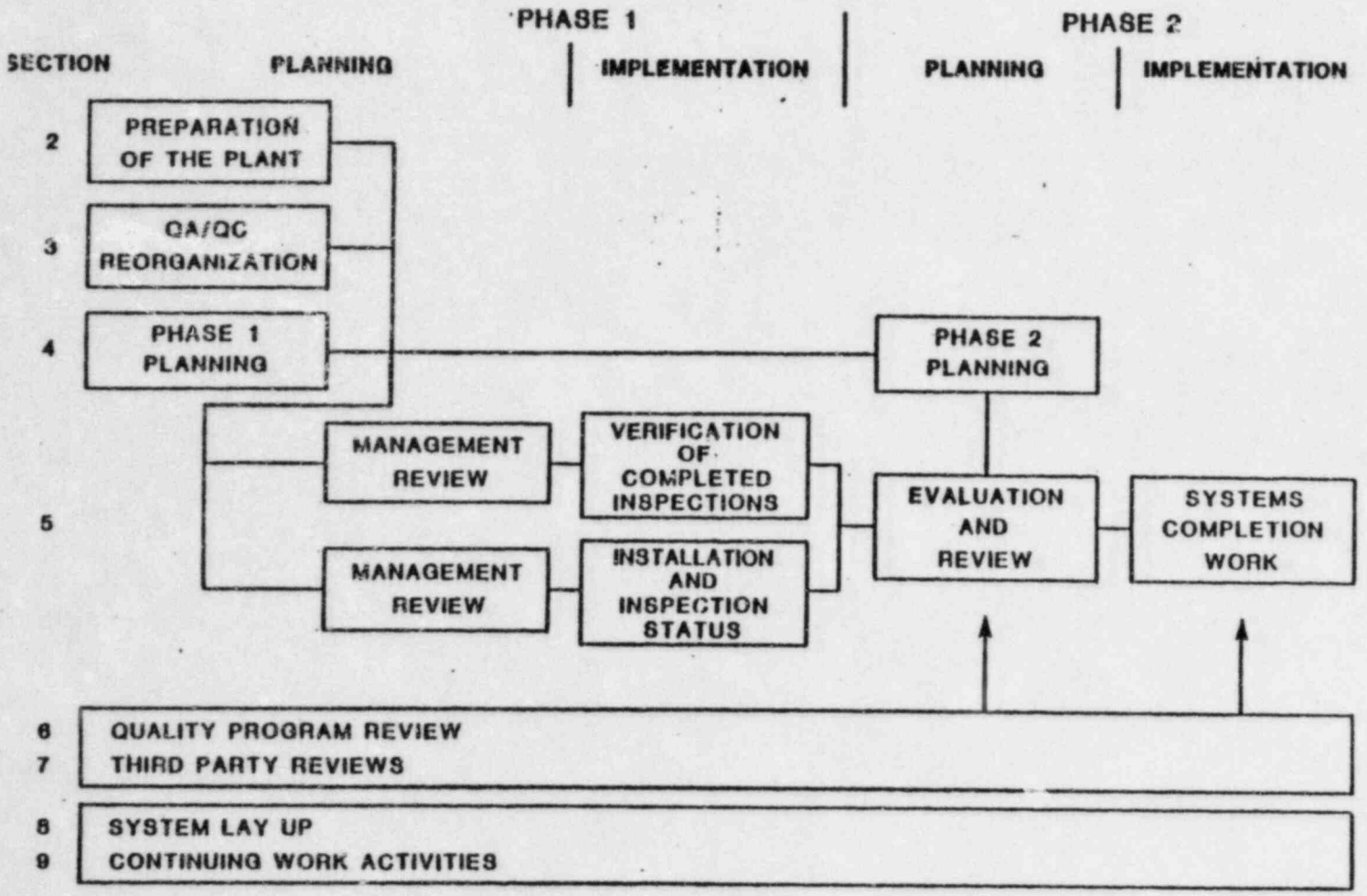
-ESTABLISHING AN ORGANIZATIONAL STRUCTURE CONSISTENT WITH THE REMAINING WORK.

-PROVIDING SUFFICIENT NUMBERS OF QUALIFIED PERSONNEL TO CARRY OUT THE PROGRAM.

-MAINTAINING FLEXIBILITY TO MODIFY THE PLAN AS EXPERIENCE DICTATES.

FIGURE 1-1

CONSTRUCTION COMPLETION PROGRAM SCHEMATIC



SECTION 2.0

PREPARATION OF THE PLANT

OBJECTIVES: To allow improved access to systems for program activities

DESCRIPTION: Reduce the workforce and limit Q activities

Remove the construction equipment and clear areas

Inspect, store and salvage equipment

RESULTS: Plant is in a condition to facilitate installation and inspection status and verification of completed work

STATUS: Reduction in force started 12/1/82 with cleanup completed on 1/31/83.

SECTION 3.0

QA/QC ORGANIZATIONAL CHANGES

OBJECTIVE:

- ESTABLISH INTEGRATED QA/QC ORGANIZATION UNDER CPCO CONTROL
- TRAIN AND RE-CERTIFY QC INSPECTION PERSONNEL

DESCRIPTION:

- QC ORGANIZATION REPORTS DIRECTLY AND SOLELY TO CPCO MPQAD
- QA AND QC RESPONSIBILITIES REDEFINED AS AN INTEGRATED TEAM
- QA DEVELOPS INSPECTION PLANS - QC IMPLEMENTS PLANS - QA MONITORS
- BECHTEL'S QC AND QA MANUALS USED AS APPROVED FOR MIDLAND
- ASME REQUIREMENTS REMAIN IMPOSED ON CONTRACTOR AS N-STAMP HOLDER - QA MONITORS
- QC INSPECTORS RECERTIFIED

RESULT EXPECTED:

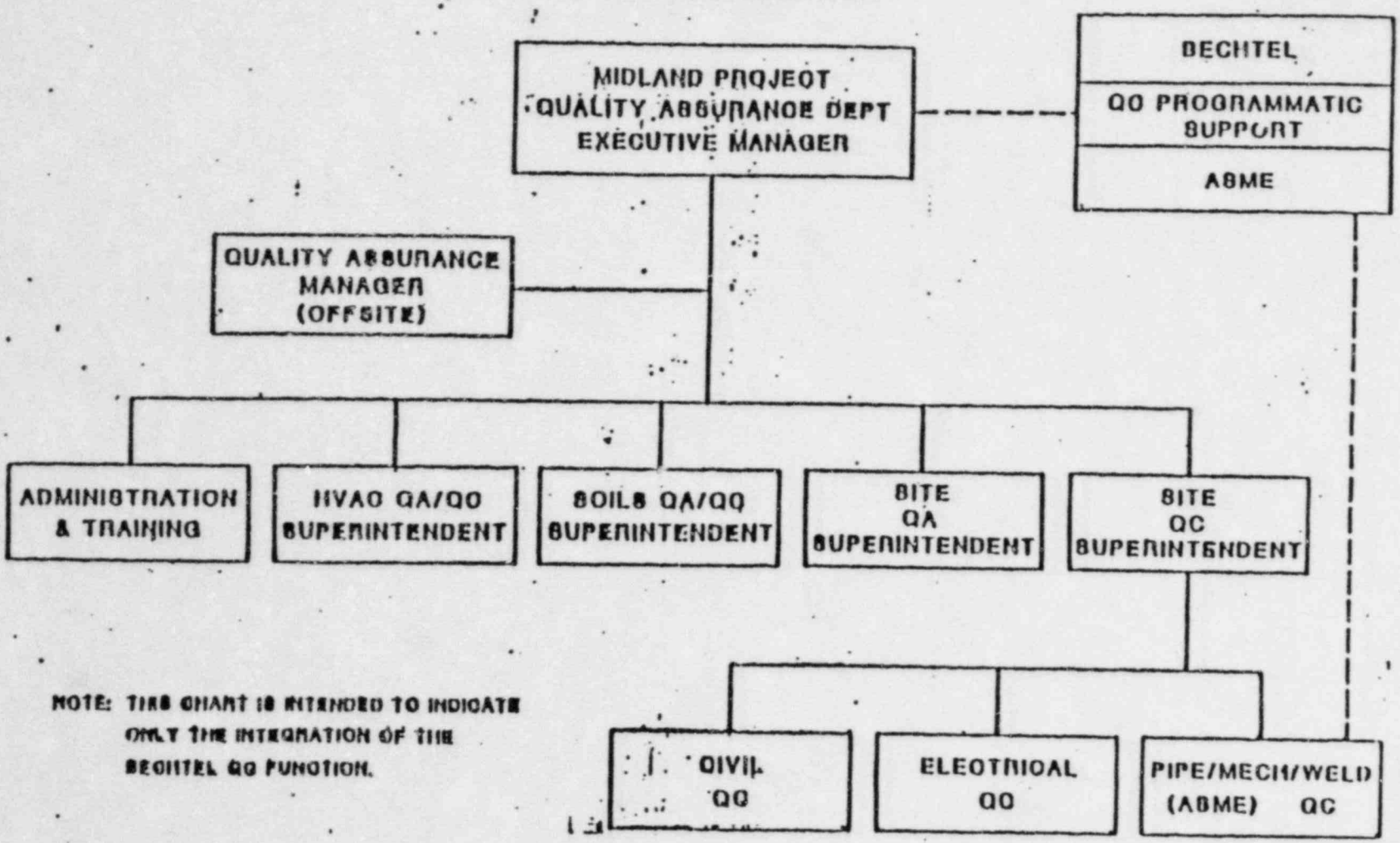
- FULLY INTEGRATED QUALITY ORGANIZATION UNDER CPCO CONTROL
- UNIFORM UNDERSTANDING OF QUALITY REQUIREMENTS AMONG ALL PARTIES
- IMPROVED PRIMARY INSPECTION PROCESS WITH RECERTIFIED PERSONNEL
- IMPROVED AND AGGRESSIVE IMPLEMENTATION OF QA PROGRAM

STATUS:

TRANSFER QC ORG TO CPCO	SUBMIT PROGRAMMATIC CHANGES TO NRC	COMPLETE INSPECTOR RECERTIFICATION
1/17/83	2/17/83	4/1/83

FIGURE 9-1

MPQAD ORGANIZATION



NOTE: THIS CHART IS INTENDED TO INDICATE ONLY THE INTEGRATION OF THE BECHTEL QC FUNCTION.

QC RECERTIFICATION

PROGRAM:

- COVERS ALL QC INSPECTORS INTEGRATED WITH MPQAD
- CLASS ROOM TRAINING ON PROGRAMMATIC AND INSPECTION PLANS
- WRITTEN CLOSED BOOK EXAMINATIONS WITH 80% ACHIEVEMENT REQUIREMENT ON PROGRAMMATIC AND INSPECTION PLANS
- ON THE JOB TRAINING AND PERFORMANCE DEMONSTRATION EXAMINATIONS WITH 100% ACHIEVEMENT REQUIREMENT ON INSPECTION PLANS
- FINAL CERTIFICATION GIVEN BY MPQAD PERSONNEL QUALIFIED AS ANSI LEVEL III

TRAINING STAFF:

- UNDER MPQAD DIRECTION
- DEDICATED STAFF WITH SUPPORT BY EXPERIENCED MPQAD STAFF
- EXPERIENCED TRAINING SUPERVISION AND SELECTED INSTRUCTORS
- PRESENT COMPLEMENT
  - SUPERVISORS
  - INSTRUCTORS
  - PROGRAM SUPPORT (LESSON PLANS - EXAMS)

STATUS:
(AS OF 2/4/83)

- ALL PERSONNEL RECERTIFIED TO QC PROGRAM
- NEARLY 500 INSPECTOR - PQCI TESTS
- OVER 100 PERFORMANCE DEMONSTRATIONS
- APPROXIMATELY 75 INSPECTOR - PQCI CERTIFICATIONS

SECTION 4.2 AND 4.4

PROGRAM PLANNING

TEAM ORGANIZATION

OBJECTIVE: ORGANIZE AND TRAIN TEAM AND PREPARE PROCEDURES FOR INSTALLATION AND INSPECTION STATUS ASSESSMENT AND FOR SYSTEMS COMPLETION.

DESCRIPTION:

- .DEVELOP TEAM CONCEPT
- .SELECT PILOT TEAM TO TEST PROCESSES AND PROCEDURES
- .PREPARE JOB RESPONSIBILITIES AND PROCEDURES
- .PROVIDE TEAM TRAINING FOR STATUS ASSESSMENT AND SYSTEMS COMPLETION

RESULTS EXPECTED:

- .IMPROVED INSPECTION AND INSTALLATION PLANNING AND EXECUTION
- .IMPROVED DIRECTIONS TO CRAFTS
- .IMPROVED COMMUNICATION BETWEEN CONSTRUCTION, QC, ENGINEERING AND TESTING

STATUS ESTABLISH TEAM CONCEPT AND DESIGNATE PILOT TEAM 1/21/83

BENEFITS OF "COMPLETION TEAM" APPROACH

- SINGLE GROUP RESPONSIBLE FOR ALL ASPECTS OF SYSTEM COMPLETION TO FUNCTIONAL TURNOVER
- IMPROVED COMMUNICATION BY BEING PHYSICALLY LOCATED TOGETHER
- IMPROVED MAINTENANCE OF STATUS OF WORK
- SINGLE POINT CONTACT FOR QUALITY INSPECTION REQUIREMENTS
- IMPROVED INTEGRATION OF QUALITY INSPECTION PLANS WITH THE INSTALLATION PLANS
- SINGLE POINT CONTACT FOR ENGINEERING/DESIGN REQUIREMENTS
- SINGLE POINT CONTACT FOR TESTING REQUIREMENTS

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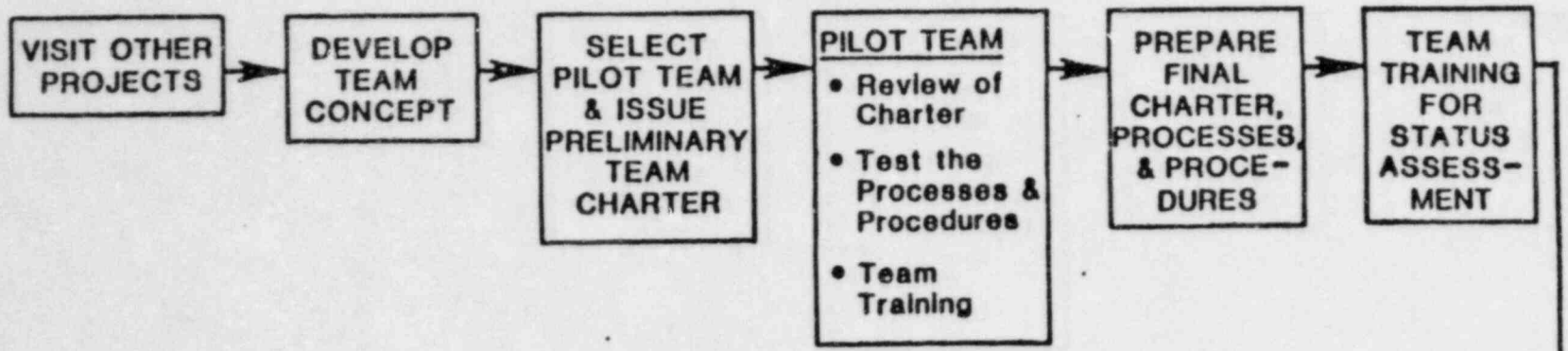
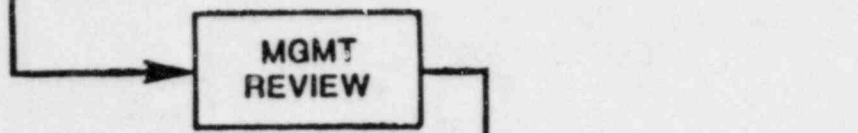
SYSTEM TEAM DEVELOPMENT

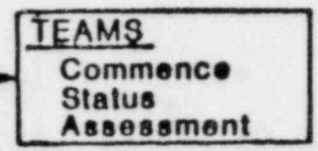
ORGANIZATIONAL PROCESS & PROCEDURE DEVELOPMENT



REVIEWS AND APPROVALS



COMMENCE WORK



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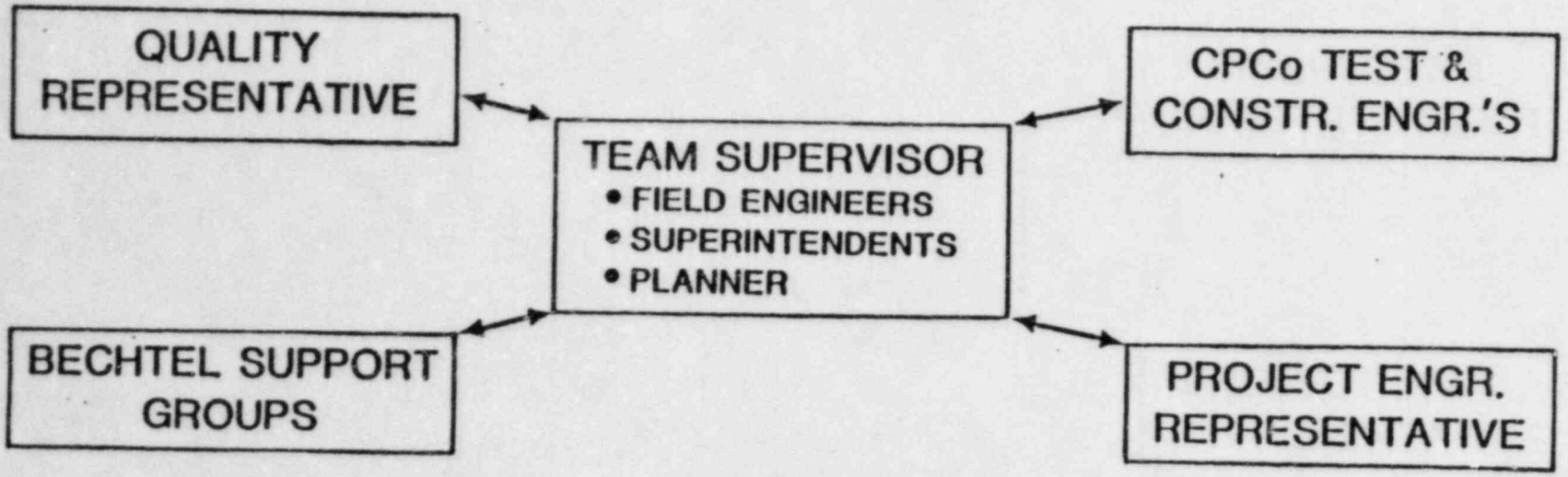
subject
no.

SYSTEM TEAM OPERATIONS



PHASE I

- REVIEW DOCUMENTS TO DESCRIBE THE SYSTEM SCOPE
- COMPARE PHYSICAL STATUS TO THE DOCUMENTS
- PERFORM QUALITY VERIFICATION ACTIVITIES AS ASSIGNED
- IDENTIFY REMAINING WORK

PHASE II

- DEVELOP DETAIL SYSTEM COMPLETION SCHEDULES
- DIRECT & ACCOMPLISH THE WORK
- MONITOR & REPORT STATUS/PROGRESS
- IDENTIFY PROBLEMS FOR RESOLUTION & MGMT. REVIEW
- COMPLETE THE SYSTEMS FOR FUNCTIONAL TURNOVER

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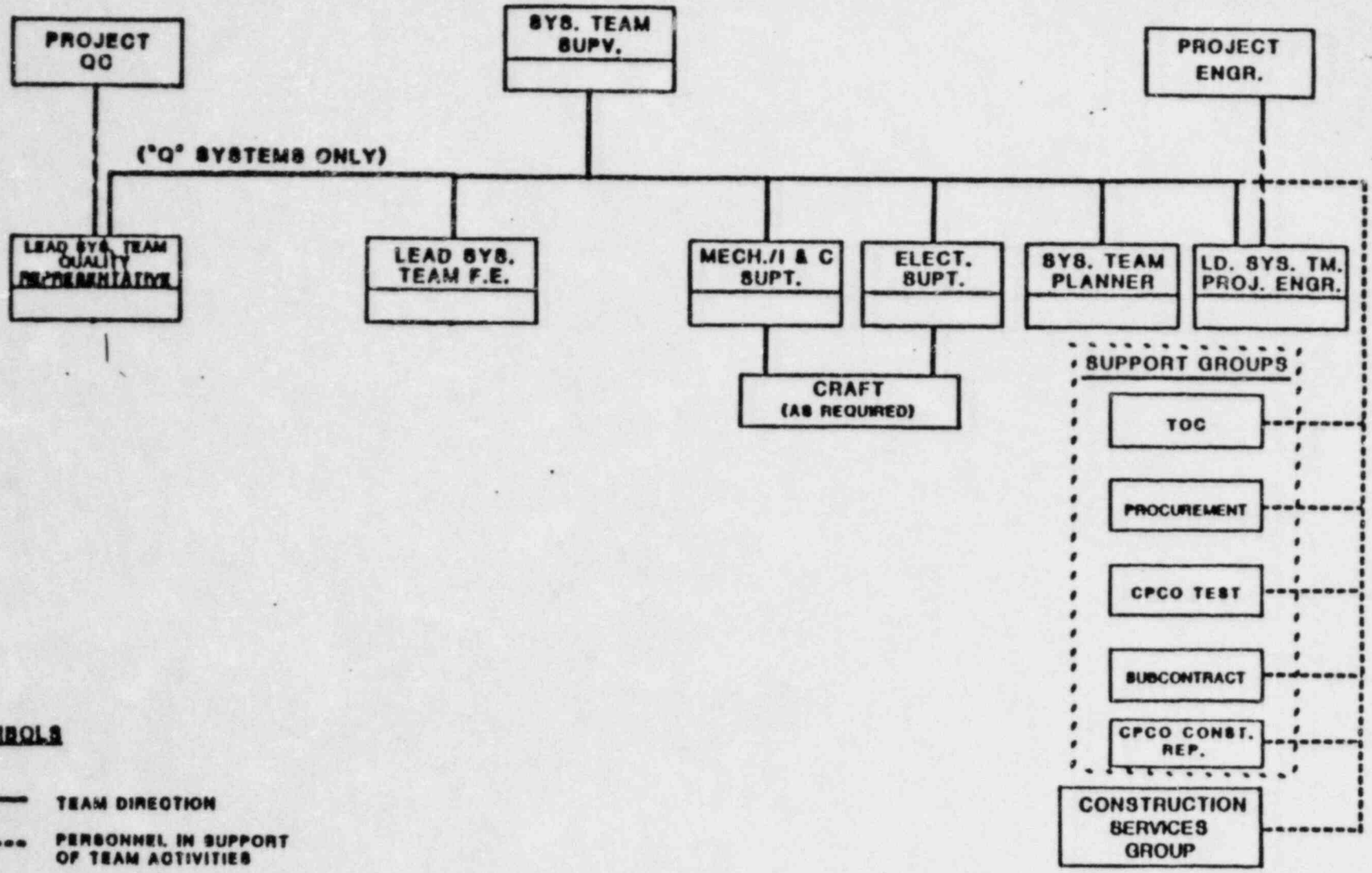
SYSTEM TEAM ORGANIZATION



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SECTION 4.3

PROGRAM PLANNING - PHASE 1

QUALITY VERIFICATION

OBJECTIVES:

- DEVELOP AND IMPLEMENT A QUALITY VERIFICATION PROGRAM FOR COMPLETED INSPECTIONS

DESCRIPTION:

- REVIEW EXISTING INSPECTION PLANS (PQCI) AND REVISE AS NECESSARY
- WRITE NEW INSPECTION PLANS (PQCI) IF REQUIRED
- VALIDATE PAST COMPLETED INSPECTION

RESULT EXPECTED:

- ESTABLISH THE VALIDITY OF COMPLETED INSPECTIONS AND INSTALLATION QUALITY STATUS
- DOCUMENT AND CORRECT ANY NONCONFORMING CONDITIONS

STATUS:

PQCI REVISION TO SUPPORT START OF REINSPECTION	DEVELOP VERIFICATION PROGRAM CONCEPT	DEVELOP DETAILED PLANS FOR VERIFICATION EFFORT
2/22/83	2/15/83	2/28/83

INSPECTION PLAN (PQCI) REVIEW AND REVISION

EXISTING PQCI'S REVIEWED AND REVISED, AS NECESSARY, BY MPQAD-QA

NEW PQCI'S WILL BE WRITTEN IF REQUIRED

PQCI'S MUST MEET RELEVANT CRITERIA INCLUDING:

- CONFIRM THAT ATTRIBUTES IMPORTANT TO SAFETY ARE INCLUDED
- ACCEPT/REJECT CRITERIA CLEARLY STATED
- INFORMATION NECESSARY FOR INSPECTION CONTAINED IN PQCI
- INSPECTION POINTS CLEARLY NOTED

- PROCEDURE FOR DOCUMENTATION UNDER REVIEW AND REVISION
- INSPECTION PLANS REVIEWED BY PROJECT ENGINEERING AS AN OVERVIEW TO INSURE ALL TECHNICAL REQUIREMENTS INCLUDED
- REVISED/NEW PQCI PILOT TESTED BEFORE IMPLEMENTATION
- QC INSPECTORS RETRAINED TO REVISED PQCI

VERIFICATION PROGRAM CONCEPTS

- ESTABLISH THE VALIDITY OF PAST/CLOSED INSPECTION REPORTS
- CONFIRM THE ACCEPTABLE CONDITION OF INSTALLED COMPONENTS, SYSTEM AND STRUCTURES
- DOCUMENT AND CORRECT NONCONFORMING CONDITIONS
- SCOPE OF PROGRAM INCLUDES ALL COMPLETED INSPECTION REPORTS
- INSPECTION REPORTS CATEGORIZED BY PQCI
- VERIFY THE QUALITY OF COMPLETED WORK USING AN ACCEPTABLE SAMPLING PLAN WHERE APPROPRIATE
- VERIFICATION PLAN BASED UPON SPECIFIC INSPECTION REPORT POPULATIONS:
  - ITEM ACCESSIBLE FOR REINSPECTION
  - DOCUMENTATION ONLY IS AVAILABLE
  - UNIQUE AREAS OF CONCERN
  - LOT SIZES NOT APPROPRIATE FOR STATISTICAL SAMPLE
- CONTINUATION OF REINSPECTIONS ALREADY COMMITED
  - CABLE ROUTING AND IDENTIFICATION
  - HANGERS
- DETAILS OF PLAN STILL UNDER DEVELOPMENT

SECTION 4.5

QA/QC SYSTEMS COMPLETION PLANNING (PHASE 2)

OBJECTIVE:

- FORMALLY INTEGRATE INSPECTION PLANNING WITH CONSTRUCTION SEQUENCE
- VERIFY THAT PQCI'S ARE FULLY ACCEPTABLE FOR NEW INSPECTIONS

DESCRIPTION:

- ESTABLISH AN IN PROCESS INSPECTION PROGRAM
- CLEARLY DEFINE INSPECTION POINTS IN PQCI
- UTILIZE QUALITY REPRESENTATIVE ON SYSTEM COMPLETION TEAM
- MPQAD-QA CONDUCT FINAL REVIEW OF PQCI

RESULT EXPECTED:

- TIMELY COMPLETION OF QC INSPECTIONS ON SYSTEM COMPLETION WORK
- CLEAR AND DETAILED INSPECTION REQUIREMENTS
- TIMELY DOCUMENTATION AND CORRECTION OF NONCONFORMANCES

STATUS:

DEVELOP CONCEPTUAL PROCEDURES FOR INTEGRATED INSPECTION	DEVELOP PROCEDURES FOR INTEGRATED INSPECTION WITH PILOT TEAM	FINAL REVIEW OF PQCI

2/22/83

CONCEPTS OF IN PROCESS INSPECTION PROGRAM

- MPQAD-QA ISSUES FINAL PQCI WITH IDENTIFIED INSPECTION POINTS
- INSPECTION POINTS INTEGRATED INTO CONSTRUCTION SCHEDULE
- QUALITY REPRESENTATIVE ON SYSTEM COMPLETION TEAM RESPONSIBLE FOR OVERALL QUALITY:
  - INSURE THE TEAM PROPERLY PLANS FOR INSPECTION
  - INSURE PROPER PQCI'S IDENTIFIED FOR TEAM
  - INSURE AVAILABILITY OF QUALIFIED INSPECTORS
  - INSURE NONCONFORMANCES REPORTED TO MPQAD-QA FOR TIMELY DISPOSITION AND ANALYSIS
  - INSURE QC INSPECTIONS PERFORMED ON TIMELY BASIS
  - INSURE THAT NEW WORK DOES NOT OBSCURE NONCONFORMANCES
- PROCEDURES TO BE DEVELOPED BY PILOT TEAM

SIGNIFICANT INSPECTION PROCESS IMPROVEMENTS

IMPROVED QUALITY CONTROL INSPECTIONS AND INSPECTION REPORTS

REVIEWED AND MODIFIED TO:

- MINIMIZE INSPECTOR INTERPRETATIONS BY IDENTIFYING SPECIFIC ACCEPT/REJECT CRITERIA IN SELF CONTAINED PQCI
- INSURE CLARITY AND EFFECTIVENESS OF PQCI BY PILOT TESTS
- INSURE ALL INSPECTION ATTRIBUTES AND ACCEPTANCE CRITERIA ARE INCLUDED BY MPQAD-QA PREPARATION AND PROJECT ENGINEERING OVERVIEW

ABSOLUTE AND TIMELY REPORTING OF NONCONFORMANCES

PROCEDURES REVISED TO:

- REQUIRE ALL NONCONFORMANCES ARE IDENTIFIED AND RECORDED FOR ANALYSIS AND DISPOSITION
- IMPROVE TRENDING AND IDENTIFICATION OF PROCESS DEFICIENCIES FOR TIMELY MANAGEMENT ACTION
- ELIMINATE DUPLICATIVE NONCONFORMANCE REPORTING SYSTEMS

QUALITY REPRESENTATIVE ON SYSTEM COMPLETION TEAM REPRESENTS MPQAD-QA/QC

INTEGRATED CONSTRUCTION/INSPECTION PROCESS

IMPROVED INTEGRITY AND TIMELINESS OF INSPECTIONS BY:

- USE OF DEFINED HOLD POINTS FOR INSPECTION IN CONSTRUCTION SEQUENCES
- FORMAL DOCUMENTATION OF ALL OBSERVED NONCONFORMANCES AT ALL INSPECTION POINTS

SIGNIFICANT INSPECTION PROCESS IMPROVEMENTS

(CONT'D)

- DEDICATED QUALITY REPRESENTATIVE FOR SYSTEMS AS MEMBER OF TEAM
- INTEGRATED PLANNING FOR INSPECTIONS BY TEAM

INTEGRATED QUALITY PROCEDURES DUE TO QA/QC INTEGRATION

- ELIMINATION OF REDUNDANT OR DUPLICATIVE PROCEDURES
- FOCUS ON SINGLE MISSION FOR QUALITY ORGANIZATIONS
- ELIMINATION OF POTENTIAL INSPECTOR MISINTERPRETATION

SECTION 5.0
PROGRAM IMPLEMENTATION

OBJECTIVE: .PROVIDE A PROCESS FOR CONTROL, REVIEW AND APPROVAL OF EACH MAJOR TASK AS THE PROGRAM PROCEEDS.

DESCRIPTION: .ESTABLISH COMPLETION AND QUALITY STATUS

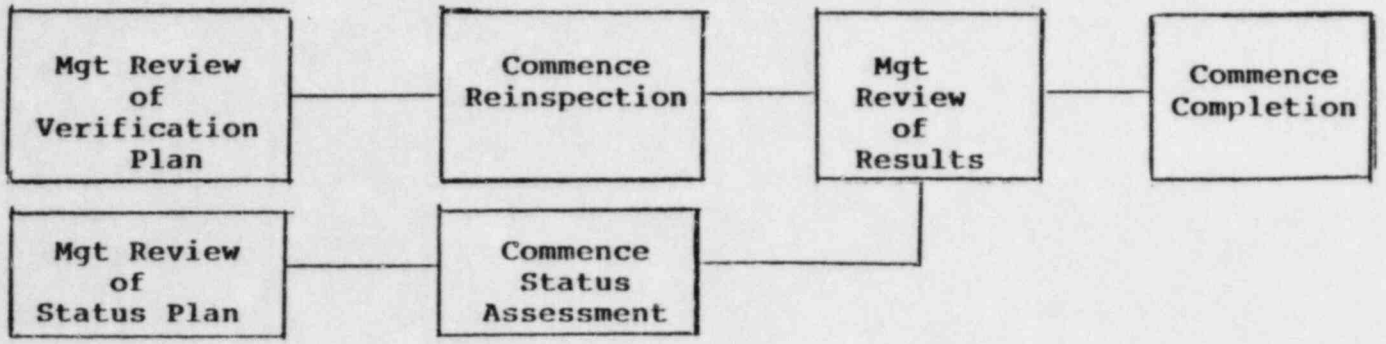
.INTEGRATE CONSTRUCTION AND QUALITY ACTIVITIES

.IMPROVE ON-GOING QUALITY PERFORMANCE

RESULT EXPECTED .COMPLETE SYSTEMS FOR TURNOVER TO CPCo TESTING

.PROVIDE CONTINUING DEMONSTRATION OF QUALITY AS WORK PROCEEDS

.PROVIDE VERIFICATION OF QUALITY IN COMPLETED WORK



SECTION 6.0

QUALITY PROGRAM REVIEW

OBJECTIVE: REVIEW THE ADEQUACY AND COMPLETENESS OF THE QUALITY PROGRAM AND MAKE REVISIONS AS NECESSARY:

- ON AN ONGOING BASIS FOR GENERAL IMPROVEMENTS
- IN RESPONSE TO SPECIFIC CONCERNS (D/G INSPECTION)
- IN RESPONSE TO THIRD PARTY REVIEWS

DESCRIPTIONS:

- REVIEW SPECIFIC PROCEDURES FOR COMPLIANCE TO PROGRAM REVIEW
  REVIEW ACTUAL IMPLEMENTATION OF PROCEDURES
- COORDINATE REVIEWS WITH OTHER PROJECT AREAS
- PROVIDE INPUT AND RECOMMENDATION TO MANAGEMENT

RESULT EXPECTED:

- CONTINUED OVERALL IMPROVEMENT IN THE QUALITY PROGRAM CONTENT AND IMPLEMENTATION

STATUS:

ONGOING REVIEWS	COMPLETE PRESENT SPECIFIC EFFORTS

CURRENT SPECIFIC PROGRAMMATIC REVIEWS

EFFORTS PRESENTLY UNDERWAY TO REVIEW PROGRAMMATIC REQUIREMENTS AND IMPLEMENTATION FOR:

MATERIAL TRACEABILITY:

- REVIEW OF ALL PROJECT COMMITMENTS
- REVIEW OF IMPLEMENTING PROCEDURES
- REVIEW OF PRIOR AUDITS
- REVISION OF RECEIPT INSPECTION PQCI

Q-SYSTEM RELATED REQUIREMENTS

- VERIFICATION OF PROJECT COMMITMENTS BY ENGINEERING AND LICENSING

DESIGN DOCUMENT CONTROL

- FLOW CHART OF EXISTING PROCEDURES
- CHECK OF ACTUAL IMPLEMENTATION
- COMPARISON WITH PROGRAMMATIC REQUIREMENTS

RECEIPT INSPECTION

- REVIEW OF SOURCE INSPECTION/RECEIPT INSPECTION SYSTEMS
- PQCI REVISED
- RECERTIFICATION OF INSPECTORS
- CONSIDERATION OF SELECTED OVERINSPECTION

SECTION 8.0

SYSTEM LAYUP

OBJECTIVE: PROVIDE ADEQUATE PROTECTION FOR PLANT SYSTEMS AND COMPONENTS UNTIL PLANT STARTUP

DESCRIPTION:

- .IDENTIFY AND PROTECT SYSTEMS WETTED DUE TO HYDRO TESTING OR FLUSHING
- .PROVIDE SCHEDULES FOR WALKDOWN TO ENSURE CLEANLINESS AND ADEQUATE PREVENTIVE MAINTENANCE
- .CARRY OUT WALKDOWNS TO ENSURE COMPLETENESS OF SYSTEM LAYUP ACTIVITIES

RESULTS EXPECTED:

IMMEDIATE PROTECTION OF WETTED SYSTEMS

PROVIDE CONTINUED CARE FOR ALL COMPONENTS UNTIL SYSTEM TURNOVER

STATUS:

COMPLETE LAYUP OF ALL WETTED SYSTEMS	1/15/83
ISSUED SCHEDULES FOR WALKDOWNS	1/15/83

SECTION 9.0
CONTINUING WORK ACTIVITIES

OBJECTIVES:

- MEET PREVIOUS NRC REQUIREMENTS AND CONTINUE WITH ACTIVITIES WHICH DO NOT IMPEDE THE EXECUTION OF THE PROGRAM

- PROVIDE DESIGN SUPPORT FOR ORDERLY SYSTEM COMPLETION WORK AND RESOLUTION OF IDENTIFIED ISSUES

- ESTABLISH A MANAGEMENT CONTROL TO INITIATE ADDITIONAL SPECIFIED WORK THAT CAN PROCEED OUTSIDE OF THE SYSTEMS COMPLETION ACTIVITIES

SECTION 9.0

CONTINUING WORK ACTIVITIES

DESCRIPTION: THOSE ACTIVITIES THAT HAVE DEMONSTRATED EFFECTIVENESS IN THE QUALITY PROGRAM IMPLEMENTATION WILL CONTINUE DURING IMPLEMENTATION OF THE CONSTRUCTION COMPLETION PROGRAM.

THESE ARE:

1. NSSS INSTALLATION OF SYSTEMS AND COMPONENTS BEING CARRIED OUT BY B&W CONSTRUCTION COMPANY

2. HVAC INSTALLATION WORK BEING PERFORMED BY ZACK COMPANY. WELDING ACTIVITIES CURRENTLY ON HOLD WILL BE RESUMED AS THE IDENTIFIED PROBLEMS ARE RESOLVED

3. POST SYSTEM TURNOVER WORK, WHICH IS UNDER THE DIRECT CONTROL OF CONSUMERS POWER COMPANY, WILL BE RELEASED AS APPROPRIATE USING ESTABLISHED WORK AUTHORIZATION PROCEDURES

4. HANGER AND CABLE RE-INSPECTIONS, WHICH WILL PROCEED ACCORDING TO SEPARATELY ESTABLISHED COMMITMENTS TO NRC

5. REMEDIAL SOILS WORK WHICH IS PROCEEDING AS AUTHORIZED BY THE NRC

6. DESIGN ENGINEERING WILL CONTINUE AS WILL ENGINEERING SUPPORT OF OTHER PROJECT ACTIVITIES

SECTION 9.0

CONTINUING WORK ACTIVITIES

STATUS: .THESE ACTIVITIES ARE PROCEEDING WITH SCHEDULES THAT ARE INDEPENDENT OF THIS PLAN.

THIRD PARTY REVIEWS

-INPO Self-initiated Evaluation by MAC

-Independent Design Verification of Auxiliary Feedwater and one Other System

-Independent Installation Implementation Overview (Soils Work being performed by Stone & Webster)

SELF-INITIATED EVALUATION

-INPO Received Report January 31, 1983

-Submission to NRC

-Corrective Action Implementation

INDEPENDENT INSTALLATION IMPLEMENTATION OVERVIEW

-Status

-Scope

1 - Familiarization With Procedures, Drawings, Specs, Organizations, Interfaces

2 - Evaluate adequacy of the above

3 - Evaluate compliance with above for construction activities and QC activities

4 - Submit observations and reports to Consumers Power with copies to NRC

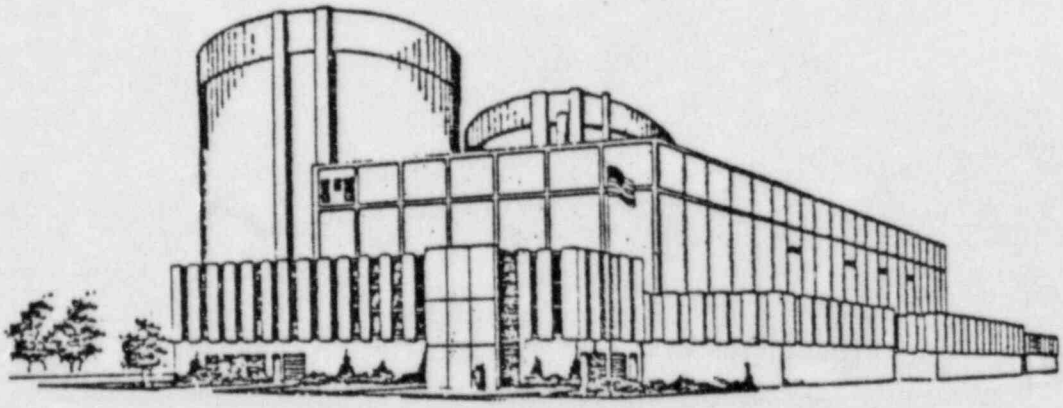
-Schedule

1 - Award Contract February 15, 1983

2 - Activities 1 through 5 February 15 to August 15, 1983

3 - Final Report, Evaluation and Decision on Need to Extend Overview Schedule 9/1/83

MIDLAND INDEPENDENT DESIGN VERIFICATION PROGRAM FOR THE AFW SYSTEM AND ANOTHER SYSTEM TO BE DETERMINED



FEBRUARY 8, 1983

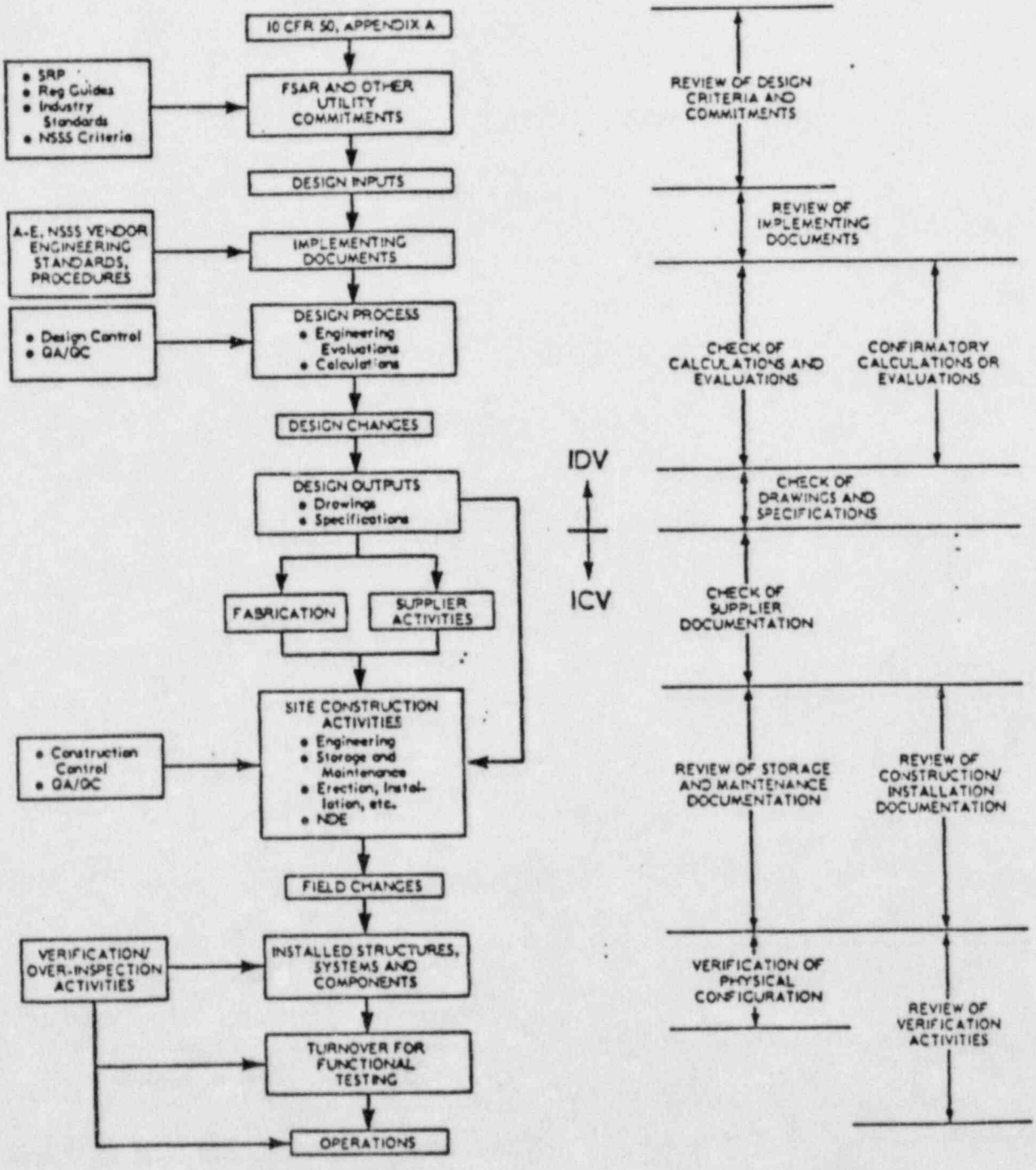
PRESENTATION OUTLINE

- PROGRAM STATUS
- INTER-RELATIONSHIP BETWEEN THE DESIGN AND CONSTRUCTION PROCESS AND THE MIDLAND IDV
- PHILOSOPHY OF REVIEW
- BASES FOR SAMPLE SELECTION
- SCOPE OF DESIGN VERIFICATION
- SCOPE OF CONSTRUCTION VERIFICATION
- REPORTING PROCESS
- SCHEDULE

PROGRAM STATUS

- PROJECT QUALITY ASSURANCE PLAN
  - DEVELOPED, APPROVED, AND UNDER IMPLEMENTATION
  - INCLUDES PROJECT CONTROL PROCEDURES, INSTRUCTIONS AND REPORTING REQUIREMENTS
- ENGINEERING PROGRAM PLAN
  - DEVELOPED, APPROVED, AND UNDER IMPLEMENTATION
  - 44 DESIGN TOPICS/5 CATEGORIES OF REVIEW
  - 15 CONSTRUCTION TOPICS/5 CATEGORIES OF REVIEW
- DESIGN VERIFICATION
  - IN PROGRESS FOR AFW SYSTEM
  - DESIGN CHAIN IDENTIFIED
  - PROJECT EXPERIENCE UNDER REVIEW TO ASSIST IN FOCUSING THE DESIGN VERIFICATION
- CONSTRUCTION VERIFICATION
  - RECENTLY INITIATED
  - INITIAL AS-BUILT CONFIGURATION VERIFICATION FOR PIPING/SUPPORTS NEARING COMPLETION

INTER-RELATIONSHIP BETWEEN THE MIDLAND DESIGN AND CONSTRUCTION PROCESS AND THE MIDLAND IDV PROGRAM



DESIGN AND CONSTRUCTION PROCESS

MIDLAND IDV PROGRAM

GOAL

- PROVIDE AN INDEPENDENT EVALUATION OF THE QUALITY OF THE MIDLAND PLANT DESIGN AND CONSTRUCTION

PHILOSOPHY OF REVIEW

- SELECT A REPRESENTATIVE SAMPLE OF ENGINEERED SYSTEMS, COMPONENTS, AND STRUCTURES WHICH WILL FACILITATE:
  - AN INTEGRATED ASSESSMENT OF IMPORTANT PARAMETERS AFFECTING THE FUNCTIONAL CAPABILITY OF THE TWO SYSTEMS, AND
  - THE ABILITY TO EXTRAPOLATE FINDINGS TO SIMILARLY DESIGNED FEATURES WITH A HIGH DEGREE OF CONFIDENCE
- CONSIDER POSITIVE AND NEGATIVE FINDINGS WHICH WILL ALLOW A BALANCED VIEW OF OVERALL QUALITY
- ASSESS ROOT CAUSE AND EXTENT OF IDENTIFIED FINDINGS
- REVIEW CORRECTIVE ACTION TAKEN TO ADDRESS FINDINGS

BASES FOR SAMPLE SELECTION

- SIMILAR TO SYSTEM SELECTION CRITERIA
  - IMPORTANCE TO SAFETY
  - INCLUSION OF DESIGN/CONSTRUCTION INTERFACES
  - ABILITY TO EXTRAPOLATE RESULTS
  - DIVERSE IN CONTENT
  - SENSITIVE TO PREVIOUS EXPERIENCE
  - ABILITY TO TEST AS-BUILT INSTALLATION
- STRONG RELIANCE UPON ENGINEERING JUDGMENT
- POTENTIAL USE OF STATISTICAL TECHNIQUES TO ESTABLISH SAMPLE SIZE FOR REPETITIVE PRODUCTION ACTIVITIES (E.G., CONCRETE AND STEEL PROPERTIES, WELDING RECORDS, ETC.)
- INDUSTRY DESIGN/CONSTRUCTION EXPERIENCE
- INDUSTRY OPERATING EXPERIENCE
- PROJECT DESIGN/CONSTRUCTION EXPERIENCE
  - AREAS EXPERIENCING REPEATED PROBLEMS
  - AREAS WHICH MAY NOT HAVE RECEIVED EXTENSIVE PRIOR REVIEW
- AREAS WHERE FINDINGS HAVE BEEN IDENTIFIED

INITIAL SAMPLE REVIEW MATRIX FOR THE AUXILIARY FEEDWATER SYSTEM MIDLAND INDEPENDENT DESIGN VERIFICATION PROGRAM

DESIGN AREA	SCOPE OF REVIEW				
	REVIEW OF DESIGN CRITERIA AND COMMITMENTS	REVIEW OF IMPLEMENTING DOCUMENTS	CHECK OF CALCULATIONS AND EVALUATIONS	CONFIRMATORY CALCULATION OR EVALUATION	CHECK OF DRAWINGS AND SPECIFICATIONS
I. AFW SYSTEM PERFORMANCE REQUIREMENTS					
SYSTEM OPERATING LIMITS	X	X	X		
ACCIDENT ANALYSIS CONSIDERATIONS	X				
SINGLE FAILURE	X	X	X		
TECHNICAL SPECIFICATIONS	X	X			
SYSTEM ALIGNMENT/SWITCHOVER	X	X			
REMOTE OPERATION AND SHUTDOWN	X				
SYSTEM ISOLATION/INTERLOCKS	X	X			
OVERPRESSURE PROTECTION	X				
COMPONENT FUNCTIONAL REQUIREMENTS	X	X	X		X
SYSTEM HYDRAULIC DESIGN	X	X	X		
SYSTEM HEAT REMOVAL CAPABILITY	X	X	X		
COOLING REQUIREMENTS	X				
WATER SUPPLIES	X	X			
PRESERVICE TESTING/CAPABILITY FOR OPERATIONAL TESTING	X				
POWER SUPPLIES	X	X			
ELECTRICAL CHARACTERISTICS	X				
PROTECTIVE DEVICES/SETTINGS	X	X			X
INSTRUMENTATION	X	X	X		X
CONTROL SYSTEMS	X	X	X		
ACTUATION SYSTEMS	X				
NDE COMMITMENTS	X				
MATERIALS SELECTION	X	X			

INITIAL SAMPLE REVIEW MATRIX FOR THE AUXILIARY FEEDWATER SYSTEM
MIDLAND INDEPENDENT DESIGN VERIFICATION PROGRAM (CONTINUED)

DESIGN AREA	SCOPE OF REVIEW				
	REVIEW OF DESIGN CRITERIA AND COMMITMENTS	REVIEW OF IMPLEMENTING DOCUMENTS	CHECK OF CALCULATIONS AND EVALUATIONS	CONFIRMATORY CALCULATION OR EVALUATION	CHECK OF DRAWINGS AND SPECIFICATIONS
II. AFW SYSTEM PROTECTION FEATURES					
SEISMIC DESIGN	X				
• PRESSURE BOUNDARY	X	X	X	X	X
• PIPE/EQUIPMENT SUPPORT	X	X	X	X	X
• EQUIPMENT QUALIFICATION	X	X	X		X
HIGH ENERGY LINE BREAK ACCIDENTS	X				
• PIPE WHIP	X	X	X		X
• JET IMPINGEMENT	X				
ENVIRONMENTAL PROTECTION	X				
• ENVIRONMENTAL ENVELOPES	X	X	X	X	X
• EQUIPMENT QUALIFICATION	X	X	X		X
• HVAC DESIGN	X				
FIRE PROTECTION	X	X	X		
MISSILE PROTECTION	X				
SYSTEMS INTERACTION	X	X	X		
III. STRUCTURES THAT HOUSE THE AFW SYSTEM					
SEISMIC DESIGN/INPUT TO EQUIPMENT	X	X	X		X
WIND & TORNADO DESIGN/MISSILE PROTECTION	X				
FLOOD PROTECTION	X				
HELBA LOADS	X				
CIVIL/STRUCTURAL DESIGN CONSIDERATIONS	X				
• FOUNDATIONS	X	X	X		
• CONCRETE/STEEL DESIGN	X	X	X		X
• TANKS	X	X	X		

INITIAL SAMPLE REVIEW MATRIX FOR THE AUXILIARY FEEDWATER SYSTEM
MIDLAND INDEPENDENT DESIGN VERIFICATION PROGRAM

SYSTEM/COMPONENT	SCOPE OF REVIEW				
	REVIEW OF SUPPLIER DOCUMENTATION	REVIEW OF STORAGE AND MAINTENANCE DOCUMENTATION	REVIEW OF CONSTRUCTION/ INSTALLATION DOCUMENTATION	REVIEW OF SELECTED VERIFICATION ACTIVITIES	VERIFICATION OF PHYSICAL CONFIGURATION
I. MECHANICAL					
• EQUIPMENT	X	X	X	X	X
• PIPING	X		X	X	X
• PIPE SUPPORTS	X		X	X	X
II. ELECTRICAL					
• EQUIPMENT	X	X	X	X	X
• TRAYS AND SUPPORTS	X				X
• CONDUIT AND SUPPORTS	X				X
• CABLE	X	X	X	X	X
III. INSTRUMENTATION AND CONTROL					
• INSTRUMENTS	X	X	X	X	X
• PIPING/TUBING	X				X
• CABLE	X				X
IV. HVAC					
• EQUIPMENT	X	X	X	X	X
• DUCTS AND SUPPORTS	X				X
V. STRUCTURAL					
• FOUNDATIONS	X		X		
• CONCRETE	X		X		X
• STRUCTURAL STEEL	X		X		X

SCOPE OF CONSTRUCTION VERIFICATION REVIEW

- REVIEW OF SUPPLIER DOCUMENTATION
  - SAMPLING CHECK AGAINST DESIGN SPECS AND DRAWINGS; REVIEW OF
    - DRAWINGS
    - TEST REPORTS
    - CERTIFIED MATERIAL PROPERTY REPORTS
    - STORAGE AND INSTALLATION REQUIREMENTS
    - OPERATION AND MAINTENANCE REQUIREMENTS
- REVIEW OF STORAGE AND MAINTENANCE DOCUMENTATION
  - RECEIPT INSPECTION DOCUMENTATION
  - STORAGE, INCLUDING IN-STORAGE AND IN-PLACE MAINTENANCE
    - REQUIREMENTS INCLUDING PARAMETERS SUCH AS TEMPERATURE, HUMIDITY, CLEANLINESS, LUBRICATION, ENERGIZATION, ETC.
  - OBSERVATION OF ON-GOING ACTIVITIES
- REVIEW OF CONSTRUCTION/INSTALLATION DOCUMENTATION
  - IMPLEMENTATION OF PROPER REQUIREMENTS SUCH AS ERECTION SPECIFICATIONS, INSTALLATION REQUIREMENTS, CONSTRUCTION PROCEDURES, CODES AND STANDARDS, ETC.
  - REVIEW OF DESIGN CHANGES, FIELD MODIFICATIONS, ETC.
  - EVALUATION OF DOCUMENTATION FOR ITEMS SUCH AS CONCRETE, WELDING, BOLTING ACTIVITIES, ETC.

SCOPE OF CONSTRUCTION VERIFICATION REVIEW
(continued)

- OBSERVATION OF ON-GOING CONSTRUCTION ACTIVITIES

- REVIEW OF SELECTED VERIFICATION ACTIVITIES
  - CABLE SEPARATION, PIPE SUPPORT, AND BOLTING OVER-INSPECTION PROGRAMS, ETC.
  - OBSERVATION OF VARIOUS WALKDOWN ACTIVITIES (E.G., SYSTEMS INTERACTION - SEISMIC II/I)
  - COLD HYDROS
  - COMPONENT AND SYSTEM FUNCTIONAL TESTING PROGRAMS
  - CONSTRUCTION COMPLETION PROGRAM

- VERIFICATON OF PHYSICAL CONFIGURATION
  - INSTALLATION OF SYSTEM IN ACCORDANCE WITH PIPING AND INSTRUMENTATION DIAGRAMS
  - INSTALLATION OF COMPONENTS AND PIPING IN ACCORDANCE WITH ARRANGEMENT DRAWINGS AND ISOMETRICS (APPROXIMATE LOCATION AND ORIENTATION)
  - INSPECTION OF SELECTED FEATURES FOR COMPLIANCE WITH DESIGN DETAILS (APPROXIMATE DIMENSIONS)
  - VERIFICATION OF IDENTITY (EQUIPMENT PART NUMBERS, ETC.) IN ACCORDNACE WITH DRAWINGS, SPECIFICATIONS, OR SCHEMATICS
  - QUALITY OF WORKMANSHIP

Eisenhut - FEMA responsible for evacuation plan. NRC must assure onsite plan.

Brown - Will that plan be submitted to their board for approval?

Eisenhut - Certainly. Sniezek takes certification from FEMA. Government of State is authority who responds to that issue.

Keppler - Closing - Serious consideration to another public meeting.

Statement concerning public meetings re Midland. Note no commitment to "open up the CCP evaluation process for public review and comment" as Billie says.

RBL
3/11

NRC Participants

Tom Novak

Darrel Eisenhut

Jim Sniezek

Jim Keppler

Wayne Shafer

Bob Warnick

Ron Cook

Bill Paton

Steve Lewis

Mike Wilcove

Public Meeting - February 8, 1983 7:00 p.m.

Opening - Keppler briefing on morning meeting. Asked that comments and questions be restricted to five minutes.

Sister Art Platty - She was asked by the Mayor of Saginaw to be there. Community must be assured of safety. Third party independent review - will it be an inside choice? Who will guarantee the safety of the public? Will the deadline be met? What is the cost?

Eisenhut - Explained CPCo's plan to rebuild confidence. Independent third party audit will be required. Must audit past, present and future. Told her that NRC was briefed on INPO and Tera at the morning meeting. There will be an independent program by private contractor to oversee total program. Contract not yet named.

Sister - Would NRC name the third party?

Eisenhut - Haven't reached a decision on that yet.

Sister - The community wants NRC to choose the independent monitor.

Eisenhut - No one can guarantee safety. Sufficiently low possibility of accident.

Sister - Whose responsibility is it to people of our community?

Eisenhut - The utility. NRC charged with the process of overseeing that the plant is built, designed and operated safely.

Sister - Community wants guarantee for safety. The $120,000 civil penalty fine is a "slap on the hand".

Eisenhut - Safety-related work terminated. Want two assurances - (1) previous work adequate, (2) future work adequately built.

Sister - Will the completion date be met?

Eisenhut - He does not feel we'll meet date, but the NRC has to assume licensee's date will be met. It will not be licensed until an adequate . . . The cost is not a factor to the NRC.

Tom Herron, Lone Tree Council - Not concerned with nuclear power, but the construction of the plant. Lost confidence in CPCo and NRC to do job of protecting safety. NRC embarrassed by Zimmer (97% complete and a mess). Management from top of CPCo holding information back from craftsmen. Given CPCo's past, what makes NRC sure the new CCP will work? The civil penalty fine is a "slap on the hand" and will have to eventually be paid by the ratepayers.

Keppler - Interested in seeing an organization not a part of the construction effort to determine quality is adequate. Looking for a third party review. The $120,000 fine is not a big incentive, but rather a public embarrassment. The NRC is sending a signal to other licensees - "We won't tolerate."

James Cook - In no case would ratepayers be charged for the Civil Penalty.

Castillanos - Resident of Midland County. Lives 2 1/2 miles f om the plant. Building in violation now (hotel meeting room). All exits blocked, etc. If NRC acknowledges this fact and does nothing about it, how can they be held responsible for inspecting a nuclear power plant for deficiencies? Dewatering problem . . . well water in the area. Impact of icing and cooling pond. Called his insurance company to inquire about nuclear policy - no such policy. After reviewing the CCP, he realized he needs to know what was in the report. RELEASE REPORT.

Keppler - The report was released today. The NRC has completed work on 2 allegations. Have 8 more.

Tom Devine - Received affidavit today from a construction employee that all employees know where and when the NRC will be inspecting. NRC inspection reports don't mean anything. Mr. Keppler said today that he was tired of "cheap shots". GAP has been monitoring RIII. When are the games going to stop? Why should GAP have confidence in NRC?

Keppler - Hard to respond. He knows of no instances where the licensee has been informed of an NRC inspector coming. Inspectors choose places and times to inspect themselves.

Devine - Shafer's team report good.

Keppler - Go to OIA.

Devine - I did two years ago and OIA agreed with me.

Sniezek - Policy is for unannounced inspections. If an NRC needs to talk to a specific person onsite, then he of course would have to let the employee know he was coming. For an announced inspection, the NRC inspector's supervisor's permission is needed. A track is kept of all announced and unannounced NRC inspections.

Shafer - Thanked Devine. Our (Midland Team) effort no different than any other at Midland.

Eisenhut - Will Devine supply affidavit?

Devine - Handed affidavit to Eisenhut.

Ron Cook - There are times the licensee is informed. The licensee should be putting his best foot forward to help the NRC. Often times the licensee is not cooperative. Unfair to slam the NRC. Often times Cook doesn't know himself when he will be in the office and when he won't.

Mark Hammler - Commented on the efficiency of the public hearing. Fire code not adhered to. He has now seen an example of the way NRC deals with safety. How indicative is that of how NRC inspects nuclear plants? By choosing small rooms and changing the times within one week of the meeting, NRC makes it hard for public to attend. They discourage attendance.

Keppler - Appreciate problems. We did not expect such a big crowd. We will reserve a bigger room next time. The fire code is not in the NRC's purvue. Eisenhut takes heat for meeting change.

Hammler - Schedule additional meetings.

Christopher Harts, Gilbert-Commonwealth employee - The problems with nuclear ~~poer~~ power are not insurmountable. CPCo is on the right track. He worked with Bechtel on South Texas. He has never known of an NRC inspector coming. Is the NRC responsible for policies? With all these policy questions, I suggest that the next meeting you have you put a stack of them outside the door so not so much time will be wasted on policy questions.

Tracy Parsons, Midland resident - Midland is under the watchful eye of CAP and others. I want the plant to <u>start</u>. Intervenors take joy in seeing how close a plant can come to operating before they stop construction. These meetings should be ~~construction,~~ constructive not destructive. Please decide, don't procrastinate. Good that you allow the public to comment.

Bruce Timmons - There are only 3 intervenors in whole petition because of the difficult process to become an intervenor. When the plant was proposed the community was happy. Now their bubble has burst. Construction halted. Temple wants Dow to back out. Temple confidence in CPCo low. Can CPCo do the job? Soils work below average? Don't have same problems with other utilities. NRC "ping-pongs" on confidence of CPCo.

Quinter Bernet, M.D. Forensic Medicine - Not all nuclear problems are solvable. He was in Washington to discuss nuclear waste with the head of storage safety. Have enough in cribs to blow hole in the earth. Reprocessing plant in NY the liquid waste has solidified and can't be pumped out. Must now be removed by robots. Encasements for waste used in France are made of ceramic and glass. They are only good for ten years. Every ten years the material must be removed. There is no government plan for long range waste. Who will guard in case of an earthquake? Radioactivity found 3 miles from a plant - became sterile deserts. Community has no credibility in CPCo or NRC. Where are ethics and morality? Selling future lives. Future be damned.

? - What led to fine being levied?

Keppler - QA Program not being followed.

Eisenhut - Before we license, confidence in design construction, etc. must be assured. I am encouraged to see the licensee realizes its own problems, but must have a third party review.

? - Wants another public meeting when the choice is made.

[illegible]

Charles Hoker - 29 years in reactor business. Vital part of national resources. Can be operated with a positive contribution to Midland in that it creates energy, jobs, etc.

Barbara Stamiris - Soils settlement hearing. Hearing called for at end of 1979. Because of QA breakdown, false statement, etc. it has been delayed. Order worded so that CPCo could ask for a hearing. More problems along the way. Soils remedial work still going on. What percent complete is the plant?

J. Cook - 83%.

Stamiris - 1/2 year soils work tracked separately. NRC states QA Program not at fault, but implementation of program is at fault. Why not use the old program since the new one isn't completely finished anyway?

. Cook - Can't explain CCP - too voluminous. CCP not QA Program.

Paton - Legal posture - because of a "loophole" ... They are given a permit. Before permit "yanked" CPCo must be given a hearing.

Andrea Wilson - Basis for approval should be . With GAP allegations how do you expect us to make a decision without seeing report? Wants another meeting after report is issued. Keppler gave us reasonable assurances before. Now a $120,000 penalty is issued. She is not assured by Keppler's reasonable assurances.

Keppler - I did not make that statement lightly. We are still wrestling with the QA program. We can't come up with decision without a third party review. Hopes new direction will help.

John Knocchi - Third party reviewer important. Someone who can be believed. If it is done - how will it be done? Every part, certain parts?

Eisenhut - CCP proposal not approved. Discussion today - 3 pieces - Tera, CCP aspects, independent instrumentation implementation overview - effort performed by independent contractor to overview past and future soils, HVAC and NSSS. Last contractor also not picked. Told CPCo not to fix anything until NRC reviews. CCP encompasses all

Knocchi - Need third party overviewer to attain credibility.

Eisenhut - Third party must send documentation to NRC for PDR. Criteria to select third party - spouses, relatives, no one related to employees of CPCo.

Knocchi - Looking back, make distinction between letter of the law and forcing something that makes a difference.

Keppler - Review of all safety-related structures in plant. NCR evaluated. Must be addressed.

Krause - Resident of Midland for past 6 years. Anxious to have plant operating. Reagan wants licensing streamlined.

Eisenhut - Post TMI remarks re: inefficienty in licensing. Most licensing is held up for about 1 year. National labs assisted rework of licensing function. 14 or 16 plants licensed since TMI. No way a current plant can take advantage of new licensing process.

Wilma Deason - As years passed, she has become concerned with construction inadequacies at the plant. Important that people of the community are starting to recognize effect of the plant on them.

Mary Sinclair - Nuclear waste issue important. Doesn't want to stop plant as indicated earlier in evening. This is a family issue. The intervenors did not cause delay, the soils compaction issue is the cause. Shafer's inspection caused another delay. Today's meeting is a direct result of that inspection. How can the NRC propose to begin operating licensing with 150,000 back inspections? I have 18 contentions, Stamiris has 3. They should be litigated. I hope that the growing awareness in the community continues.

Paton - Sinclair should make a motion to the Licensing Board because of her 18 contentions.

Garde - GAP denies statement of "trying to stop Midland". CCP elements are good, but can they be implemented properly. Wants secret FOIA document between Keppler and CPCo. Allegations received by GAP from whistleblowers ar a <u>fact</u>. Just as one bad apple can spoil the barrel, one bad weld can spoil a nuclear plant.

Paton - As for the "secret document" - QA stipulations and agreements between NRC and CPCo. The licensing board attorneys are resisting because if the discussion were open, no agreement will ever be reached. This shortened the hearing considerably.

? - Original estimate in cost - what will it cost by the time it is complete?

Eisenhut - Cost is not in the purvue of the NRC.

Novak - In area of cost - numbers quoted at beginning of construction were what other plants were costing at that time.

Albert Savage - No faith in CPCo because of Big Rock Point and Palisades. When cathedrals were built in year 1000, they knew enough to drive piles under them. CPCo didn't. Thousands of heat exchanger tubes needing to be replaced. Stainless steel reactor will corrode.

Savage - Incorrect welding rod. What is NRC doing about that?

Eisenhut - Steam generator ~~tubes~~ tubes historically have corrosion problems. Extensive programs for monitoring this problem. Also working on issuance of new requirements.

Frederick L. Brown - Lives 10 miles from plant and concerned about evacuation planning. Member of MI Environmental Review Board. Board has talked with the NRC for emergency plan for Midland. He was more confused than before he talked to NRC. Who has the ultimate responsibility for an evacuation plan? Clear, concise statement as to who will be approving is needed.

Eisenhut - FEMA responsible for evacuation plan. NRC must assure onsite plan.

Brown - Will that plan be submitted to their board for approval?

Eisenhut - Certainly. Sniezek takes certification from FEMA. Government of State is authority who responds to that issue.

Keppler - Closing - Serious consideration to another public meeting.

Meeting between NRC and Consumers Power Company
(2/8/83)

Opening Remarks

Good morning ladies and gentlemen. We are meeting here today to review Consumers Power Company's planned Construction Completion Program for the Midland Nuclear facility. This meeting is being held in front of the public because of the overall public interest that has been shown in the Midland project in general and identified quality assurance and construction problems in particular and is consistent with our established practice of holding meetings of this type permitting public attendance. While we welcome attendance by members of the public and the news media, I wish to emphasize that this is a meeting between Consumers Power Company and NRC, and involves public participation only through observation. Following this meeting the NRC will be glad to hear comments or respond to questions from the public concerning the subject matter of the meeting or other areas of interest concerning the Midland project and further opportunity for discussion by the public will occur tonight for those persons who could not attend this meeting. In addition to the two public meetings, a few of the NRC people and myself will be meeting this afternoon with senior representatives of Consumers Power Company and Bechtel corporation at the Midland construction site. This meeting is being held at their request to discuss the perceived importance of some of the specific problems identified by the NRC inspections last fall and to discuss Region III's handling of certain inspection findings relative to the approaches used by other NRC regions. That meeting will not get into the details of this morning's meeting.

I'd like to start by having the NRC people who are present here today to introduce themselves and then ask Consumers Power and their representatives to introduce themselves.

By way of background, for benefit of the public, Mr. Eisenhut and myself met with Mr. Selby and Mr. Cook of Consumers Power Company on two occasions in early September of last year to discuss renewed NRC concerns regarding the effectiveness of the quality assurance program at Midland. These meetings were an outgrowth of a detailed review and evaluation by members of my staff, attempting to assess the reasons why the quality assurance program was not effective in the early identification, correction and prevention of problems. Consumers Power Company was told that we believed their QA program was basically sound, but that the implementation of that program resulted in a number of problems. While we were unable to pinpoint the specific reasons for these implementation problems, we did share with Consumers Power management certain practices we believed warranted change. Furthermore, we told them that comprehensive programs needed to be developed and put into place in order to: (1) Provide assurance that completed construction work was sound, and (2) Provide assurance that future work would be effectively controlled. We requested CPCo to develop a program to deal with NRC's concerns and to sumbit that program for review by the staff.

On September 17, 1982, CPCo submitted two letters to the NRC --- one dealing with the remainder of the safety related work. A supplemental submittal was made on October 6, 1982. Two meetings, both open to the public, were subsequently held in Washington between NRC and CPCo to discuss these submittals. Concurrent with this review effort, my staff conducted an in-depth inspection of the civil, mechanical, and electrical work associated with the diesel generator building. This inspection effort identified a number of substantive quality assurance problems and led Consumers Power Company to conduct similar inspections of other plant areas. Those inspections by CPCo disclosed similar QA problems. These combined inspection findings, in conjunction with CPCo's overall assessment of the status of the project resulted in CPCo's halting a large amount of safety related work at the Midland site and to develop a formalized Construction Completion Program for completing the Midland Project. We subsequently requested CPCo to tie together this program with their earlier submittals regarding proposed quality improvements into a single package. We also committed to have a public meeting to obtain the comments of concerned citizens and organizations once that program had been submitted to the NRC. This program was submitted by CPCo on January 10, 1983, and serves as the focal point for the meetings today.

With that status, I would now like to turn over the meeting to Mr. Selby.