UNITED STATES
NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF: **DOCKET NO:**

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
SUBCOMMITTEE ON NINE MILE POINT NUCLEAR
STATION, UNIT NO. 2

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

SUBCOMMITTEE ON NINE MILE POINT NUCLEAR STATION, UNIT NO. 2

The Grand Ballroom
The Hotel Syracuse
500 South Warren Street
Syracuse, New York

Wednesday, February 20, 1985

The subcommittee convened, pursuant to notice, at 1:20 p.m., Chester Siess, Chairman of the Subcommittee, presiding.

ACRS MEMBERS PRESENT:

C. SIESS, Chairman
J. EBERSOLE

DESIGNATED FEDERAL EMPLOYEE:

J. McKINLEY
J. SCHIFFGENS

NRC STAFF AND PRESENTERS PRESENT:

A. SCHWENCER
E. WEINKAM, III
T. COLLINS
C. MANGAN
A. ZALLNICK
B. HOOTEN
J. PERRY
N. RADEMACHER
T. LEMPGES

R. ABBOTT
R. STUART
M. COLOMB
E. KLEIN
D. PRACHT

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P R O C E E D I N G S

MR. SIESS: The meeting will come to order, please.

This is a meeting of the Advisory Committee on Reactor Safeguards Subcommittee on Nine Mile Point, Unit 2.

I am Chester Siess, Chairman of the Subcommittee. We have one other ACRS member present today, Mr. Jesse Ebersole, sitting on my left.

On my right is Mr. John Schiffgens from the ACRS staff who is the assigned staff member for this meeting, and at the other end is Mr. John McKinley of the ACRS staff. One of them is the Designated Federal Employee. I am not sure which one. Mr. McKinley is.

The purpose of the meeting is to begin our review of the Niagara Mowhawk Power Corporation's application for an operating license for Nine Point Nuclear Station, Unit No. 2.

A transcript of the meeting is being kept, and because of that it is requested that each speaker first identify himself or herself for the record and then either use a microphone or speak with sufficient clarity and volume that he or she can readily be heard, and I will remind you from time to time about that.

We have received no request from the public to make oral statements nor have we received any written

statements to be read into the record of this meeting.

Again, to repeat, the purpose of the subcommittee meeting is to gather information as a basis for the review that will be made by the full committee presumably at the next monthly meeting of the full committee.

We will hear a number of presentations from both the staff and from the applicant. Many more subjects will be covered in the subcommittee meeting than will be covered in the full committee meeting and there will approximately four or five hours allocated for the full committee meeting.

One purpose of the subcommittee meeting then is to explore issues in somewhat more depth and to transmit some of our recommendations, if there are any, to the full committee as to matters which they may want to explore in more depth.

The subcommittee members have had the opportunity to visit the plant site this morning, which is not a part of the meeting. It was more for information. We have an agenda which I assume everybody has. It calls for the meeting this afternoon to go to about 5 o'clock, although I don't intend to stick to that all that closely. If we are at a convenient stopping point at 5 and seem to be on schedule, we will stop then and, if not, we may go

somewhat later than 5 o'clock.

We will reconvene tomorrow morning at 8:30 in this same room, and the meeting tomorrow again has an expected adjournment date of about 5 o'clock and that is not fixed either. If we should finish up earlier, fine. If we have to go a little later, I am prepared to stay and I think Mr. Ebersole and the staff could stay also. But I think we will be able to make 5 o'clock tomorrow without to much difficulty.

At the conclusion of the meeting we will try to give you some idea of the scope of your presentation and -- well, let me just say the scope of your presentation when you appear before the full committee. I was going to say the scope of our review, but I really have no control over the scope of the full committee's review. There are 15 people and each of them have different ideas about what they would like to review.

No matter how we might limit the scope of your presentation to the full committee, I am sure you realize that you must be prepared to answer questions on just about anything at that time.

Jessie, do you have any questions?

MR. EBERSOLE: I have nothing to add to that, Chet.

MR. SIESS: Then as the first item we will call

on the NRC Staff, Mr. Schwencer, to make some comments and then I think he is going to turn it over to the Project Manager.

MR. SCHWENCER: Good afternoon, Mr. Chairman.

My name is Al Schwencer. I am Chief of Licensing Branch 2 of the NRC Staff. After just a couple of brief introductory remarks, I will be turning it over to Ed Weinkam on my right who is serving as the Project Manager on this case.

I would just like to for perspective indicate to you that we received the application in January of '83. So it has been under review for approximately two years. During this period of time, the Project Manager of record is Mary Howee. As some of you may know, Mary has a three-week old infant and she will be back on the job but, unfortunately, she will not be able to make either the subcommittee meeting or the full committee meeting.

Ed will be the principal spokesman today for the Staff and either he or I will attempt to answer any questions you may have. I suspect, however, because of Mary's corporate knowledge, we may be asking to provide some of the answers that at your full committee meeting.

I would like to turn it over to Ed Weinkam now.

(Slide.)

MR. WEINKAM: Good afternoon, Dr. Siess and Mr.

Ebersole. My name is Ed Weinkam. I am the Acting Project Manager for the Division of Licensing assigned to the operating license application by Niagara Mohawk Power Corporation for Nine Mile Point Nuclear Station, Unit 2.

Again, Mr. Schwencer is here representing the Staff as my supervisor, Chief of Licensing Branch No. 2.

Joining us later will be from Region 1 Mr. Sam Collins who is the Chief of the Branch in the Region responsible for the Nine Mile application, Mr. Bob Graham, the Resident Inspector, and also joining us later today from the Office of Nuclear Reactor Regulation will be Mr. Bob Benedict from the Licensee Qualification Branch. Tomorrow we will be joined by John Lane from the Containment Systems Branch and Barry Manillee the Plant Security Reviewer.

(Slide.)

I just wanted to put up a very brief overview of some of the major upcoming licensing milestones. The FES should be out in April with the first supplement of the Safety Evaluation Report scheduled for May.

As I think you are aware, there are no hearings scheduled and the applicant estimates construction completion in February of '86.

(Slide.)

The next slide highlights for your information

some reference points among Washington Nuclear Project Unit 2, LaSalle County Station Units 1 and 2 and Nine Mile Point 2.

The comparisons are continued for other parameters in Chapter 1 of the Nine Mile Unit 2 Safety Evaluation Report.

MR. SIESS: Ed, befoer you leave that, from the SER in Table 1.2 there was an item I didn't understand. The maximum heat flux varied -- and I guess this doesn't really relate to Nine Mile 2, but why is the maximum heat flux so much greater for WPPSS 2 than it is for any of the others?

MR. WEINKAM: Dr. Siess, when I made this slide up I went to the FSAR for WNP 2 and LaSalle, and those were the numbers in there, and I really can't answer that question. Those are also the numbers which are in the Safety Evaluation Reports for the two projects.

MR. SIESS: All right. That means it must be right.

(Laughter.)

MR. WEINKAM: Yes, sir.

MR. SCHWENCER: We can check on that.

MR. SIESS: It has nothing to do with Nine Mile 2, but it was a curious thing.

(Slide.)

MR. WEINKAM: At the time of issuance of the

Safety Evalution Report the Staff has identified 18 items that had not been resolved with the applicant at the time the report was issued.

On this slide I have indicated nine issues marked in the left-hand column with a black ball as issues which are usually outstanding issues at this stage of licensing or have been changed to confirmatory issues since the SER was issued.

That would be Items 2, 3, 4, 5, 9, 10, 16, 17 and 18.

MR. EBERSOLE: May I ask about Item No. 2. It is Reactor Water Cleanup Line Break. is this relevant to the reliability of valve closure functions under loads, under dynamic loads?

MR. WEINKAM: No, sir. This had to do with the applicant's characterization of a length of piping in the containment penetration area as break exclusion area.

MR. EBERSOLE: Well in a more broadly considered aspect of that line, the reactor water cleanup line and the forward flowing steam flow from RCIC represent potential line breaks where valve reliability has to be guaranteed to terminate either the liquid or the steam flow, as the case may be. And somewhere along the line here I would like to hear the applicant's presentation defending the reliability of those closing functions.

MR. WEINKAM: Yes, sir, and that is also an open item for the staff under Item 4 for equipment qualification. Equipment qualification encompasses pump and valve operability and reliability.

MR. EBERSOLE: I don't think equipment qualification encompasses the hypothesis that these valves don't close.

MR. WEINKAM: No, sir, but it does take a look at the design capability or flow conditions under which the valve should operate.

MR. EBERSOLE: Good. Thank you.

MR. WEINKAM: Yes, sir.

I have marked the four issues with a black triangle to indicate issues which will be discussed at the conclusions of the applicant's presentation on the topic, Items 6, 7 8 and 15.

I will have staff reviewers available at that time also to discuss the issues with you.

I will now discuss the remaining five issues.

(Slide.)

Snow participation averages about 112 inches per year at Syracuse. The greatest 24-hour amount is 24.5 inches. The staff reviewed the FSAR at the time of issuance of the draft safety evaluation report and noted that the applicant had taken into account the 100-year return period

ground snow load as approximately 85 pounts per square foot.

In addition, the applicant considered a probable maximum winter precipitation of 56 pounds per square foot. This yielded a combined ground snow load of 141 pounts per square feet.

In Amendment 10 to the FSAR the applicant revised the design basis snow load to 45 pounts per square foot for seismic category one structures.

In late January 1985 the staff requested the applicant to justify ther reduction in the 100-year reeturn period snow load from 85 pounts per square foot to 45 pounds per square foot and the severe load combinations.

Once the design basis snow loading has been established, the capability of seismic category one structures to withstand these loads will be reviewed.

MR. SIESS: What they reduced was the ground load, or both the ground load and the PMWP?

MR. WEINKAM: Yes, sir. They reduced the 100-year return load from 85 to 45 and have no consideration for PMWP.

MR. EBERSOLE: What is the combined probability of the heaviest snow load and the seismic event of significance? Was it arbitrarily assumed that they coincided in time?

MR. WEINKAM: No, sir, I don't believe that the seismic event is considered here, the fact that the seismic category one structures were the ones that needed to withstand the heavy loading on the roofs, but not in combination with the seismic events.

MR. EBERSOLE: Oh, okay. That is what I wanted to hear.

MR. WEINKAM: Yes, sir.

MR. SIESS: Well, Ed, right now their design snow load is 45 pounds per square foot?

MR. WEINKAM: Yes, sir. That is as the staff understands it.

MR. SIESS: And under the original documentation in the FSAR was it 85 or 85 plus 56?

MR. WEINKAM: 85 plus 56.

MR. SIESS: That is quite a reduction.

Is the applicant going to address this issue?

MR. ZALLNICK: Mr. Rademacher will comment upon the snow load issues. Would you like his comment now or would you like to wait until the end?

MR. SIESS: When do you want to comment on it, a little later you said?

MR. ZALLNICK: We can comment on it right now.

MR. WEINKAM: I think it would be opportune now since it is fresh in our minds.

MR. SIESS: I would like to take up these things together so that we know the question and the answer at the same time or close thereto.

MR. ZALLNICK: Yes, sir.

MR. RADEMACHER: Good morning. My name is Norm Rademacher. I am the Nuclear Design Coordinator for Nine Mile 2. Also I have here with us our Assistant Manager of Design, Ed Klein, who may also provide some information on the snow loads.

Basically in the original FSAR we addressed NUREG 1389 and 1489. These were contractor NUREGs that has been published, CR-NUREGs, but not endorsed by the staff in any formal publications. And the way we had it worded in the FSAR, it was unclear as to what the capability and how you use the loads for design.

Therefore, we revised the FSAR to show the 45 pounds for the one in the 100 year storm. However, we have verified that. We do have the capability to meet the 141 PSF loads that Ed perviously described. This, after translation to the roof, you have to translate the snow on the ground from the ground to the roof. That results in approximately 112 PSF.

MR. SIESS: So you designed the plant in accordance with the commitment made in the PSAR essentially?

MR. RADEMACHER: The original PSAR commitment going back to the CP stage was 45 PSF for the one in 100 year storm. Subsequently there has been substantial revisions in the staff positions and we can accommodate the 112 PSF snow load on the roofs.

We have analyzed three buildings, the reactor building, diesel and control building. The reactor building can take 112 and the other ones are substantially higher by about 300 PSF.

MR. SIESS: How much snow does it take to make 112 pounds per square foot?

MR. RADEMACHER: 141 I calculated it out to be about 22 feet of snow. You have to divide by 6.25 or thereabouts for the actual feet of snow.

MR. SIESS: How many feet of snow?

MR. RADEMACHER: Divide 112 by 6.24. I will get my calculator out.

MR. SIESS: No, that is close enough. I guess if I had come here on some other day, I would find that more cedible.

(Laughter.)

I assume you are submitting this to the staff?

MR. RADEMACHER: Yes. We will be responding to the staff in March.

MR. SIESS: Okay. You hadn't heard this before,

had you?

MR. WEINKAM: No, sir. We had sent out a request for information in the late January time frame on this topic and we will be discussing it further with the applicant with this response.

(Slide.)

During the staff's review of the physical identification and independence of redundant safety related electrical systems to meet IEEE Standard 384/1974 and Reg. Guide 1.75 the staff found what appeared to be inconsistencies between the stated electrical separation criteria and MP-2.

Of the four inconsistencies identified in the SER, only one remains an outstanding issue. One of the cases has been closed and two are confirmatory.

The remaining issue deals with the indication by the applicant that justification by analysis would be used for exceptions to establish separation criteria in the power generation control complex cabinets.

However, elsewhere in the FSAR the applicant stated that there are no cases where analysis has been used to justify less than the required six-inch separation in cabinets.

The staff has requested the applicant to ciarify the apparent inconsistency and to provide for staff review

any analysis performed to justify exceptions to the separation criteria in IEEE 384 and Reg. Guide 175.

The applicant intends to provide the GE analysis in March 1985 to justify the separation exceptions.

MR. EBERSOLE: May I ask about this. In the first place, the six-inch separation has got to be an arbitrary number established by unknown means to me. I don't know whether this failure to meet this requirement means you separate it five and a half inches or four inches or two inches or one inch.

In any case, it is typical of say Reg. Guide 175, separation requirements of electrical apparatus, and in the event of breach of this separation can I count on the fact that the auxiliary control center will save me? This is a typical interface of critical circuits. I am asking you when I invoke breaching this arbitrary hypothesized six-inch separation by intrusion fires as a case in point, is the case in point represented by competence to shut down the plant safely anyway from the backup control center?

MR. SIESS: Would you like the applicant to answer that?

MR. EBERSOLE: I don't care who answers it.

MR. SIESS: You don't have to answer, Ed, if it is something the applicant ---

MR. EBERSOLE: If the applicant wants to answer that, it will be ---

MR. ZALLNICK: Mr. Rademacher will comment on that also.

MR. RADEMACHER: That is exactly the case. We can go to the remote shutdown panel.

MR. EBERSOLE: So this is really just sticking to the relatively arbitrary requirements of the separation criteria like Reg. Guide 175 or the IEEE equivalent?

MR. RADEMACHER: That is correct.

MR. EBERSOLE: Okay.

MR. WEINKAM: I couldn't answer that definitively because we will be coming to the alternate dedicated shutdown question which comes into that area.

MR. EBERSOLE: But that is precisely to overcome the fundamental shortfalls of this sort of separation?

MR. WEINKAM: Yes, sir, and additionally the fact that you may not meet the six-inches and you will go to an analysis which you may or may not ---

MR. EBERSOLE: I have trouble inventing any analysis in my own mind which would establish six inches as being any better than five or seven or four.

MR. SIESS: It is enforceable.

(Laughter.)

What is the usual fix if you are under six

inches, to put a barrier in between?

MR. ZALLNICK: There are severa different fixes. There are barriers, there is SilTemp tape or flexible conduits. There are other things that we need to supply analyses to the NRC on.

MR. EBERSOLE: Could anybody be a clew as to why six inches was thoght to be all right and five was not?

(No response.)

MR. EBERSOLE: I didn't think so.

(Laughter.)

(Slide.)

MR. WEINKAM: The staff is currently reviewing the safe and alternate shutdown capability of Nine Mile Point 2. For the safe shutdown capability the staff examines the fire protection features provided for structures, systems and components important to safe shutdown.

These features should be capable of limiting fire damage so that, one, one train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or emergency control station is free from mire damage and, secondly, systems necessary to achieve and maintain cold shutdown from either the control room or the emergency control station can be repaired within 72 hours.

If either of these positions cannot be met, then

alternative or dedicated shutdown capability and its associated circuits independent of cables, systems or components in the area, room or zone under fire damage consideration should be provided.

For the alternate shutdown capability, the plant should be able to achieve and maintain subcriticality, maintain reactor coolant inventory, achieve and maintain hot shutdown and achieve cold shutdown within 72 hours..

During the post-fire shutdown the reactor coolant system process variables should be maintained within those predicted for a loss of normal AC power. The fission product boundaries should not be affected, and by that I mean that there should be no fuel clad damage, rupture of any reactor coolant boundary or rupture of the containment boundary.

The staf is continuing the review of the design of Nine Mile 2 to meet the safe and alternative shutdown capability.

MR. EBERSOLE: May I ask. In the design of that system what was the rationale for establishng a time within which you lock out the main control to preclude inadvertent and spurious operation and lock in the functions from the aux center? Was it 10 minutes? You know, there have been some cases and I see one defined here where certain fuses may blow before you get to the disconnect, and I believe

you told me in the field that you had auxiliary fuse sources which may have overcome that. But, anyway, what was the rationale for the time interval?

MR. WEINKAM: Let me just digress for a second. The staff's review of the alternative shutdown capability takes into account, for instance, an intersystem LOCA, which probably would be a case.

The applicant will either have to show that he can lock it out within a period of time or else go down and rack out the breaker or take the mode of power away from that valve and verify the valve position.

MR. RADEMACHER: Essentially we assume that the spurious operation would occur at any time during a transient. So at time zero it could occur.

MR. EBERSOLE: I see. That is conservative?

MR. RADEMACHER: Yes.

MR. SIESS: Why is this open, because its review is not completed or because you found something that you need further information on?

MR. WEINKAM: Because we have the review still open. We may be going back to the applicant with some questions, but I just left it open because the staff has not completed the review.

MR. EBERSOLE: In the event you find that time zero is not going to be practical, what would use in lieu

of that, 10 minutes or something?

MR. RADEMACHER: No. The approach that we use, and we will be discussing our capability to meet Appendix R later, but basically the approach that we use is if we can't take that failure at time zero, we either fix it by ensuring that it is not affected or spurious operation or alternatively if it is a system that may not be needed for safe shutdown, we would lock it out at the motor control center or something like that.

MR. EBERSOLE: I see. Thank you.

(Slide.)

MR. WEINKAM: There are no general design criteria or regulatory guides that directly apply to safety related performance requirements for lighting systems.

The staff in its assessment of the lighting systems design capability, among other review criteria, considered the capability of lighting sytems to provide adquate lighting for access roads to and from safety related equipment areas.

The applicant was asked to show how adequate lighting would be maintained for access to safety related areas required for safe shutdown for periods longer than eight hours after the design basis seismic event with attendant loss of offsite power. The staff assumes non-Class 1-E lighting is unavailable following such an

event. The staff will report on the resolution of this issue in a supplement to the SER.

MR. SIESS: What does the eight hours come from, battery capacity?

MR. WEINKAM: Yes, sir. I believe that is correct, isn't it?

MR. RADEMACHER: Yes.

MR. SIESS: And this is continuing; is that right? You asked for information?

MR. RADEMACHER: Yes, they asked for additional information and we submitted a letter on November 30th, 1984, and I believe that is still under staff review. However, oral indications are that we need to provide some additional justification, and with that this item should be closed out.

MR. WEINKAM: I think that we have had some discussion within the last two weeks, and my contact with the staff and the applicant is that I think we can reach a closure of this issue in the near future.

MR. SIESS: You don't think it is something we need to hear from them on today if you are close to resolution?

MR. WEINKAM: No, sir, I don't believe so

MR. EBERSOLE: Let me ask, when you are looking at emergency lighting, the first stage of loss of lighting

would be loss of normal AC power, the second degradation would be loss of all AC, and then I won't invoke the third, which is the DC loss. What level of degradation are we talking about that we still need emergency lighting?

MR. WEINKAM: We are talking about the second level where we have lost offsite power. The lighting is on the diesels, but the staff's concern is the ingress and egress to safety related areas for long periods of time.

MR. EBERSOLE: But you are telling me that I will not have this lighting if I descend to the level of degradation that involves a total blackout. What do I do then? I still have DC lights.

MR. SIESS: What is the lighting in the safety related areas that lasts beyond eight hours?

MR. RADEMACHER: Excuse me, I didn't hear the question.

MR. SIESS: The staff's concern is what do you do about access to the safety related areas? Presumably for eight hours you have batter power.

MR. RADEMACHER: That is correct.

MR. SIESS: What is the source of lighting in the safety related areas after the eight hours? Is it battery power for eight hours?

MR. RADEMACHER: For example, in the control room it is backed up by the diesel generators. So it would be

powered from the diesel generators.

MR. SIESS: Now we have already postulated a loss of offsite power and onsite power.

MR. RADEMACHER: In that case then it would be just the eight-hour batter packs plus portable hand held flashlights.

MR. SIESS: So all of your essential lighting is batteries and you have that for eight hours?

MR. RADEMACHER: No. Let me describe our design. We have four types of lighting, emergency lighting, essential lighting, normal lighting and egress lighting.

MR. SIESS: Essential lighting is the issue?

MR. RADEMACHER: That is correct. Emergency lighting is off the diesels and whatever length of time that the diesels run the lighting would be provided.

Essential lighting can be provided from the diesels, but it is not seismic. Therefore, after a seismic event it may not be available. The inverters are in the normal switch gear building which is not a seismic building and may or may not be available.

The third level is normal lighting, which is just off of offsite power or normal station service.

And the last type of lighting is the egress lighting, which includes battery power lighting, you know, battery packs and certain of that is also off of essential

lighting.

MR. SIESS: So if you had a station blackout due to a seismic event, you would be dependent on your batteries?

MR. RADEMACHER: That is correct.

MR. SIESS: And if you lost the batteries you would really have a blackout?

MR. RADEMACHER: Yes, except for hand held portable flashlights.

MR. EBERSOLE: I guess we are trying to find out when you really go black. These independent modules that you hang around the station to overcome dark places, are they qualified for seismic?

MR. RADEMACHER: Yes, they are seismically supported.

MR. EBERSOLE: So you really will always have lights I take it?

MR. RADEMACHER: For eight hours until the batter wears out, yes.

MR. EBERSOLE: Thank you.

MR. SIESS: Those are the batteries you are talking about for the independent emergency?

MR. EBERSOLE: The modules?

MR. SIESS: These little things up on the wall?

MR. RADEMACHER: Yes, the battery packs on the

wall. Yes.

(Slide.)

MR. WEINKAM: The division one and division two diesel generator air start systems at Nine Mile Point 2 do not include air dryers. Niagara Mohawk has provided rationale for the acceptability of such a design and the staff has considered that it is not acceptable.

Niagara Mohawk has proposed using moisture separators and filters in conjunction with manual blow down of the air receivers and system piping to preclude air start system contamination and eliminate the need for air dryers.

The staff finds this rationale acceptable for the following:

One, manual blowdown of the air receivers eliminates only accumulated condensed moisture. The air in the receivers will still be saturated at the operating pressure and temperature. Production and pressure and/or temperature will cause condensation.

Secondly, moisture separaters will only remove excess moisture from the incoming air. The discharged air will still be saturated.

Thirdly, air beyond the separators will still be maintained at 100 percent relative humidity.

Fourth, blowdown of the system piping will

only eliminate possible condensed moisture in some corrosion products.

And, finally, continuous exposure to moist air will eventually result in internal corrosion and corrosion product buildup with clogging and malfunctioning of the air start control valves.

The staff study in NUREG CR-0660 identified moisture in the air start system as the single greatest cause of diesel generator unreliability.

The applicant and staff are continuing a discussion on this topic.

MR. SIESS: From what you said at the end, I would have to assume that this is not unique to Nine Mile Point, Unit 2. If NUREG CR-0660 found it as an contributor, then that means there are other plants out there that don't have air dryers.

MR. WEINKAM: I can't answer that, sir, but the point that I was trying to make by saying that was that the staff has identified that a moisture corrosion type of situation would lead to a higher degree of degradation of the air start valves.

MR. SIESS: But now if there are not other plants out there without air dryers and you are still having diesel failures due to air problems, then I would suggest that air dryers may not be doing any good or doing enough

good.

MR. WEINKAM: Or the air dryers may not be operated properly or maintained properly.

MR. SIESS: Yes, but you don't know whether this particular situation is unique to Nine Mile Point. As I understand, the applicant says this is a backfit.

MR. SCHWENCER: Dr. Siess, I think the applicant may want to speak to this issue, but in direct answer to your question, there are plants out there, particularly older plants, that did not have air dryers in. There are one or two plants that have been licensed after Three Mile Island where there are commitments to get them in by a certain date. The timing in operation of this plant, the staff has taken a firm position that the dryers should be in.

I think the applicant may want to address this issue. We have been working quite closely with them on it.

MR. SIESS: Now if there are other plants out there without air dryers, and the staff knows that that is causing a problem, this I think is a pretty legitimate reason for wanting to have them in. That is why I asked.

There has been quite a study recently of diesel generator reliability, and I was wondering if it is only loosely related to this or whether somebody can actually say look, one contributed to unreliability as lack of air

dryers, and putting in air dryers improves the reliability.

I mean this is saying air dryers are required and we have got a good reason for it. The other approach is to say well, we think they will do some good.

MR. SCHWENCER: The NUREG listed up there is the University of Dayton study which did study the actual failures. I don't think neither Ed nor I could give you statistics within the last year or so, but my understanding is that there have been recent failures that have been attributable to moisture.

MR. SIESS: Is the applicant going to make a presentation on this later on?

MR. ZALLNICK: No, sir, we weren't planning on it. To bring you up to date we have decided to put the air dryers in and we are in the process of doing the engineering and procurement on the air dryers and discussing with the NRC how to incorporate the air dryers then into the startup program.

MR. SIESS: Okay. So you are not going to contest it as a backfit?

MR. ZALLNICK: No, sir.

MR. SIESS: Do you have air dryers on Unit 1?

MR. SCHWENCER: While he is looking for that. one of the three units does have air dryers. Am I correct on that of Nine Mile 2? It is only two of the units that don't

have air dryers currently? I don't know what the situation is on Nine Mile Unit 1.

MR. RADEMACHER: That is correct. The HPCS diesel does have air dryers on it existing and, as Tony mentioned, we are putting air dryers on the Cooper's.

MR. SIESS: I am sorry. I am confused. By unit somebody mentioned diesels?

MR. WEINKAM: I think Mr. Schwencer was confused. You were speaking about Nine Mile 1 or Fitzpatrick.

MR. SIESS: Well, I asked specifically do you have air dryers on the diesels on Nine Mile Unit 1. What has been your diesel reliability?

MR. LEMPGES: The answer is no, we do not have air dryers on Unit 1.

MR. SIESS: What has been your reliability record on diesel starts?

MR. LEMPGES: I don't have any numbers off the top of my head, but essentially it is 100 percent.

MR. SIESS: Okay. Is that why you were arguing in the first place from experience?

MR. ZALLNICK: Pretty much from experience. There is one other reason we were arguing, if you want to mention it. The type of starting of the diesel for the Cooper's was changed.

MR. SIESS: Now Cooper is the name of the

diesels? You have two Cooper diesels?

MR. ZALLNICK: There are two Cooper diesels and the HPCS diesel.

MR. SIESS: Okay.

MR. ZALLNICK: The starting on the Cooper is done by direct air start rather than with an air start motor, and we believe that that added reliability to the starting mechanism of the diesels above what might be gained by adding air dryers. We have since decided that we would add the air dryers on also.

MR. EBERSOLE: Have you had any cases of freezing of the water in any of the air lines as a result of water in them?

MR. LEMPGES: No, sir. It is a heated room and they are not outside or not subjected to the low temperatures.

MR. EBERSOLE: I see, that is the reason. You are always in a warm environment.

MR. LEMPGES: Yes, sir.

MR. EBERSOLE: Is that true when the engine -- well, of course once it runs and it has started you don't need the air any more, or do you? There is no continued air flow after the start, is there?

MR. LEMPGES: No, sir.

MR. EBERSOLE: All right. Thank you. I am

thinking about that frigid gale that is going to be blowing through that room.

(Laughter.)

MR. SIESS: Okay. Continue.

MR. WEINKAM: Dr. Siess, that concludes my presentation. I guess the Region was due up next and they are not here right now. Could we defer that until later?

MR. SIESS: Okay. We will take Mr. Collins at a convenient time after he comes in. Will you find out when he comes in whether he expects to be here all day or tomorrow?

MR. SCHWENCER: Yes, sir, we will do that.

MR. SIESS: If he is not going to be here tomorrow, we will try to find time for him today.

MR. EBERSOLE: Speaking about frigid air, when you start the diesels in bitterly cold weather and you invoke the running of the fans to cool the generator inside the house, is there any temperature control to hold temperatures up in that room?

MR. LEMPGES: There is temperature control. We have a rolled door that opens with vent fans in the roof.

MR. EBERSOLE: Is it just manual attendance to hold temperature up?

MR. LEMPGES: No, that is automatic.

MR. EBERSOLE: Oh,it is?

MR. LEMPGES: Yes. Combustion air is taken from outside the roof and exhausted outside.

MR. EBERSOLE: I am thinking about the cooling air for the engine proper though.

MR. LEMPGES: Yes, that is water cooled.

MR. EBERSOLE: No, no, I don't mean that. Well, let's take the generator windings which are air cooled, and the room environment itself with all the oil lines and things. What temperature do you hold to in that in extremely cold weather like 40 below? What interior room temperature do you hold in there?

MR. LEMPGES: I can't answer that.

MR. RADEMACHER: For Nine Mile 2 we maintain 65 degrees.

MR. EBERSOLE: By what, by closing the doors or windows or what? Is it a manually attended operation to do that or automatic?

MR. RADEMACHER: No, that is automatic, as Tom mentioned.

MR. EBERSOLE: Okay. Thank you.

MR. SIESS: Thank you very much.

My agenda calls for a break, but it is much too early for a break. I will save it till later.

So I will now call on representatives of the applicant.

MR. ZALLNICK: Thank you, Dr. Siess.

The first presenter we have today is Mr. Charles Mangan. Mr. Mangan has over 22 years experience in nuclear engineering and worked on the design of Unit 1 and Unit 2. He is currently the Vice President of Nuclear Engineering and Licensing.

(Slide.)

MR. MANGAN: Good afternoon, and welcome to Syracuse.

As Tony said, I am the Vice President of Nuclear Engineering and Licensing for Niagara Mohawk, and we are here to cover the agenda topics and any questions you might have.

(Slide.)

Nine Mile Point is located Upstate New York on the southern shore of lake Ontario. The site, which is about miles northeast of the City of Oswego is centrally located in Niagara Mohawk territory.

Our franchise area covers most of Upstate New York. It stretches from Buffalo on the West to Albany in the East and from Canada in the North to the Pennsylvania border in the South.

The generating capacity is pretty well mixed among coal, oil, hydro and nuclear.

(Slide.)

Niagara Mohawk has been in the nuclear business for over 30 years. Nine Mile Point, Unit 1 has been operating for 15 of those 30 years. We also were directly involved with the design, construction and operation of the James A. Fitzpatrick plant which is owned by the Power Authority of the State of New York. Nine Mile Point, Unit 2 is part Niagara Mohawk's long history of involvement with nuclear power.

(Slide.)

We started back in 1953 at Fermi 1. Three of our people helped design that facility.

In 1958 Niagara Mohawk ordered development of a high-temperature gas cooled reactor, Peach Bottom 1.

We formed a separate nuclear engineering section in late 1959. At that time we did all of our own architectural engineering. A year later Niagara Mohawk became the architectural engineer for the direct nuclear superheat reactor at Vallecitos.

This experience was invaluable during the design of Nine Mile Point, Unit 1. This unit went critical in late 1969 and has been successfully operated ever since.

In 1971 we decided to built a second reactor at Nine Mile Point. The construction permit for Unit 2 was issued in June 1974.

The plant is similar to the one we already have

in operation. While there are many design differences, the basics are the same.

It is on an existing site which already has two boiling water reactors. The plant staff has experience dating back over 20 years.

The Safety Review and Order Board, which is the main oversight committee for the operation of both units has been in existence since before the operation of Nine Mile Point Unit 1.

The site has a successful emergency plan. It is used jointly among the Power Authority, Niagara Mohawk, the County and the State and cooperation has been outstanding.

The Federal Emergency Management Agency has approved the plan. Over the years the general philosophy of Niagara Mohawk has been one of voluntary compliance. Ten years ago we took it upon ourselves to convert the provisional operating license for Unit 1 to a permanent license. Other reactors of the same vintage are just now getting their permanent license.

In order to get this conversion we knew that we would have to upgrade Nine Mile Point, Unit 1 to address then current criteria. During that process we addressed compliance with general design criteria, regulatory guides, IEEE guides and the appendices to 10 CFR 50. None of these

existed during the design of Nine Mile Point, Unit 1.

The general philosophy of voluntary compliance or perhaps more properly voluntary upgrades continued after the issuance of the permanent license. Many new systems have been added to Unit 1. These include a cask drop protection system, containment atmosphere dilution system, costly upgrades of liquid and gaseous waste systems, plant unique simulators to both units and analogue trip systems to improve instrument reliability.

A recent example of this philosophy concerns recirculation system piping. In 1982 we discovered cracks in the furnace sensitized safe-ends. On our own with no prompting from the Commission we decided to check the welds in the 28-inch pipe.

As a result of our review, we found indications of cracks in the heat affected zones. We immediately decided to replace all of the piping as well as the safe-ends. Needless to say, this was not a very popular decision in the industry.

Now most of my discussion relates to Nine Mile Point Unit 1, and the same safety philosophy carries over into the design and operation of Nine Mile 2.

In the case of the IGSCC issue, we elected to replace the Unit 2 recirculation piping on a voluntary basis. This was prior to the cracking at Unit 1, and it was

before any NRC regulatory action.

MR. EBERSOLE: May I ask a question?

MR. MANGAN: Yes, sir.

MR. EBERSOLE: After that horrendous Browns Ferry fire that was in '74, what actions did you take, if any, then on Nine Mile Point 1?

MR. MANGAN: I believe our first official action as far as making any changes occurred in 1975, and maybe To could help me as to the dates. I think that is correct. And we went through many, many iterations, as I am sure you are aware, of what was acceptable and what wasn't acceptable.

As a matter of fact, going back in that time, we pushed very hard to get the NRC team on site. That was delayed several times and actually was delayed by the NRC for approximately a year and a half. We were trying to get the thing put to bed and we took an aggressive stance.

We actually got it pretty well put to bed and had a very successful onsite visit by the NRC. And I would say within two month's time after that Appendix R came out.

MR. EBERSOLE: I see.

MR. MANGAN: So we were basically back to ground zero in a lot of areas. For your own information, we just recently had our own Appendix R investigation at Nine Mile Point Unit 1 and again it went very successfully and there were no violations and basically a clean bill of health.

MR. EBERSOLE: Great. Thanks.

MR. MANGAN: Another example on Unit 2 concerns the control room. Niagara Mohawk initiated a review of the Unit 2 control room several years before this was a requirement. Our operating people evaluated the control panel layout in 1977 using panel mockups and stick-on controls.

The point I am making is we are committed to safe and efficient operation of our nuclear units. We don't wait for the regulatory authorities to tell us to do things. We make our own assessments of safety issues and do things in response to these issues. Sometimes we get burned.

The remedial actions we take by ourselves early on are not always in full agreement with regulatory guides or even regulations which come out later. However, this has not stopped us from going ahead on our own.

Niagara Mohawk is very active in industry groups. We are represented on all of the owner's groups and we are also very active in the Electric Power Research Institute, INPO and others. We are not just contributing money to the groups. We are active participants. We stay current on the technical issues and we contribute our own technical expertise.

Before I introduce Mr. Bill Hooten, the

Executive Director of Nuclear Operations for Niagara Mohawk, I would like to say a few words concerning our involvement with the Management Analysis Company commonly referred to as MAC.

By late 1983 Niagara Mohawk had become concerned with the future of Nine Mile Point Unit 2. We were aware of the difficulties being encountered by other reactors and by the industry in general. As a result a decision was made by Niagara Mohawk to utilize the services of people heavily experienced in construction, people with a proven track record. I would like to emphasize that this move is considered preventive and prudent to ensure the timely completion of the project.

To date the relationship between MAC and Niagara Mohawk has been positive and fruitful. Significant progress has been made and the results have reinforced our decision to use MAC on the project.

Towards completion of construction a gradual phase-out of these MAC employees will begin. Most of the functions that are currently handled by MAC will disappear. They are construction related. The few positions that remain will be filled by Niagara Mohawk people. They are being trained now.

It is important to remember that Niagara Mohawk has 15 years of experience in the operation of nuclear

units. We have been training site management staff for a considerable time. This will ensure that no voids will occur in our management ranks.

I am confident that the site management staff now in place, coupled with experienced senior management, will ensure the safe and efficient operation of Nine Mile 2.

If there are no questions, I would like to introduce Mr. Bill Hooten.

MR. EBERSOLE: Let me ask just another shot in the dark in talking about an overview of what NRC does and what you do independently. I recall back in the years of Nine Mile Point 1 the question of heavy loads came up and what would the cranes do if they dropped a cask. It was the most obvious question. A lesser one was considering the handling of moderately heavy several ton concrete loads over the open core, could they be dropped by inadequacies in slings or other controls so as to knock the fuel out and strip the colar chokes and establish a critical reactor, et cetera.

Could you give me a resume of sort of what you have done about looking at the crane design for infallibility if you can get it, and your general approach to avoiding consequences due to dropping of moderate to heavy loads?

MR. MANGAN: On Unit 2 or Unit 1?

MR. EBERSOLE: Both.

MR. MANGAN: I would rather have somebody else address Unit 2. Tony, I don't know who that is offhand. Basically on Unit 1, as you know, with an operating reactor these things kind of grow.

MR. EBERSOLE: Yes, I know.

MR. MANGAN: And we have the right man here, by the way, that handled the crane work on Nine Mile 1. As a matter of fact, he was one of the charter members of the ASME committee on this issue at the request of the NRC.

MR. EBERSOLE: You know, a moderately heavy load on top of the core is worst than a heavy load into the pool, for instance, or on the floor.

MR. MANGAN: That is correct.

MR. ZALLNICK: I think maybe we could hear from Mr. Klein. Mr. Klein is the Assistant Project Engineering Manager and can give you some comments. He is also a member of the ASME Committee on Cranes.

MR. EBERSOLE: Would it be prudent to wait for this or just to go ahead now?

MR. MANGAN: I don't think it really matters. Ed Klein was directly involved. He is the individual I was talking about that was directly involved with Unit 1 from day one.

MR. KLEIN: Good afternoon, gentlemen. My name is Ed Klein.

Nine Mile 1 crane was changed out. We took the trolley off and put up a redundant trolley, and the slings and the strongback were all modified to provide redundancy for Unit 1. Of course, we installed the cask drop protection system. I can't address the dropping of moderate loads at this time into the reactor with the head off. Essentially we have administrative procedures that do not allow the passage of heavy equipment when the reactor head is off.

MR. EBERSOLE: Don't you have some shield blocks that you pass over that weigh pretty much?

MR. KLEIN: Only the shield blocks that go in fact over the top of the vessel. The shield blocks that go from the vessel cavity into the dry storage pit would be lifted directly up and not go over the vessel, and the lightweight ones between the vessel and the spent fuel storage ones also have a load path that doesn't go over the vessel. I can't think of anything else that ---

MR. EBERSOLE: You said you changed out the carriage. Did you look at the reduction gear design and go into the failure logic when limit and travel switches failed and you have excessive torque which will damage the crane from internal forces?

MR. KLEIN: I can't rightly address that, but we did take down the trolley and put up a redundant trolley and we do have limit switches for movement over the spent fuel pool. And, of course, in Unit 2 we are complying with Reg. Guide 0612.

MR. EBERSOLE: Is this an open issue with the staff, the heavy load bit?

MR. WEINKAM: No, sir.

MR. SIESS: Now do you comply with the Reg. Guide? I think it has two alternatives, am I correct?

MR. WEINKAM: Excuse me, Dr. Siess, it is NUREG 0612, and there are two phases. The applicant has completed a satisfactory submittal on Phase I and that has been accepted by the staff and they have closed it on Phase 2.

MR. SIESS: Okay. Now that covers all the cranes. That is all heavy loads. I think what Mr. Ebersole was talking about chiefly was the big crane in the containment. Did you choose to qualify that as a single failure proof crane?

MR. KLEIN: Yes, sir.

MR. SIESS: In accordance with whatever requirements there are, and I forget the ---

MR. MANGAN: Yes, it is totally in compliance with the Reg. Guide for just that reactor building crane.

MR. EBERSOLE: When one says single proof failure

criteria, you really don't know what is meant because sometimes the computation is to throw you back to IEEE 279 and mean just the electrical apparatus. Now does that mean that I am not dependent on a mechanical component in that context?

MR. KLEIN: It is fail safe electrically.

MR. EBERSOLE: But it is not mechanically, is it?

MR. KLEIN: No, sir. I need to ---

MR. EBERSOLE: You see, I will tell you why I asked this ---

MR. SIESS: Excuse me, just a minute. I thought there was a fairly specific set of requirements for what would be called a single failure proof crane. Is that a Reg. Guide?

MR. RADEMACHER: Yes, you are right.

MR. SIESS: There is more than electrical?

MR. RADEMACHER: They require certain requirements on slings. They require additional criteria for brakes and the drum diameter and various things like that.

MR. SIESS: Speeds, cable strength and everything?

MR. RADEMACHER: Exactly, yes, sir.

MR. KLEIN: That is another Reg. Guide.

MR. SIESS: Do you meet that for Nine Mile

Unit 2?

MR. RADEMACHER: I think we met everything but one criteria which was an allowed alternative, and I can't remember that right off the top of my head, but we can check if you would like.

MR. EBERSOLE: Let me give you a physical picture of an early finding which was that on standard cranes one of the first-stage main gears was driven by the pinion with a motor, and on the opposite end of the motor shaft was the brake, and what held the pinion in context with the bull gear was a pillow block which would come unleashed if you opened one bolt on it, thus leaving the full gear train in full flight. Would I find that sort of design in any of your cranes? Do you follow me?

MR. KLEIN: Yes, but we would have to go back and look at that specifically.

MR. EBERSOLE: Well, that tells me that you have an effort in place to already have looked at it, which means you haven't looked at the structural guts of the cranes. You don't do that?

MR. KLEIN: We are in compliance with that Reg. Guide for that crane, totally in compliance with that. That may be specifically addressed and, if it is, we are in compliancecompliancecmechanic with it.

MR. EBERSOLE: I don't think it may be though.

MR. [illegible] I think it is.

MR. EBERSOLE: You think it is?

MR. SIESS: I think that happened long before the Reg. Guide.

MR. EBERSOLE: Could the staff comment on this? Is this sort of thing addressed in the guide? I don't know. Do you take the crane apart and look at the single point failures in it?

MR. ZALLNICK: We will check and see whether that is part of that Reg. Guide.

MR. EBERSOLE: All right. Thank you.

MR. SIESS: Now, in addition to having a single failure proof crane, do you also place restrictions on load paths?

MR. KLEIN: Yes, sir. We have limit switches that limit the movement of any heavy article on the reactor building floor over the spent fuel pool.

MR. SIESS: And for other critical places you said earlier that you don't move things over an open vessel, I assume that is not handled by limit switches, but by administrative controls. I don't think you could do it by limit switches without a computer.

MR. MADDACHER: That is correct.

MR. KLEIN: That is right.

MR. SIESS: There are too many different paths I

am sure.

MR. RADEMACHER: Yes.

MR. SIESS: What do you call a heavy load?

MR. KLEIN: Anything over 1,000 pounds.

MR. EBERSOLE: What would 999 pounds do if you dropped it on top of the core?

MR. RADEMACHER: We looked at that and there is an analysis in the FSAR that says that it produces acceptable consequences.

MR. EBERSOLE: Doesn't it knock a bunch of collar chokes loose and establish a critical reactor?

MR. RADEMACHER: The analysis that we have does not.

MR. EBERSOLE: Thank you.

MR. SIESS: Let's see, we were on questions for Mr. Mangan. Have you got any more?

MR. EBERSOLE: No.

MR. SIESS: I think that is all the questions then.

MR. ZALLNICK: Okay. I would like to introduce Bill Hooten, our Executive Director of Nuclear Operations for Niagara Mohawk. He will discuss MAC involvement further and also explain our organization.

Mr. Hooten is a management analysis company employee and brings a total of 32 years of nuclear

experience to Niagara Mohawk.

Bill.

(Slide.)

MR. HOOTEN: Good afternoon, gentlemen.

With that introduction, Mr. Mangan took about half of my speech I think.

(Laughter.)

I would like to continue these discussions with some rundown on our capabilities and the organization that we have in place to handle our nuclear operations.

And as the Executive Director I should mention to you that for Niagara Mohawk I am totally responsible for all nuclear activities, both Nine Mile 1 and Nine Mile 2.

I joined Niagara Mohawk in early 1984 as a result of the early retirement of the executive in charge of nuclear operations at that point in time.

(Slide.)

I have on the chart here the present organization, the upper-level management organization that we have for all nuclear activities. You will note the highlight of the MAC employees on that organization chart.

As Mr. Mangan mentioned, these employees, including myself, upon completion of our current assignments, will be replaced by fully qualified Niagara Mohawk personnel.

I report directly to Bill Donlon. Most of you heard Bill Donlon's comments at lunch and I would like to re-emphasize some of those comments.

Mr. Donlon is spending a great deal of time devoting his time to Nine Mile 2 activities on a daily basis essentially, and also we together spend considerable time on Nine Mile 1.

He is making his presence felt on the project. He is familiar with the detailed activities, he knows what is going on and it is refreshing to work under a utility president with his attitude for getting this project completed.

You will note on that chart that Mr. Jim Perry, Director of Quality Assurance, whom you will hear from later, also reports directly to Mr. Donlon and of course satisfies the independence of QA activities as it should be.

Reporting directly to me I have several, specifically three executives there, Mr. Lempges, the Vice President of Nuclear Generation, and you will hear from Tom a little later in this program. Tom has 28 plus years of experience in the nuclear business. He has held numerous operating licenses, SRO licenses, has served as General Plant Superintendent and is now in his current position reporting to me. He is responsible for the operation of

Unit 1 as well as currently responsible for the operating organization that is actively involved in the present testing program on Unit 2.

Tom has quite a few well qualified people already in place. In fact, he has the key operating complement for Nine Mile 2 already in place and, as it should be, working on the test program in Unit 2. Tom Lempges is also, for your information, our key contact point for organizations such as INPO.

I should mention that Mr. Mangan, whose experience and background you have already had a summary of, is also our key contact point for NRC activities.

Mr.Dean Quamme, the Director of the Nine Mile 2 project has over 20 years experience on major nuclear projects, experience that makes him familiar in detail with construction, operations, startup and test programs. And he has reporting directly to him the Manager of Startup and Tests as part of his project organization.

In the startup and test team, the man in charge of that team just recently completed the Hanford 2 Washington Public Power Supply System, Unit 2 successful test program.

We have a good team in place. We are in the startup and test turnover from construction phase on the project and we have got the people there to get it done.

(Slide.)

My total organization on this project is focused on completing both the design, the construction, the startup tests and getting the unit into commercial operation.

(Slide.)

I have here Mr. Mangan's engineering organization. That may be a little hard to read. Nevertheless, on the left-hand side you will see the Manager of Nine Mile 2 Project Licensing.

The primary thrust with regard to Unit 2 of this organization right now is getting the licensing done on Unit 2 as well as doing selected engineering tests with regard to the same Unit 2.

The bulk of this organization right now, comprising roughly 110 people, under the key managers that you see there is devoted to support of Unit 1. This organization will of course be integrated with the existing Unit 2 staff engineering personnel.

We have under the Project Director, Dean Quamme, a site engineering staff. Now this is all Niagara Mohawk. The Stone and Webster engineering forces on site right now are considerable and are not intended to be indicted on this chart.

(Slide.)

We have got roughly 25 engineering personnel of Niagara Mohawk on the site that will be integrated into a Unit 2 technical support organization as we start approaching commercial operation. Beefing up this Unit 2 engineering staff we will take personnel from the existing startup and test organizations that has quite a few Niagara Mohawk personnel in it on site. We will also take construction engineers from the present organization and factor them into that. We have a current program in place for completely fleshing out this technical support organization in preparation for the operation of Unit 2.

(Slide.)

This indicates the operations organization totally integrated covering Unit 1 and Unit 2 for operating the two units on the station.

(Slide.)

Reporting directly to Mr. Lempges we have Tom Perkins. Mr. Perkins has many, many years of experience in the operation, maintenance and administration of Unit 1 and is presently directly involved and preparing to operate Unit 2.

The people that I mentioned that Mr. Lempges has on the Unit 2 operation of course report directly to Mr. Perkins.

You will see the Station Superintendent, Unit 2

on the left and the Station Superintendent, Unit 1 on the right all reporting through Mr. Perkins to Mr. Lempges. The maintenance and technical support organizations are indicated.

I would have to say that if there is one image that I would like to leave with you gentlemen, it is one of a very experienced qualified utility with 15 years operating experience on an existing PWR and fully structured to handle the operation, maintenance and other activities associated with Unit 2.

If there are no questions at this point, gentlemen, I think that I would like to have the next speaker.

Do you have any questions?

MR. SIESS: Mr. Hooten, I think it might be helpful if we heard from Mr. Collins from Region 1 before we hear the presentation on QA.

Any objection?

MR. ZALLNICK: No, sir, Dr. Siess. I was going to suggest that might be a better approach anyway.

MR. SIESS: Okay. For those of you who have an agenda, I would like for you to note that we are taking this item up right on schedule.

(Laughter.)

MR. SIESS: It may never happen again.

MR. COLLINS: Good afternoon. Dr. Siess and Mr. Ebersole, I apologize for being late. I wouldn't have believed that the schedule would have been quicker than it was assumed. I had a meeting on site and, as you note ---

MR. SIESS: You are right on time.

MR. COLLINS: ---I am now on time.

(Laughter.)

I would like to address Region I's overview of the project. I have provided a handout package to the members of the panel, and you folks will be receiving a copy of the package. It will be issued formally and received in a docket.

I have slide, but since I can't do justice to Niagara Mohawk's slides, I will speak to the handouts if I can.

The region itself is charged with the responsibility of overviewing and assessing the construction of the site in accordance with the requirements of the FSAR.

Our involvement up until the 1981 time period has been primarily with Region I inspectors traveling to the site and performing dedicated inspections and returning to the regional office, which is located in King of Prussia, Pennsylvania.

In late 1981 we assigned a resident inspector to

the site. We have had residents assigned to the site continually except for a four-month period in 1983 when we changed inspectors. Bob Graham, the Senior Resident Inspector is here today.

At this point in time we have two resident inspectors assigned to Nine Mile 2 with a third inspector performing pre-op inspections as necessary as the program progresses. He will also be assigned directly to the site. He is currently the Senior Resident at Nine Mile Point 1.

The Region has conducted three systematic assessments of licensee performances since the program was initiated. Primarily the performance of the licensee within that program has been satisfactory.

We have charged the licensee and ourselves with the goal of increasing our efforts in quality assurance primarily within the past two periods, that was a category three, and most recently, the period from October of 1982 to September 1983, quality assurance and piping and supports and project management was an area that needed increased attention.

The Region I overview slide, which is located in the back of your handout, summarizes Region I's perceptions of the project to date.

The project, in our mind, is still very much in the construction stage, although the pre-op program is as

initiated, and I think the latest number I heard was 35 percent of selected systems have been turned over to the pre-op program. The next goal of course is reactor vessel and associated systems, flush and hydro.

Past inspections have identified deficiencies within the construction of the plant. Currently there are a large number of open items, approximately 300, which need to be addressed prior to licensing.

That is a moving target and I expect that number to increase as well as some items being detracted from it as the program increases towards the licensing phase.

The licensee has instituted corrective actions since the CAT inspection. I would like to focus in on the team inspections that have been done at the site.

We have two CAT inspections and one construction team inspection. The significance of those inspections lies predominantly in the most recent CAT inspection which was conducted in the November/December time period of '83 which identified concerns in the area of management involvement at the site and our perception of the effectiveness of the QA program dealing with the construction on site.

That inspection in addition to the most recent SALP, which dovetailed into the report timing-wise resulted in an enforcement action being taken against the licensee, Niagara Mohawk in which case numerous changes have resulted

on site. Many of those changes are dynamic and are still in progress.

The most visible changes that Region I has observed is the present involvement of Niagara Mohawk with the construction project, the re-emphasis in the quality assurance program and the gentleman that you see before you now is very much a different product than was available a year ago.

Programs have been enhanced to track quality of construction at the site. They have a trending program which is the QPNP program, on which we received a presentation. It is a very extensive program which monitors goals, construction completion and the quality of those construction products.

They still have a ways to go in achieving their goals. We do, however, see trends in pipe supports, for example and the involvement of QA at the site which indicates that the corrective action programs are starting to initiate a turnaround in the areas of concern.

The hardware reinspection program has identified the problem with completed hardware being inspected right the first time. I would like to clarify that in that the majority of the items have been noted as a result of the massive reinspection effort, which is a hardware verification program in essence, have resulted in

re-evaluation of their adequacy against the engineering criteria and they were acceptable as is.

The bottom line of the region's perception at this point is that a definitive statement regarding the construction quality cannot be made until completion of the verification of corrective actions which are in progress.

We do see positive indicators. However, the plant being 85 percent or so complete, and that is an approximate number, we have a ways to go to complete our inspection program and the licensee has a ways to go to meet their goals.

MR. SIESS: A little earlier you said they have a ways to -- well, you just repeated -- they have a ways to go to meet their goals.

MR. COLLINS: Yes.

MR. SIESS: If they meet their goals, will they meet your goals?

MR. COLLINS: To answer your question, not necessarily. Their goals are more schedular oriented than our goals. Our goals are quality. The licensee is dovetailing that goal in with their production goals to meet deadlines for the most recent milestone which is reactor vessel, flush and hydro.

As far as the Region is concerned, we use their trending process as an indicator of quality and not

necessarily production.

MR. SIESS: Okay. You mentioned some 300 plus open items. I really don't have much feel for whether that is a lot or a few. How does that compare with other plants in your experience at this stage?

MR. COLLINS: It is in the ball park for other plants within the region. Bearing in mind that we are a year or so away, if I would project that out into the schedule, we are referring to clearing approximately 30 items a month in order to meet a goal of the items being addressed, adequately reinspected and closed out. At this point in time, that is not happening.

MR. SIESS: Another question. In your report you have compared the inspection hours for Nine Mile Point 2 with four other BWR's. Why did you choose to compare it with other BWR's? Is it your experience that there is a different number of inspection hours required for a BWR than for a PWR?

MR. COLLINS: No, sir. I can't say that. We were just trying to get a comparison of the most similar type of services.

MR. SIESS: Another question. I have a news item. This was actually a news release and it did appear in one of the local papers of a meeting of the Regional Administrators with the Commission a couple of weeks ago

where apparently somebody asked them which were the most worrisome plants. And I get the impression that each Regional Administrator was asked to name one because there were four in the list, one from each region except Region IV I think. Nine Mile didn't make the first list, but they did make the second list of being among the plants needing the most regulatory attention in 1985.

So I assume there nominations were made by the Region. Could you give me a reason why Nine Mile Point was considered one of the most worrisome or the most troublesome facilities to the day-to-day regulators, and certainly the Region is the day-to-day regulator.

MR. COLLINS: I will provide you with my perspective. I can't speak for the Regional Administrator.

MR. SIESS: Let's see, who is your Regional Administrator, Mr. Murley?

MR. COLLINS: Dr. Tom Murley.

MR. SIESS: Okay.

MR. COLLINS: That was not necessarily a staff decision. However, it was discussed with Dr. Murley before he went down to the Commission.

My perception is that this licensee and their involvement is very much different than it was a year ago. I think you can see by the number of hours that has been in the program that we have a concentrated and very dedicated

effort going on at the site.

We believe that we need to track not only the ongoing construction, but the licensee's corrective actions. So we really have a dual effort going on at this site as opposed to a site perhaps that didn't have the early indications of the potential for problems down the line which may have a routine program.

We have two residents assigned to this site. We have had multiple team inspections there in act on an augmented inspection program which is a very dedicated, specific inspection program solely for Nine Mile Point 2.

We feel that they are in a critical point in the construction phase where they are starting to pull the commodities together. The small bore systems, the electrical systems and the I&C systems are coming together, and this is also a point in the program where historically the production schedule and the pre-op schedule has started to surface out of motivation. Because of those reasons we feel that we need the extra emphasis to ensure that the quality is built in as well as the production is being done given their previous history.

MR. SIESS: Thank you. You said they are on an augmented inspection program. That surprised me a little bit because I thought that an augmented inspection program was what you instituted in response to a category three

grade on the SALP, and on the last SALP that is in your report ---

MR. COLLINS: They had one category three.

MR. SIESS: Well, two, piping systems and ---

MR. COLLINS: Quality assurance, piping systems and management involvement.

MR. SIESS: I mean if I looked at that I would say normal inspection because most of them were two's or one's.

MR. COLLINS: Yes.

MR. SIESS: But you said it is augmented now. I mean am I relating something that shouldn't be related here?

MR. COLLINS: No, sir. We felt that the problems were serious enough in that the plant was far enough along in the percent complete stage where we needed to get a handle on the construction of the site as well as monitor the licensee's corrective actions in that same field. When I say augmented inspection program, what we are using that for is to relate to the routine program which is going on at any other construction site, for example, and also relate to the numerous items which were opened up by the CAT team inspection, the construction assessment inspection conducted by the people in Washington, the team in Washington which took place in November.

That inspection alone generated what number, Bob, 68 or 120 -- 120 specific items that required correction.

Additionally, the order which resulted from the team inspection as well as the SALP required the licensee to go through various stages of self-analysis. MAC was involved in many programs which reviewed previous open items, the resolution of those items, the adequacy of the resolution as well as Unit 1 management competence and management effectiveness was reviewed.

That resulted in three separate reports, each of those having recommendations which is finalizing and concluding now in one report in which the licensee is required to address the specific report, their recommendations and how they are going to implement those recommendations.

So the enforcement action, which was 83-137, which came out in March of 1984, is the primary motivator behind the augmented inspection program.

MR. SIESS: Well, I get the impression that what the I&E people are doing now is trying to stay right on top of construction quality and not be surprised at anything that comes up later. Is that a characterization of what you are doing?

MR. COLLINS: Yes.

MR. SIESS: You are trying to keep up to date on it and keep right on top of everything that is going on.

MR. COLLINS: I think at this stage in the project we have to do that and the licensee has to do that. I think it is not enough to say that we are going to turn the corner in six months.

MR. SIESS: It wasn't always done this way. There have been plants that go into problems at the last minute that were ---

MR. COLLINS: Yes, sir, but not in Region I.

(Laughter.)

MR. SIESS: Right.

Jesse?

MR. EBERSOLE: I have no questions.

MR. SIESS: Well, thank you very much for your report.

Will you be able to come to the full committee meeting?

MR. COLLINS: Yes, sir.

MR. SIESS: It will be either Thursday or Friday a week after next I think.

MR. COLLINS: Yes, sir. At that point in time, if you like, we can address their readiness for operation in regard to the pre-op program and our experience with Nine Mile Point 1.

MR. McKINLEY: The full committee meeting is currently scheduled for March 7th, 8th and 9th.

MR. SIESS: Yes, but we won't hear from them on the 9th.

MR. McKINLEY: No. I just pointed out we were scheduled for three days.

MR. COLLINS: That will be fine.

MR. SIESS: It will be the 7th or 8th, and preferably the 7th.

Well, thank you.

I think this would be an appropriate time to take about a 10-minute break.

(Recess taken.)

MR. SIESS: We will continue the meeting with Item 7B on the agenda, Mr. Perry.

MR. ZALLNICK: Yes, sir, Dr. Siess. Our next presenter is Mr. Jim Perry. Mr. Perry has 26 years of nuclear experience in engineering and quality assurance and quality control. He is currently Chairman of the ASME QA Standards Committee. He is the Director of Niagara Mohawk Quality Assurance.

Mr. Perry.

(Slide.)

MR. PERRY: Good afternoon, gentlemen.

I would like to share some thoughts with you

relative to Niagara Mohawk's view on quality assurance matters with particular emphasis on what we have done since receiving the CAT inspection that was referred to that took place in late 1983.

(Slide.)

This chart illustrates from the time of the CAT inspection late in December '83 to current what the onboard forces at the site are with respect to site manual personnel and the number of QA/QC personnel.

If you will note at the time of the inspection, the ratio of QA/QC to crafts was one QA/QC per 12 crafts personnel. The ratio as of the end of December 1984 is one QA/QC to eight.

MR. SIESS: Can you break it down into QA versus QC just roughly?

MR. PERRY: The total number I think currently is around 690. What is the number of QA people, Charlie, would you say roughly? Roughly 100 to about 590, 100 QA to about 590 QC inspection personnel.

MR. SIESS: Thank you.

MR. PERRY: Yes, sir.

(Slide.)

Looking at Niagara Mohawk specifically, as of the end of December we had approximately 194 people within the organization and that breakdown is roughly 70 percent

Niagara Mohawk employees and roughly about 30 percent contractor employees.

The total individuals with college degrees amounts to 117 of which approximately 75 have bachelor's, 12 have master's and one has a Ph.D. The total years of nuclear experience, as indicated on the chart, is 1,221, which averages about a little over six years per person.

I might note at this point that since CAT we have either changed or added in senior management positions of roughly 14 people with the average years of QA/QC experience of 20 and nuclear experience of 15.5 average.

(Slide.)

This chart reflects the current organization of Niagara Mohawk quality assurance. On the left we have the Manager of Quality Assurance Nuclear Reporting to myself as the Director. That is Dave Palmer. He is responsible for Nine Mile Point Unit 1 in total, as well as Nine Mile Point Unit 2 associated with all startup and test activities.

The second block, Manager of QA Projects, Mr. Charlie Beckham, has total responsibility for Nine Mile Point Unit 2, excluding startup and test. In other words, he has design, procurement and construction.

The third manager, Manager of QA Services, Mr. Bryant, has the corporate audits, procurement, QA, systems and procedures as well as the training coordination

functions.

The next manager, the Manager of QA non-nuclear, Mr. Treddwell, has companion activities associated with the non-nuclear activities within the corporation.

On the extreme right is the Manager of the Quality First, and I will describe that a little later. That is Mr. Swissler. We have instituted that program this fall, and I will give you some data on that in just a moment.

MR. SIESS: Could you go back one slide, please?

MR. PERRY: Yes, sir.

(Slide.)

MR. SIESS: Those with college degrees, leaving out that Ph.D., are those engineering degrees?

MR. PERRY: The bulk of those, sir, are engineering degrees. There are some in technical and science fields and not just engineering, and there are a few that are in the business or management field that are non-technical. The bulk are in the technical field, sir.

MR. SIESS: And the nuclear experience is technical nuclear experience and not just QA nuclear experience? I am making a distinction between the QA and the ---

MR. PERRY: The nuclear experience I am referring to here is totally experience, whether it be in QA/QC or

technical and engineering or operations, sir.

MR. SIESS: Okay. Thank you.

MR. PERRY: Yes, sir.

(Slide.)

This chart projects what the organization will look like once Unit 2 comes on line. We are projecting approximately 135 people and again the Director reporting to the President, Bill Donlon. Underneath that we have three sections. One, Manager of Quality Assurance, Nuclear Operations, and the various groups under him are so indicated on the chart. You will notice we intend to retain this Quality First group and only the number of people will be smaller since there won't be as many contract personnel on site. The center one is the Manager of Corporate QA covering procurement construction and corporate auditing,a and then a non-nuclear.

So we have the number of people currently onboard that are necessary to staff this organization.

MR. SIESS: That is 135 people in the QA Department for the two units, right?

MR. PERRY: What would be the number for the total staff on the two plants?

MR. PERRY: Are you talking about the chart on the left?

MR. SIESS: Well, this is QA. I am looking again

for the ratio of QA to ---

MR. PERRY: Let me just state that the non-nuclear on the extreme right consists of about 23 people and all the balance are the two blocks ---

MR. SIESS: No, I mean the total operating staff of the plant, what proportion is QA of the total, 135 QA, and what have you got, 600 people to operate the two plants?

MR. KLEIN: Eight hundred for both units and that is site personnel.

MR. SIESS: Okay.

(Slide.)

This chart illustrates the number of personnel within the Niagara Mohawk organization since the time of CAT and how it has increased since that time. I might indicate that the number of personnel at the site have doubled since the time of the CAT in December 1983.

The second curve, Projects QA, will be tapering off as construction work is completed.

The next curve, Startup and Test, is starting to rise now and we expect that to go to 40-some-odd people in the next few months to keep up with the pace on startup and test.

The very last curve in purple is the quality assurance effort that I mentioned earlier.

MR. SIESS: Now projects is construction you said?

MR. PERRY: Projects consists of design, procurement and construction. The only thing it excludes is the QA component associated with test and activities, prerequisite test, preliminary test as well as power ascension test.

MR. SIESS: And once you are operating, then you are concerned with operational QA and maintenance QA?

MR. PERRY: And we expect modifications as well.

MR. SIESS: Are those handled by a single group or do you subdivide that?

MR. PERRY: No. The operations organization chart that I showed has a separate component that would be looking at that aspect specifically.

(Slide.)

So if you notice under the Manager, Nuclear Operations, QA, the second box is the Supervisor of Modifications. So we separate that from inspection and separate it from surveillance and audits. So there we are looking at the people that are dealing primarily with the engineering folk during the design phase and procurement phase and they will be physically on site during the time the equipment is installed.

MR. SIESS: Which box does maintenance come

under?

MR. PERRY: The maintenance comes under the inspection partly and partly under surveillance. So the inspection is directly associated with the maintenance and ISI. The surveillance would pick up the maintenance activities as well as routine plant operations.

MR. SIESS: Thank you.

MR. PERRY: Yes, sir.

(Slide.)

This chart briefly summarizes what Tom Collins was referring to earlier, and I would like to give you a little background.

We received a CAT inspection in December of '83, the report came out in January and the fine occurred in March along with the orders. And with the information we were required to respond to each of the specific CAT findings in terms of the root cause, corrective action and preventive action. Each of the specifics were grouped by the criteria of Appendix B, and there were some eight of the 18 that were mentioned.

There were many items involved and we were required to come up with preventive action plans in response to the CAT findings, not only on the specifics, but on the generic areas relating to Appendix B. That we did do and submitted our response to the Commission in the

Spring '84 in accordance with the order.

There were three parts to the order. The first part required Niagara Mohawk to bring onboard a third party independent assessment team, and the team's actions consisted of our phases of activities, first, to look at every single commitment that we had made relative to our response to CAT, and they were very detailed and numerous, and, second, to look at 100 percent of all the SALP items from the 1982 SALP report, and to evaluate those in terms of whether we met the stated commitments.

In addition, Phase 3, the order required us to go back to January 1980 to March of '84 looking at each of the deficiencies Niagara Mohawk had reported on Unit 2.

Phase 4 covered all of the contractor reported deficiencies during the same time period of three and a half years.

Now this assessment team was done by MAC individuals with the approval of the Region where none of the individuals could have worked at Niagara Mohawk prior to this time. So they were not involved on the project, if you will.

All of these phases were looked at in great depth. They had a team of people from about July until December when they finally finished their work, up to 45 people going through this in minute detail, including

reinspections, as well as looking at the specific documentation of records and talking to people.

The only phase, Phase 4, was the one that did involve some sampling. In other words, they broke that down into the specific contractors by discipline, electrical, mechanical, civil and the like, and further divided it into two categories of programmatic or hardware related deficiencies.

Where they did sampling, according to the approved plan approved by Region I, it was a 95/95 confidence, 95 percent confident that there were no more than five percent of the total population that might have defectives in it.

The plan called for doing a normal inspection and if that failed to go into a tighten mode, and if the tighten mode failed, to go into a recommendation to Niagara Mohawk as to how it should be handled.

The net results of all of that effort, which was documented in the final report issued concurrently to the Region I and Niagara Mohawk in late December is summarized on this chart. And you will notice the bottom line is that of all four phases, the observed percent acceptable is 96.1.

Translated what that means is that of the 3,390 specific items that they looked at for which there were

certain comments made relative to root cause, preventive action, corrective action and the like, in over 96 percent of the cases they found it totally acceptable.

What that means is that we in fact implemented our commitments that we had made to the Commission to the letter that was stated without exception.

Now with respect to the four percent remaining, the team issued some 77 corrective action requests, CAR's, and some of those applied to more than one item. You will notice that in this column here. And there were six inspection reports issued by the contractors.

As of the end of last month, about 60 percent of those have been acted upon, closed out or verified by members of this assessment team, not by Niagara Mohawk QA, and satisfactorily closed out. The balance are in process and will be completed by the end of March of this year.

Now some of those corrective action requests were originated by the team and they did their analysis. So as they issued them, we initiated action. Keep in mind some of those CAR's were not issued until as late as December 1984. So I think we have taken timely and appropriate action.

Another point I would like to make is the last column, the number of recommendations. You will notice there are some 220 specific recommendations. The assessment

team felt that based on their review there were some areas where we can enhance and so some improvements. Each one of those are being evaluated by a team of people right now.

We have committed to the NRC that will have our detailed analysis in accordance with the order submitted and what action we intend to take or have taken relative to each of these 220 recommendations.

I might point out to the staff and to the subcommittee that you must keep in mind that some of these recommendations reflect what they looked at that might be three years old and they may not be relevant to the current status of the project. In those instances we will so indicate in our response to the NRC.

In other words, their charter in accordance with the order was not to compare it to what we are doing now, but to look at what they found and what they recommend we should have done when that occurred.

The other thing I would like to point out for the record is that this CAT was very traumatic for us. I think it got our attention and we have made major changes in organization and practices and techniques and procedures and streamlining activities, and I think we put an awful lot of effort into responding and getting ourselves well.

I would like to point out that this last December we received a construction team inspection. In my

judgment, that one was initiated by the region rather than headquarters, but the numbers of personnel, the technical competence and the duration of the CTI was essentially the same as the CAT.

The results of that, as indicated in the exit meeting in the middle of December, was that there were no fines, and there were only two violations. One of them had to do with failure to protect installation and emplaced equipment, and the other one was an isolated one dealing with an instrument support stand of four by four inch angle that was ground such that the design specified a weld could not be made.

Comments made by the members of the CTI team was that they felt good progress had been made by the project since the CAT and we had come a long way, and in their judgment the findings of these two violations and some 11 open items they considered to be very minor in nature. And I think that is a testimony of the change and the turnaround and the progress that has been made.

Now as Sam Collins pointed out, we are not totally satisfied. We have got a rough road ahead of us, but I want to assure you that schedule is not the only thing we are interested in. We are interested in a damn good quality plant that is going to run and it is going to run for its intended life and quality is paramount in our

mind and not just schedule and cost.1

(Slide.)

Now, in addition, we have done some things ourselves without being forced by orders or anything else. We conducted last August and September what we call a QA program assessment. Our purpose was to determine whether the contractors, and this is Stone and Webster and the other major contractors on site, of which there are four, whether their QA programs were effective.

And what I mean by that is this is more than an audit. This is more than looking at whether they are following their procedures. We are looking at whether what they are doing makes sense and is what ought to be done. We wanted a step change where it was needed.

We found in our results that many of the program elements were effective. However, some elements needed strengthening. As a result of that, we issued corrective action requests and made specific recommendations to the contractors to enhance their programs.

Those have been initiated and have made some improvements in what is going on in the project, and I think the CTI results is one indicator that we have made that progress.

(Slide.)

We haven't stopped with the programmatic assessment. We went one step further. We have launched a program that we call hardware surveillance inspection assessment. We are looking at the hardware through special reinspection primarily by Niagara Mohawk quality assurance personnel of contractor final acceptance safety related hardware.

We look at some 15 different commodities, essentially everything that can, which covers not only the items that CAT covered, but others that they didn't cover in a couple of instances. This was conducted the last quarter of 1984. We have reviewed the raw data, in some cases we have done some additional inspections and in some cases we asked our contractor, Stone and Webster, to do some additional ones. Those are being reviewed by engineering and project personnel along with the quality assurance people as a team to determine what it means.

At this stage of the game, although we found deficiencies, based on the engineering evaluations of these deficiencies, we have concluded that we have sufficient confidence that the hardware will perform its intended function.

What I am really telling you, sir, is we don't have a Midland or a Zimmer situation on Nine Mile 2. That is a fact. I am not saying we don't have quality problems,

but the magnitude of those problems are such that they are out of specification of such a tolerance that engineering in many instances has determined that they can be accepted as is. There is action moving forward now in some instances to come up with a generic specification change. So I think we can get those areas resolved

I share the region's view with respect to why didn't QC find these in the first place and what was wrong with those inspections, and I assure you we have stepped up our efforts and initiated action with the contractors just as soon as we had the raw data and showed them what we found. We took them right out to the plant and showed them how did you accept this with this condition that didn't meet specification and went through that.

There has been addition effort and training. We have stepped up our surveillances and we have overchecked the areas where there were some sensitivity to provide added assurance that the work that is ongoing and what needs to be done to finish this plant is done and is done according to the requirements and letter of the existing specifications.

(Slide.)

Now to put it in perspective in terms of the quality of the plant. As of the end of last year, the number of non-conforming and dispositioned reports, and

these are reports that require engineering to make a judgment as to the acceptability of the non-conforming conditions, there were approximately 9,000 of these of which about 45 percent were dispositioned use as is. And I am not saying those are not important, don't get me wrong. Everyone of those is important and they need to be addressed properly and we care about quality.

But to put it in perspective, look at what is significant and what is defined as a significant deficiency report per 50.55(e) that is reportable. There were as of November some 145 of those that the Commission as notified that were potential reportables, some of which have been determined by subsequent analysis not to be reportable, but the total number is 145.

If you look at the total significant deficiencies over the total population of entities, you will find that is 1.5 percent, and I think that tells a story with respect to significance.

MR. SIESS: The definition in 50.55 is something that if not discovered and done something about could have adversely affected safety?

MR. PERRY: That is essentially correct, yes, sir.

MR. SIESS: The others were things that were not strictly in conformance with the requirements, but on an

engineering review they fell within the normal range of variation or were acceptable ---

MR. PERRY: Yes, sir. So it is a matter of degree here. I am saying the N&D's are important, but the ones that really need the spotlight because they meet the criteria of 50.55(e) is a small percentage of the total population.

Now we are not happy with the 145, don't get me wrong, and there are probably more coming, but I think in terms of total N&D's that puts it in perspective.

MR. EBERSOLE: May I ask a question. Of that 145, many of those could be point problems, you know, deficiency reports on a particular piece of hardware. On the other hand, many of them could be a rather generic problem, let's say inadequate electrical separation which is a different cat.

Could you say something about the distribution between specific point problems and rather broad scoped deficiencies?

MR. PERRY: I think it contains a mixture of both. How many of each I don't have the number, sir.

MR. EBERSOLE: Well, there is a great disparity about the significance of each one. Some of them are one point deficiencies and others may be of a general character which ---

MR. PERRY: Yes, I agree. It is a mixture of both.

(Slide.)

On this chart I want to point out what kind of feedback that we had from the folks building this plant in terms of quality problems.

Based on the NRC reports and the indications of allegations that have gone before them that we are aware of, there are some 11 total or there may be more, but those are the ones that are included in their routine I&E reports. And I might point out the number is not large, but some of the specific items have taken an awful lot of time on the part of the staff to investigate.

Last September we instituted what we call a quality first program, and basically the way it works it this. Anyone working on Nine Mile Point 1 or 2 is requested if they have any quality or safety concerns to address them with their supervisor, and having done that if he or she is not totally satisfied that they are happy, they are encouraged to come forward to the quality first group. This the group that reports to me, but is not in a line function, and there is a certain confidentiality maintained.

We have qualified people who have been trained to interview the personnel and get the facts, and then we

have qualified QA personnel to go and investigate the details to determine whether it is valid or not. That program has been ongoing for about four months and the data relative to the quality concerns are summarized on this table.

The category one of course of what we term safety related and the rest are balance of plant. The number of concerns reported in category one are 27, and of the 27 as of the middle of January we had completed the investigation of all but seven of them. And the percent that were valid were roughly one-fifth or 20 percent. The balance of plant is approximately the same.

Now I might point out that these two that I show here represent about 40 percent of the concerns that have been brought forward. Many of them deal with personnel matters, parking and other things that are not directly related to quality. We field all of those, and our program is set up so that when we complete our investigation and conclude, we get back with the individual who made the concern and let them know what the results were and if it is valid or not valid. If it is valid, we tell them what action is being taken to correct it.

MR. SIESS: Could you break it down further into concerns related to the QA program itself and concerns related to hardware deficiencies?

MR. PERRY: The quality concerns that I have listed here are predominantly dealing with hardware, but some of them deal with the quality assurance program. For example, one of them might be a concern is somebody feels that inspectors are being harassed, for example, about the QA program concerned, and it may or may not affect hardware per se. But it would come under the category of a quality concern.

Another quality concern might someone says hey, I think we have got a big turnaround on welders, and I think they are flunking it and maybe they are not qualified, and you had better look into it, that type of thing, which would be classified as a quality concern.

On the other hand, if somebody says that it is unsafe to walk in the parking lot at Nine Mile 2 because people are driving beyond the speed limit and it is a hazard to my life, it doesn't fall under the quality category of concern. We have had those, too.

MR. SIESS: I wouldn't be surprised.

MR. PERRY: It might be true.

(Laughter.)

That concludes my presentation. Are there any further questions?

MR. SIESS: Do you have any questions, Jesse?

MR. EBERSOLE: No.

MR. SIESS: Well, thank you, Mr. Perry.

MR. PERRY: Yes, sir.

MR. SIESS: Let's see, the next item is the safety review committee. I believe this is an open item, and the staff will have something to say about it also; is that right?

MR. WEINKAM: Yes, sir. In the operations management area there are some open issues about that.

MR. SIESS: Is it the applicant's intention simply to address the staff's concern on this?

MR. ZALLNICK: No, sir. We have a presentation on our safety review committees. Mr. Rademacher was going to address the status of the review on management issues and on this open item also after the presentation.

MR. SIESS: Okay, fine.

MR. ZALLNICK: The next presenter is Mr. Stuart. Mr. Stuart has 20 years of nuclear experience in the Navy and at BRWs at Grand Gulf and Unit 1 and Unit 2.

He is currently the Assistant to the Executive Director of Nuclear Operations. He is also the Chairman of the Safety Review and Audit Board.

(Slide.)

MR. STUART: Dr. Siess and Mr. Ebersole, I am Charles Stuart, Assistant to the Executive Director, Nuclear Operations, and I am Niagara Mohawk's Chairman of

the Safety Review and Audit Board.

I will briefly discuss Niagara Mohawk's nuclear reviewing organizations.

(Slide.)

These groups, the Site Operations Review Committee or SORC, and the Safety Review and Audit Board, or SRAB, were established in 1969 in response to the startup requirements of Nine Mile Point, Unit No. 1. They are, therefore, fully functioning, well staffed and organized and are smoothly running review organizations.

The Site Operations Review Committee is staffed with senior site superintendents and chaired by Tom Perkins, the General Superintendent of Nuclear Generation, who has 20 years of civilian nuclear power plant experience.

If you will refer to this slide that I presently have in view for the composition of the Site Operations Review Committee. These gentlemen have a combined total of 121 years of civilian and boiling water reactor nuclear experience and five of the eight possess senior reactor operator licenses.

Mr. Edward Leach, the Site Chemistry and Radiation Protection Superintendent is a certified health physicist.

(Slide.)

The Safety Review and Audit Board functions to provide independent review and audit of designated nuclear activity. This slide presently in view contains an outline of the Safety Review and Audit Board membership.

The present composition consists of a chairman and nine members, with a combined nuclear experience base of 226 years, four senior reactor operator licenses on boiling water reactors, one reactor operator's license, three professional engineers and one Ph.D.

Three board members are outside consultants providing a diversity of experience and opinion to the makeup of the board.

For example, we are privileged to have Dr. Miles Leverett, a distinguished nuclear industry leader for 34 years and a charter member and past president of the American Nuclear Society and who was the organizer and served as Chairman of the Safety Review team for GE reactor plants before their startups during the period of 1956 and 1976.

Mr. Robert Burns, the Vice President of the Boiling Water Reactor Nuclear Support for the New York State Power Authority is also a consultant member who possesses the unique dual qualifications of a senior reactor operator and membership in the Health Physics Society.

Additionally, we have just recently added Mr. Pio Ianni, Manager of Plant Performance Engineering of General Electric's Nuclear Power Systems Engineering Department to further enhance the board's technical competence.

You have been provided with some slides which indicate the functions of these organizations and which have been extracted for the Nine Mile Unit No. 1 technical specifications and the Unit 2 FSAR.

As you can observe, these are typical of the requirements of such groups from an operating reactor standpoint.

Our third reviewing organization located at the site is the Operations Assessment Committee, or the OAC, which performs reviews and analysis of the operating events within the station's as well as industry events which may be applicable to either station.

If you will refer to this slide which designates the composition of this committee.

The function of the Operations Assessment Committee is to evaluate plant operations from a safety point of view. Those involved in the assessment of operating experience review the information from a variety of sources, including operating information from our own plants, publications such as I&E bulletins, circulars and

notices and pertinent NRC or industrial assessment of operating experience.

Unit 2 will utilize administrative and training procedures to implement operating experience and feedback to the plant staff.

The OAC meets with the Site Operations Review Committee at least once every two months. These reviews, meeting minutes, et cetera, are then reviewed by the Safety Review and Audit Board on a regular basis.

If there are no questions, Mr. Rademacher will address the SER open item 13.1.

MR. EBERSOLE: May I ask a few questions.

MR. STUART: Yes, sir.

MR. EBERSOLE: I have had a variety of interpretations as to what safety is, one of them being the simple adherence to all the Nuclear Regulatory Commission's guides and requirements without any mention of the range of interpretations that are possible with these.

Could you give us a few case histories with maybe blood on the floor where you had issues that you solved without the impetus and force implied by simple adherence to regulatory requirements?

MR. STUART: Dealing with these oversight bodies?

MR. EBERSOLE: Yes.

MR. STUART: There was an instance that comes to

mind. Several years ago we were having difficulties when the Safety Review and Audit Board performed operations out of Unit 1, and during the audits we found that we had a lot of instrument drift problems that occurred with the old style analogue trip units.

And through several audits and recommendations from the Safety Review and Audit Board was a study done and the outcome of that study was a replacement of the old style instrumentation with the Rosemount digital trip units, and that has benefitted us in terms of reportability, ALARA considerations, et cetera, et cetera.

MR. EBERSOLE: And you didn't have to do that. You did it anyway.

MR. STUART: That is right.

MR. EBERSOLE: Let me take another case. When Browns Ferry had its embarrassing refusal to scram, what was your response to that and what happened to your plant like Nine Mile Point 1 and Nine Mile 2? Did you make mechanical alterations? You remember when the dump volume was filled.

MR. STUART: Yes, I do. I may have to defer that question in terms of the specifics. I believe we did some changes to our procedures. I am not sure that we had to do a ---

MR. EBERSOLE: Well, let me go a little bit

further down in the darkness and say this. You recall that the original design had single point vacuum relief and dump valves on the dump volume?

MR. STUART: Yes.

MR. EBERSOLE: And yet they argued strenuously that there would never be a case were you would have prolonged discharge of reactor water into the containment because they took the point of view of ten to the minus fourteenth or whatever failure of the membrane of the dump volume and ignored the presence of these single valves which could stick open either one after a scram. An end product of that was the recent Hatch event, which I am sure you must be familiar with.

If I go to Nine Mile Point 2 and Nine Mile Point 1 now, what did you do about that? Did you put redundant vacuum relief and dump valves on the scram dump volume?

MR. STUART: I would like to call on someone to assist me, Mr. Terry or Mr. Pike, I believe.

MR. RADEMACHER: Both Nine Mile 1 and Nine Mile 2 have been modified with redundant drain valves.

MR. EBERSOLE: Thank you.

Are you familiar with the Hatch event?

MR. STUART: Yes, sir.

MR. EBERSOLE: I am sure you won't present us with a repetition of that. You needn't answer that.

(Laughter.)

MR. STUART: If there are no other questions, Mr. Rademacher will address the open item.

MR. SIESS: Okay. Thank you.

MR. RADEMACHER: Basically I believe there were six open items, or six identified items as part of this open item.

The first five of them have been I believe submitted to the NRC for their review. These include the resumes for Assistant Shift Supervisor, complying with SECY 84-355 for the shift technical adviser, organizations that perform review and audit functions for Unit 1 and how the tech specs needed to be upgraded, an indication of an interdiscipline review and the administrative procedures regarding where the station shift supervisor and assistant station shift supervisor could go within the plant.

The last item, we have provided a commitment and description of how we perform externally generated operations experience information evaluation. However, the staff asked for some additional information regarding the detailed procedure and we still owe them some information.

MR. SIESS: Any comments from the staff?

MR. WEINKAM: I believe that we consider that a fair assessment of the issues.

MR. SIESS: Do you anticipate any difficulty

resolving these?

MR. WEINKAM: No, sir.

MR. SIESS: Thank you.

Any questions?

MR. EBERSOLE: No.

MR. SIESS: Okay. That brings us to the bottom of page 1, which will be Item 9, Industry Interactions.

MR. ZALLNICK: The presenter for Industry Interactions is Mr. Tom Lempges.

Mr. Lempges has over 29 years of nuclear experience. He has worked on Fermi, EVSR, Unit 1. He was the first Superintendent of Fitzpatrick and he has held three SRO licenses and he is currently the Vice President of Nuclear Operations.

(Slide.)

MR. LEMPGES: Good afternoon, gentlemen.

Thank you, Tony.

The purpose of my presentation today is to discuss the industry interaction of Niagara Mohawk, which includes Nine Mile Point, Units 1 and 2.

To start off, I would like to say that we treat both units identically, and where we have, as you have heard, 15 years of operating experience on Unit 1, we intend to continue on with Unit 2 as far as operation goes and with any changes that may come about.

Throughout the years our organization has been quite active in a variety of industry groups, and this has contributed to the development of safe operation of nuclear power, not only at Niagara Mohawk, but throughout the country.

(Slide.)

We have always welcomed new industry initiative which have aimed towards the resolution of significant generic and individual plant concerns.

Currently Niagara Mohawk is actively participating in a full gambit of industry groups. I have a slide up which shows some of the larger groups and these address all aspects of the plant during construction and operation.

As you can see, the spectrum of groups provides a major forum by which Niagara Mohawk and other industry personnel discuss the pressing issues of nuclear power. We rely heavily on these groups for information exchange and the solution of potential problems that maybe we have discovered or maybe the industry has discovered.

We have in the company approximately 40 people who are active in these groups and are members of various committees. Often we use this information to address situation concerns before they become a regulatory issue. Some of these 40 people I mentioned also act as chair

people for the activities initiated within those groups.

Niagara Mohawk management will continue to maintain a strong commitment to participation in productive industry groups and activities. We consider our investment of time and resources into these activities quite beneficial, not only to ourselves, but to all those who participate in the nuclear power.

And as you look at that up there, on AIF we have personnel on five committees. EEI, we have got eight people involved. the BWR Owners Group, we have got 12 people involved and in EPRI we have got 10 people on committees. So you can see that we are participating.

(Slide.)

As an example, I would like to discuss our participation in INPO. I serve myself as INPO's point of contact and I am also Chairman of the Industry Review Group for the Training and Education Department at INPO.

As an institute member, Niagara Mohawk receives the benefit of a number of INPO services, and you can see these up on the slide.

One of the benefits is the operating plant evaluations. These evaluations identify operational items in need of improvement and they also make recommendations on how to resolve them.

Additionally, the evaluators look for good

operational practices that can be shared with the entire nuclear industry.

At Nine Mile 1 we have had three operating plant evaluations with regard to the nuclear network, which was formerly Notepad, and we continually look at their printouts that we receive on a daily basis, and we look at these not only for Unit 1 as an operating plant, but also their effects, if there are any, on Unit 2.

This review of the nuclear network is an additional effort to monitor industry activities on top of our review of bulletins, information notices and licensee event reports, as you heard Mr. Stuart talking about.

From the construction standpoint, INPO performed a construction project evaluation of Nine Mile Point Unit 2 in September of 1984.

(Slide.)

Going back to the first slide, another area highlighted there was NUMARK, the Nuclear Utility Management and Human Resource Committee. On that committee I serve as Niagara Mohawk's representative in both the Executive Group and I am member of Working Group No. 4, the Maintenance Working Group.

The purpose of the recently formed NUMARC is to perform integrated reviews of management and people related issues and in order to implement initiatives to enhance the

achievement of higher levels of safety and reliability in nuclear plant operations.

As you can see, Niagara Mohawk is a strong participant in industry groups and activities. Again, I impress the point that Niagara Mohawk will continue to maintain this strong commitment to participation in productive industry groups and activities.

All programs which are presently being used at Unit No. 1 will automatically become part of the operation of Unit No. 2.

The point I would like to leave you with is that the experience we have with Unit No. 1 will carry over into the operation of Unit No. 2.

MR. SIESS: There is one type of activity that you haven't mentioned here that I suspect you are involved in, and that is participation of your people in the writing of industry consensus standards, ASME, AIEE and ANSI. Do you have people working in those areas?

MR. LEMPGES: We have members of the committees that are producing those papers, yes.

MR. SIESS: Thank you.

MR. LEMPGES: Any other questions?

MR. SIESS: Any questions, Jesse?

MR. EBERSOLE: No.

MR. LEMPGES: If not, I would like to introduce

the next speaker, who is Mr. Rick Abbott, who is Superintendent of Unit No. 2.

MR. ZALLNICK: Dr. Siess, before Mr. Abbott gets up, we are a little bit ahead of schedule, and I was just going to comment that Mr. Ebersole had some questions on the tour this morning and we have some answers for those right now, if you would like to take that time.

MR. SIESS: I would rather take those first thing in the morning.

MR. ZALLNICK: The first thing in the morning?

MR. SIESS: Is that all right, Jesse?

MR. EBERSOLE: Okay, sure.

MR. SIESS: Or at least let's get through the staffing stuff and we will see how we do then.

MR. ZALLNICK: Okay. Mr. Abbott is our next presenter. Mr. Abbott has 13 years of BWR operating experience. He has had experience in Unit 1 operations at the Fitzpatrick startup, and he is currently the Station Superintendent for Unit 2.

MR. ABBOTT: My name plate slide didn't appear.

Good afternoon. My name is Rick Abbott. I am Station Superintendent for Nine Mile 2.

(Slide.)

The operation of Nine Mile 2 will be managed by the Nuclear Generation Site Organization which contains a

multitude of experience personnel that have been involved in the engineering, startup and operation of Nine Mile 1 and the James A. Fitzpatrick nuclear plants.

This organization is currently managing the Nine Mile Operation for which it has achieved an exceptional record of safe operation since its initial fuel load in 1969.

Our site organization is well prepared to support the operation of Nine Mile 2 in the same manner. Our shift supervisory personnel, as I will show you, are highly experienced professional individuals with many years of BWR operating experience.

We believe that, as the current licensee of Nine Mile Unit 1 and the original licensee of the Fitzpatrick plant, that our history of safe operation of these units demonstrates that the Niagara Mohawk commitment to nuclear safety.

(Slide.)

I will present to you first a description of the site organization and then describe my station or Unit 2 organization. And, finally, I will show you in more detail the organization the organization, qualification and experience of my Operations Department.

(Slide.)

This slide depicts the senior management of the

Nuclear Generation Site Organization. At its head is the General Superintendent of Nuclear Generation, Tom Perkins. He has overall responsibility for offsite activities and reports to the Vice President of Nuclear Generation.

Reporting to the General Superintendent are the Station Superintendents for each unit, the Site Technical Superintendent, the Site Superintendent of Chemistry and Radiation Management, the Site Maintenance Superintendent and the Site Training Superintendent.

I can provide you with a written summary of the qualifications and experience of these individuals or I can present them to you orally at this time if you would like to hear it.

All do have a minimum of 12 years of BWR experience, most or all of which has been obtained at the Nine Mile Fitzpatrick site. These individuals, plus the superintendent of technical services comprise the Site Operations Review Committee. This committee is chaired by the General Superintendent and functions to advise him on all matters related to nuclear safety.

These department heads are responsible for the staffing, the administration and technical direction of their respective departments.

I can provide you with a written summary of the current staffing levels, years of experience, number of

licenses within these departments, the number of college degrees and a projected final staffing of all of these departments, or I can present it orally at this time.

The Site Technical Organization under Mr. Drews contains the following functions: the Technical Services Department, which includes instrument control, computer operations and maintenance, reactor analysis and technical support groups.

The Technical Support Group, in turn, has among its functions the operations assessment responsibility.

The Site Technical Organization also has under its jurisdiction the site fire protection, the site planning department, the site records management and document control, the site and service inspection departments and the site administrative services and clerical personnel.

The Site Chemistry and Radiation Management Department under Mr. Leach has the following areas of responsibility: the site chemistry and radiation protection programs, the site environmental protection program and the site radiological support organization. The radiological support consists of emergency planning, dosimetry, respiratory protection, radiological engineering and the ALARA program.

The Site Maintenance Department under Mr.

Dahlberg is responsible for the electrical/mechanical maintenance programs for the site.

The Site Training Department under Mr. Zollitsch is responsible for the administration and implementation of all training programs on the site, which I intend to describe in a few minutes.

The Station Superintendents for Units 1 and 2, Mr. Tom Roman and myself, are responsible for the day-to-day operation of our respective units. We have reporting to us on a functional basis supervisors matrixed from the Technical, Chemistry, Radiation, Management and Maintenance Departments, as well as our respective supervisors of operations.

(Slide.)

This slide depicts my station organization for Nine Mile 2. As you can see, all the positions are currently filled with the exception of the Supervisor of Mechanical Maintenance which is temporarily being filled by the Superintendent of Mechanical Maintenance. We expect to fill this position in about a month.

If there is one major concept that Niagara Mohawk has learned through its experience with Nine Mile 1 and Fitzpatrick, it is to develop its plant staff early and to participate to the maximum extent possible in the initial test program with as many permanent plant personnel

as possible so that experience is gained and retained for the future operations of the plant.

As you are aware, Nine Mile 2 is still in the early stages of the preoperational test program. However, my station organization is fully in place and functioning in the test program.

The Operations Department, which I will go into in further detail in a few minutes, is essentially fully staffed and on shift. Chemistry personnel are performing the flushing program, sampling and analysis activities. Rad protection personnel are reviewing plant layout and design for ALARA considerations. My unit reactor analyst is heading up the effort for developing the power ascension test program. The mechanical and electrical maintenance personnel are involved in both the test program activities and maintenance of equipment at this time. My instrument and control supervisor has over 50 technicians performing instrument calibrations.

In addition, we have Computer Department and meter and test personnel actively involved in the test program to perform the computer testing, protective relaying and circuit verifications respectively.

Finally, we have 30 Niagara Mohawk test engineers actively involved in the test program. These individuals will assume positions within the Engineering

and Site Nuclear Generation Departments after commercial operation.

I would now like to describe the Unit 2 Operations Department in further detail.

Involvement by the Site Nuclear Generation Organization at Nine Mile 2 began in 1978 with a group of approximately 15 Niagara Mohawk operations personnel that left the Fitzpatrick plant after the Power Authority became the plant licensee and it fully staffed its Operations Department.

These individuals performed design reviews of systems and begin the task of generating procedures for Nine Mile 2. Many of these individuals have remained in the Operations Department of Unit 2 and now hold key positions within our Department.

(Slide.)

This slide depicts the Operations Department Management headed by Mr. Mike Jones, Supervisor of Operations. As you can see, he has reporting to him two assistants to whom nine station shift supervisors and nine assistant station shift supervisors report. All of these positions are presently filled. In addition, Mr. Jones has a supervisor and assistant of rad waste operations reporting to him.

(Slide.)

This next slide depicts the on-shift organization headed by the Station Shift Supervisor or SSS. Down the left-hand side of the slide you will see that there is an on-shift dedicated fire-fighting crew consisting of a chief and four fire fighters.

We have six such crews on shift and functioning on a 24-hour basis. There will also be a radiation protection technician and radiochemistry technician assigned to the shift when the need arises at fuel load. Pardon me, we have five fire fighting shifts on duty.

Down the right-hand side of the slide is the shift operating crew. Reporting to the SSS is the combined position of the Assistant Station Shift Supervisor and Shift Technical Advisor. This individual will fulfill the requirement of the second SRO on shift and will meet all the requirements of the STA, including a bachelor's degree in engineering or related science.

Niagara Mohawk established this policy back in 1979 at Nine Mile 1 in anticipation of the second SRO on shift requirement, a policy which we now have carried over to the Unit 2 operation. s I mentioned earlier, we have all nine SSS's and Assistant SSS's positions filled and fully functioning.

Reporting to the shift supervision are the operators headed by the Chief Shift Operator or CSO. This

individual is RO licensed and is in charge of the control room operation. He has working for him two nuclear auxiliary operators, both of whom are RO licensed, and one of whom remains in the control room with the CSO. There are also five auxiliary operators for operation of the plant.

We have in place now eight such crews of plant operators, and all of the operators that will be required to be licensed on Unit 2 currently hold RO licenses on Nine Mile 1.

Lastly on shift we have three rad waste operators who will operate the liquid and solid rad waste facilities. There are six shifts of these individuals, six positions of which remain to be filled. We expect to complete this staffing by March of this year.

(Slide.)

This next slide is a summary of the Operations Department Supervision which includes previous and current licenses, years of experience and degrees.

Worthy of note is that Mr. Jones is a former SSS on Unit 1. Mr. Gayne and Mr. Wambsgan are former licensed reactor operators on Nine Mile 1 and Fitzpatrick and former shift supervisors at Fitzpatrick. They all currently hold SRO's on Nine Mile 1.

(Slide.)

This slide is a summary of our Station Shift

Supervisors' licenses, experience and educational levels. Of these nine individuals, four are former licensed reactor operators at Fitzpatrick, two were station shift supervisors at Fitzpatrick, two are former licensed reactor operators on Nine Mile 1 and one is a former Assistant Station Shift Supervisor at Nine Mile 1. Eight of the nine hold current SRO's on Nine Mile 1 and the ninth an RO license, who also has both an associate's and bachelor's degree.

Another four of these individuals holds an AAS degree, and we have an individual with a BS degree in engineering and professional engineer's license.

As you can see, their experience in commercial BWR's ranges from a minimum of seven and half years to a high of sixteen years.

(Slide.)

This last slide is a summary of our Assistant SSS or Shift Technical Advisor Personnel. As you can see, all nine have bachelor's of science or engineering degrees and some experience in commercial BWR's. Six of the nine have spent at least six weeks on shift at Nine Mile 1 at greater than 20 percent power. The other three will be scheduled for such training as will be required.

In addition, six of the nine have performed 10 startups at the Cornell University Research Reactor. Again,

the remaining three will be evaluated and scheduled for this program as we deem necessary. None of these individuals have previous licenses. However, at the time of fuel load all those on shift at the time performing in the Assistant SSS and STA capacity will be SRO'ed on Unit 2.

This concludes my presentation on organization and staffing and, unless there are any questions, I will proceed in to the training program.

MR. SIESS: Any questions, Jesse?

MR. EBERSOLE: No.

(Slide.)

MR. ABBOTT: The Nine Mile Point site training program is described by and implemented in accordance with administrative procedures. Shown here are the key aspects of our program. We conduct extensive training for non-licensed personnel to support the Nine Mile Point Stations.

Our non-licensed operator training ensures eligibility to become licensed operators. The licensed operator training program stresses the necessary knowledge and skills required for successfully licensing our operators.

We will have available a plant reference simulator for Nine Mile Unit 2 cold license training program.

Finally, our training personnel are highly qualified, many of whom hold SRO's and professional training certification.

(Slide.)

The General Superintendent of Nuclear Generation retains overall responsibility for our training program. The Training Superintendent and his Department are responsible for providing the logistical support, such as facilities, training aids and other materials, lesson plans and scheduling and coordination of training classes and the training personnel or trainers.

The department heads that report to the General Superintendent are responsible for the technical content of their respective department's training requirements. To accomplish this, there is close coordination between the departmental supervision and the training personnel themselves.

(Slide.)

We have currently 15 training programs that are taught on a regular basis to support the operation of Nine Mile 1 and the startup program for the future operation of Nine Mile 2.

I have selected four of these programs which I believe may be of particular significance to you.

General employee training is given to all

regular site personnel and other NMPC and contractor personnel as necessary, and it consists of training of administrative procedures, nuclear security, QA, site emergency plans, industrial safety, fire protection, radiation protection and a respiratory protection program.

(Slide.)

The chemistry/radiochemistry technician training is given to chemistry technicians as part of a progression series promotion from the A Technician starting level to the C Technician journeyman level.

This slide depicts the subjects that are included in this training program.

In addition, on-the-job training is administered through the use of a qualification manual. Job assignments are given out by the chemistry supervisor in various aspects of the technician's job duties, such as sampling and analysis tasks and instrument calibration and maintenance duties.

Chemistry technicians are certified upon successful completion of prescribed training and then participate in an ongoing retraining program.

The chemistry/radiochemistry technician training program is typical of the various disciplined training that is conducted at Nine Mile Point. Generally an overall passing grade of 80 percent is required with a

certification of retraining aspects being common to these programs.

Training courses that I will not address in detail but are included in the Nine Mile Site training program are reserve fire brigade training, emergency preparedness, reactor analyst technician training, rad protection technician training, rad waste operator training, mechanical maintenance, electrical maintenance and nuclear fire fighter and chief training.

The remaining training programs that I do wish to cover are those of the non-licensed operator and licensed operator candidate programs.

(Slide.)

The non-licensed operator training program is designed for the newly assigned operator that is relatively inexperienced in nuclear plant operation.

The program consists of classroom training, as shown on this slide, in conjunction with on-the-job training. The duration of the program is approximately two years. However, this may be shortened, depending on the amount of previous plant experience the individual may have. The individual operator participates in this program while functioning on shift.

The primary goal of the program is to ensure the successful attainment of the experienced eligibility

requirements of 10 CFR 55 for becoming a licensed reactor operator.

Each individual operator maintains a person training manual which serves to document plant evolutions performed, procedural reviews and other reading assignments as required.

The licensed operator training. Once an individual meets the eligibility requirements, he or she is placed in a licensed operator training program. Much of the licensed operator training is common to both the SRO and RO candidates. However, emphasis is placed on different aspects of the subject material to accommodate the particular training needs of the candidates.

For example, instruction given on the emergency plan emphasizes shift supervisor duties to the SRO class and control room reactor operator actions to the RO class.

The outline of the technical training shown here also includes the subjects required for the shift technical adviser training. All licensed candidates receive instruction on plant transients, accident mitigation, heat transfer, fluid flow and thermodynamics. However, this subject material is taught to a greater extent to the SRO class.

Therefore, all SRO candidates, which include SSS's, staff and the Assistant SSS's or STA's receive this

augmented instruction as part of the normal SRO training.

The training of licensed operator candidates includes a minimum of three months on shift participating in the day to day shift operation at the appropriate RO or SRO level. During this period the licensed candidate is also required to complete the plant evolution and procedural reviews as outlined in his training manual.

Hands on training for the Nine Mile 2 operator is accomplished through the use of the Nine Mile 2 simulator. This portion of the training program meets the requirements of the Denton letter and the NUREG 0737.

This training includes a simulator exam which will be administered on the Nine Mile 2 simulator. Many quizes and exams are administered throughout the training program to ensure that the licensed candidates are learning and retaining the instructed material.

Prior to the NRC exam thorough written and oral walk-through exams are administered. A decision is then made based on these audit exams whether to have the individual participate in the NRC exam.

To date Niagara Mohawk's licensed operator training program has achieved what we believe to be a successful record. Since 1976, and those are the records we could go this far back to, we have had 120 individual attempt the RO and SRO exam, of which 110 have passed. This

calculates out to be a 92 percent success rate.

Regarding qualifications of instructors, all those that perform systems training and accident response training are either SRO'ed or SRO certified and are enrolled in an appropriate requal program.

Other Training Department staff members or guest lecturers teaching teaching technical subjects, such as reactor theory, may not be SRO'ed. However, they must be knowledgeable on the subject matter and are monitored during class by a qualified instructor.

(Slide.)

The Nine Mile simulator is designated as a plant reference simulator and meets the requirements of ANSI 3.5 '81 and Reg. Guide 1.149. Its features include the ability to freeze the action, the ability to run in slow time and fast time. It has 20 pass protected initial conditions with the capability of programming 30 additional initial conditions. It has the snap shot capability to preserve the status of the scenario in order to return to that condition at a later date, and it has the capability to backtrack in a scenario and restart the action within that scenario.

The design of the Nine Mile 2 simulator was frozen in March of 1983 in order to ensure that it would be constructed, delivered and in operation in time for the first cold license class.

Design changes to the plant control room since March of '83 are closely kept track of so that these changes can be incorporated into the simulator in the future. Our current plans call for updating the simulator on a yearly basis commencing with 18 months after commercial operation.

The simulator, as you saw this morning, is currently under test and will be available for training in March in conjunction with the first cold licensing training program which is already in progress.

The use of the simulator in the operator license training program will consist of the following: normal plant startups and shutdowns, plant transients and accidents, individual system malfunctions and the performance of surveillance tests.

It will also be used to verify plant operating procedures and it will be used in the validation program of our emergency operating procedures.

And, finally, we will require the operators to perform many of the control room manipulations in the simulator without the use of the process computer to ensure that the control panel information and the operating procedures are adequate to safely operate without the computer.

This concludes my training presentation, unless

you have any questions.

MR. EBERSOLE: Yes, I would like to ask a question. I will just pick maybe one of the most thrilling experiences your operators might have, how to cope with an ATWS. Do you teach them how an ATWS might happen and how the core will perform in a physics context? Do you tell him how it got in the state it is in as, let's say, through hypothesizing a full dump volume, and teach him how to get out of that situation gracefully? I think that is probably the most thrilling experience you might hypothesize he would have.

MR. ABBOTT: Gracefully may be a trick to do.

(Laughter.)

MR. ABBOTT: But our training program is pretty nearly finalized and when we have a finalized training program, yes, we will. Part of the training for responding to emergency situations includes the plant conditions that gets the operator into that condition, it will include the actions the operator should take in response to the conditions and it will include a technical description of what actually is occurring in the reactor.

MR. EBERSOLE: Well, what do you say to a bright operator when he asks you the question, sir, he says, why do you close the dump volume before the rods get home? Do

you have a reason to give him?

MR. ABBOTT: Excuse me, why could I close the scram dump volume before the ---

MR. EBERSOLE: Yes, before the rods are ceded, or do you ever get such questions from operators?

MR. ABBOTT: I haven't personally no. That particular technical issue has to do with you are experiencing loss of coolant from the scram dump volume with those valves still open.

MR. EBERSOLE: And you tell him that you close these because you don't want to discharge from the primary system ---

MR. ABBOTT: I don't want to continue to discharge from the primary system, that is correct.

MR. EBERSOLE: But you don't want to wait to confirm that the rods are in before you close it.

MR. ABBOTT: Well, the scram dump volume ---

MR. EBERSOLE: It is closed prior to rods starting.

MR. ABBOTT: The close concurrent with the rods starting.

MR. EBERSOLE: They close before the rods start to move.

MR. ABBOTT: Well, the close on a scram signal.

MR. EBERSOLE: That is right. That means they get

closed before the rods can even bet going.

MR. ABBOTT: Yes, that is so.

MR. EBERSOLE: So how do you defend that position to him that you need to do that rather than wait until they go home?

MR. ABBOTT: Because there is sufficient volume within the scram dump volume to allow for the discharge of the scram ---

MR. EBERSOLE: But then if you invoke Murphy's Law, it is still a possibility of having it full. The only thing that prevents it is level switches.

MR. ABBOTT: That is correct.

MR. EBERSOLE: So do you have a good argument why you should close it before the rods get in?

MR. ABBOTT: We make the assumption because of our instrumentation that we do have, as far as level switches, that the scram dump volume is fully vented and drained prior to that scram event.

MR. EBERSOLE: Yes.

MR. ABBOTT: And at the time of scram the valves start to go closed and yes, indeed, they start to go closed prior to rod motion. But we have sufficient volume capacity within the scram dump volume to take care of the scram discharge water.

MR. EBERSOLE: You are telling me he have to

believe that the level switches will always work?

MR. ABBOTT: He should believe his instrumentation unless he has evidence ---

MR. EBERSOLE: I was just wondering if the operators ever asked such a stupid question as that? They don't?

MR. ABBOTT: I wouldn't consider questions like that stupid, no.

MR. EBERSOLE: Well, I keep asking it myself and I have never found the answer.

(Laughter.)

MR. SIESS: Thank you, sir.

Let's see, let's take up Item 11.

MR. ZALLNICK: I will call Mr. Abbott back up. He has a presentation on emergency operating procedures.

(Slide.)

MR. ABBOTT: Again, my name is Rick Abbott, Station Superintendent for Nine Mile 2.

I have with me this afternoon Mr. Mike Colomb who is the Station Shift Supervisor and the person most responsible for generation of our draft EOP's that are at the current state.

He is going to stand up here with me, and if we get into questions on the actual content of EOP's, if I cannot answer them, he will be available to do so.

(Slide.)

The key points of our emergency operating procedure program for Nine Mile 2 are depicted on this slide.

Our program and procedures have developed in accordance with NUREG 0737, Supplement 1.

They are based on the General Electric BWR Owners Group emergency procedure guidelines.

The procedures themselves are symptom based. NMPC operations personnel have developed the entire program and 100 percent of the EOP's have been drafted and will undergo a formal approval cycle which will include verification and validation activities for each of the procedures.

(Slide.)

A specific generation package has been developed for converting the GE owners group program into plant specific engineering emergency operating procedures for Nine Mile 2.

This generation package consists of four top tier procedures and the plant specific technical guideline, all of which were developed in 1984, as indicated on this slide.

The EOP training program is the final component of the procedures generation package and will be

implemented by April of this year.

I would like to describe briefly the content of each of the procedure generation package components.

The EOP development procedure is a general description of the program. It institutes the requirements for the plant specific technical guideline, the emergency operating procedures, the verification program, the validation program and the training program. It also assigns overall responsibility for the program to the Station Superintendent.

The Operations Department and Training Department are responsible for procedure development and the training program respectively.

The EOP verification program procedure provides administrative direction for the process of verifying the technical accuracy of the plant specific technical guideline and the EOP's themselves.

In general this verification process will ensure that the generic EOP guideline has been properly implemented in formulating the plant specific technical guideline and, in turn, the plant specific technical guideline is properly implemented in the emergency operating procedures.

The verification program will also ensure that referenced control room information and nomenclature and

operator actions required by the procedures are accurate and correct.

The Supervisor of Operations is assigned the responsibility for directing the identification, resolution and incorporation of discrepancies identified during the verification process.

The EOP validation procedure provides the administrative direction for the process of assuring that the EOP's are accurate, sound and useable at Nine Mile 2.

The validation process will be performed using three possible methods.

One, the table top method by which the EOP will be assessed by discussion and talk through of the procedure, including operator tasks required for each step of the procedure.

Two, the walk through method by which the EOP is used in the control room and a simulated response to the scenario outlined in the EOP.

And, three, the simulator method by which the scenario is portrayed on our plant reference simulator and the EOP is then used to respond to the scenario.

The Supervisor of Operations is assigned the responsibility for establishing and accomplishing the validation process for each of the EOP's.

The EOP's writer's guide procedure provides the

administrative guidance for procedure format, technical vocabulary and other general guidance to ensure preciseness, clarity and conformity throughout the EOP's.

The plant specific technical guideline for Nine Mile 2 has been developed from the latest revision of the GE BWR owners group emergency procedure guideline using the FSAR operating procedures, technical specifications, drawings and engineering and other approved vendor documents.

The training program, which is currently under development, will consist of lesson plans that will specify training requirements for each of the EOP's. These lesson plans are being formulated using the generic and plant specific technical guidelines and the EOP's.

The training will encompass the use of the procedures as well as the technical bases for the decisions and operator actions specified by the procedures. The training program should be fully developed by April of this year.

The actual training of operators and staff personnel will be accomplished during the course of the licensed training programs.

I believe it is significant to note that the entire EOP generation package as well as the EOP's themselves have been developed by Niagara Mohawk operations

personnel. Most of the work has been through the efforts of Mr. Colomb, the Nine Mile 2 SSS, who has held a reactor operator license on Fitzpatrick and currently holds an SRO on Nine Mile 1.

Along with him he had the assistance of his Assistant Station Shift Supervisor who holds a bachelor's degree in engineering.

As indicated on the slide, we expect to complete the EOP verification and validation processes and approve the EOP in April of this year.

In order to accomplish this, the Training Department is currently developing the flow charts in accordance with the EOP drafts. Once this is complete and the procedures have been verified, the validation program will be conducted in conjunction with the ongoing control room design review.

In addition, the procedures will be validated on the simulator by Unit 2 operators either during regularly scheduled training classes or at other times when the simulator is available.

With this approach we believe the end product of this program will be a set of accurate and useable emergency operating procedures of which the operating personnel will be competent in their use.

Are there any questions on this program?

MR. SIESS: Any questions?

MR. EBERSOLE: No.

MR. SIESS: Apparently there are no questions. Thank you, sir.

MR. ABBOTT: Thank you.

MR. SIESS: I propose now that we let you respond to some of the questions that Mr. Ebersole had, as you offered to earlier. And, depending on how long that takes, we may adjourn at 5 or whatever.

The next item on the agenda is the seismic issue. I am going to propose that we reduce that somewhat because we don't have any seismic consultants here. I have glanced at what you have to present, and I would propose to handle it on the basis of let's say questions only which will come from me probably.

MR. EBERSOLE: Right.

(Laughter.)

MR. SIESS: I bring that up. Do you have any special consultants you have brought in for the seismic issue or is it just your people?

MR. ZALLNICK: We have our consultants here. Ed Klein from Niagara Mohawk has a presentation. Are you worried about time frames?

MR. SIESS: No. I am worried about that if I cut out the presentation is it going to embarrass somebody you

brought in?

MR. ZALLNICK: No, sir.

(Laughter.)

MR. SIESS: Okay, fine. I know you have prepared a lot and if sometime we decide we don't want to hear it, then I hate to waste all that effort.

Now I will turn it over to you and Mr. Ebersole to see what your answers are.

MR. ZALLNICK: Mr. Rademacher, you have some responses?

MR. RADEMACHER: The first question that we had was how long Division 3 run without service water. According to the General Electric purchase specification, Division 3 will run approximately two minutes under full load without service water.

The next question is, is there an auto trip of Division 3 if there is no service water. No, there is no auto trip. However, there is an alarm in the control room that indicates high jacket water temperature.

The next question was what spare capacity of service water pump is available during normal operation ---

MR. EBERSOLE: Before you get into that No. 3 diesel?

MR. RADEMACHER: Certainly. I believe the General Electric Company claims that the Division 3 diesel is

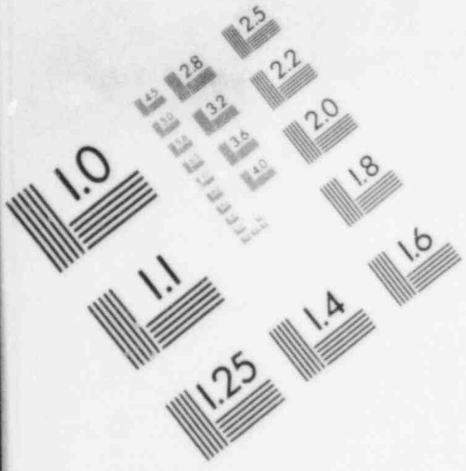
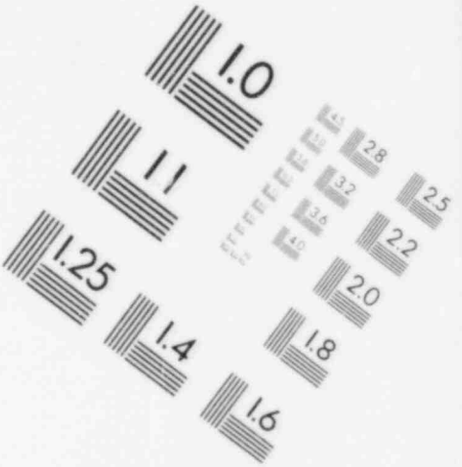
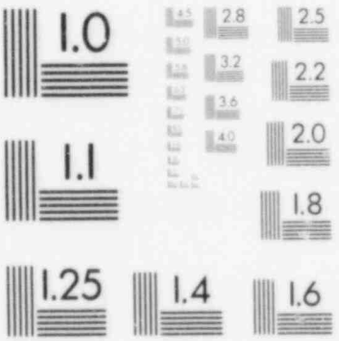
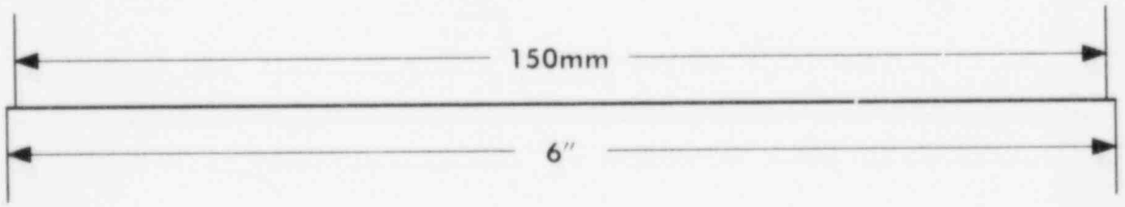
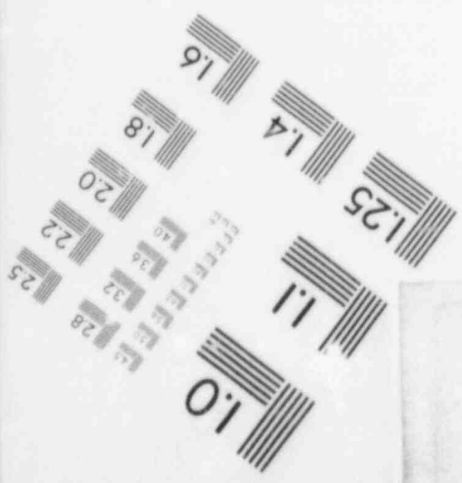


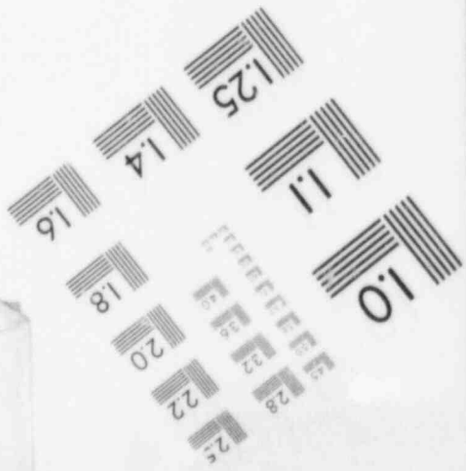
IMAGE EVALUATION TEST TARGET (MT-3)

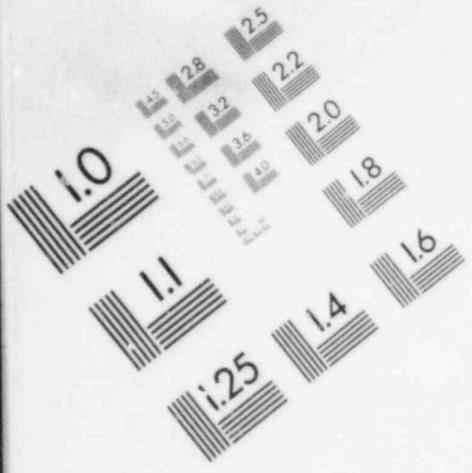












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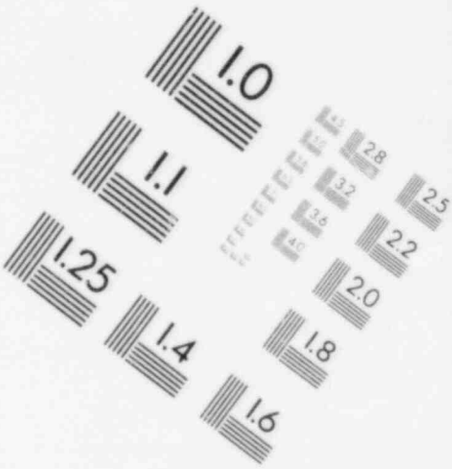

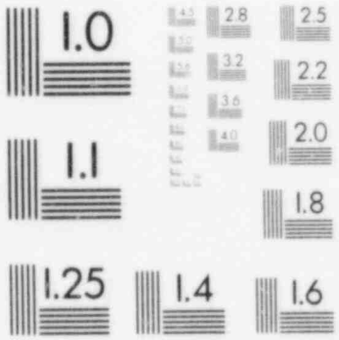

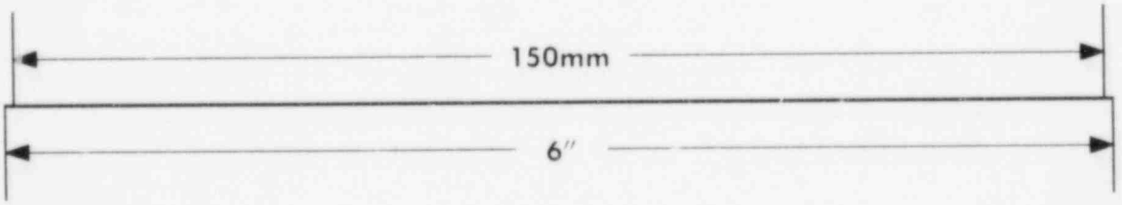

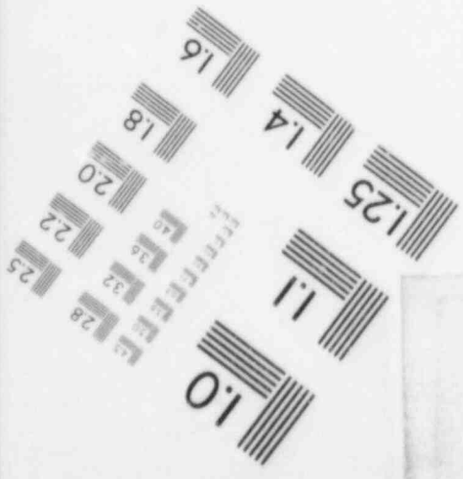

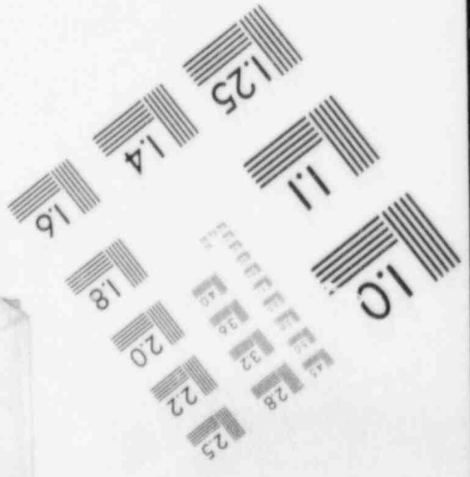

competent to assure core cooling but not containment heat removal for a substantial length of time by itself as an island of independence, which I would invite you to consider is not inclusive in the complete blackout case if you don't cross tie it into the emergency grid. In short, it is an island onto itself and you can certainly invoke a thesis that is it not a part of a general blackout picture if it is an isolated electrical set.

This is the second time I have heard where that particular diesel is in fact not an independent functioning unit, but it depends on Division 1 or 2 power outputs.

Now you have a resolution to that which does tie it back to the electrical network which is a form of pull-out breakers and insert breakers to connect it to cause one of the pumps to run to cool it. That time it takes to do that would not seem to me to be compatible with the two-minute need, and I wonder why you don't simply invoke putting a pump on the Division 3 diesel?

MR. RADEMACHER: If I might respond to that. I believe originally quite awhile ago we evaluated our service water needs. At that time we established the requirement to go with six service water pumps for the plant and to eliminate the HPCS service water pump.

This allows flexibility in that we have six service water pumps in lieu of one service water pump for

service water for the plant and for HPCS.

MR. EBERSOLE: But those six are dependent on two diesels?

MR. RADEMACHER: That is correct, and we are currently evaluating station blackout considering the fact that we would not take credit for HPCS as well as the Division 1 and Division 2 diesels relying solely on RCIC.

MR. EBERSOLE: What does General Electric have to say in the aspect of what they like to do or what they consider -- they must consider it a breach of their statement that that is an independent island.

MR. RADEMACHER: That is correct. I believe during the design process when we established our design requirements we requested Stone and Webster to notify GE and get their concurrence on that design. Now I will have to confirm that, but I believe that is the case.

MR. EBERSOLE: Have you gotten a comment or a statement from GE that that is in line with their intent in putting that diesel in? I think they intended it to run long enough to at least heat the containment up without any support which takes quite a while.

MR. RADEMACHER: That may have been the original design, but I believe we did get concurrence form GE on this.

MR. EBERSOLE: Why don't you look into that and

tell us about it later, okay?

MR. RADEMACHER: Okay.

MR. EBERSOLE: I want to not depart from that diesel and its function. it is a high-pressure core spray system. It never occurred to me before this morning. I was looking at it and it occurred to me that you might have a stuck SRV and you would like to have, because you have lost RCIC and you are in a blackout condition, and you again want to have that pump for feedwater.

This brings up the issue of can it serve in the presence of low-pressure open discharge without going to an overloaded mode?

MR. RADEMACHER: The answer to your question is yes.

MR. EBERSOLE: Do you have to do anything to cause it to not become overloaded with a low-pressure complete discharge?

MR. RADEMACHER: I believe we, and I will have to check with my operations people, but I believe we throttle the discharge valve and allow the recirc to the suppression pool to ---

MR. EBERSOLE: You re-establish pressure on the discharge?

MR. RADEMACHER: Yes.

MR. EBERSOLE: You can look into that and tell me

whether that is in your emergency procedures.

MR. RADEMACHER: Mr. Mike Colomb will respond to that.

MR. EBERSOLE: Oh, okay.

MR. COLOMB: Our high-pressure core spray system is also designed to be a low-pressure core spray system.

MR. EBERSOLE: Say that again?

MR. COLOMB: Our high-pressure core spray system is also designed to be a low-pressure core spray system.

MR. EBERSOLE: And does it require a manual intervention?

MR. COLOMB: No, it does not.

MR. EBERSOLE: Oh, what is it, it is orificed or something?

MR. COLOMB: Yes, it is.

MR. EBERSOLE: I see. Thank you. That fixes that. Carry on.

MR. RADEMACHER: The next question that I had listed, and I did have on the list, by the way, the low-pressure condition. So I was going to get back to that.

MR. EBERSOLE: Okay.

MR. RADEMACHER: I am just going down the list that I have.

MR. EBERSOLE: All right.

MR. RADEMACHER: The next question was spare

capacity of service water pumps for normal, 100 percent power operation. Normally for a hundred percent operation we use four of the six with two on standby.

The spare capacity of circ water pumps, we have six and we would use all six. Circ water pumps would just be for cooling through the condenser to the cooling tower.

MR. EBERSOLE: All right. Well, let me ask you this. In the matter of emergency equipment, which is dead-ended on an active system and you have an active system under pressure now, a service water system, but you have got lots of equipment which is not in use and you either have an option of having deadended water standing into it or have it flowing, both of which presents a problem. You are not running that emergency equipment, but the water is standing in it either deadended or it may be flowing through it.

How do you ascertain that you are not subject to biofouling or other effects of having the presence of that nice, rich water which grows clams and other things in which you have no heating source to confirm you have lost your cooling function?

MR. RADEMACHER: We have responded to the mollusk question I believe, it was an IE bulletin, and our response was that because of the cooler lake water in Lake Ontario that the, and I have forgotten what the actual title of it

was, won't grow in our water.

MR. EBERSOLE: You don't have biofouling in ---

MR. RADEMACHER: And, additionally, I was going to say that we have operated Nine Mile 1 for some 15 years, and I don't believe we have ever experienced any at Unit 1.

MR. EBERSOLE: Okay, fine. Thank you.

MR. RADEMACHER: The next question, the analysis of the feedwater check valve slamming shut is underway. I believe this was requested by the Mechanical Engineering Branch as one of the 210 series questions, and the results of this study will be complete I believe in May of '85, and that is a commitment we have on the docket.

MR. EBERSOLE: I see.

MR. RADEMACHER: The preliminary results thus far indicate that leakage is within allowable.

MR. EBERSOLE: Is this after a violent closure hypothesizing a full pipe failure upstream of the valves?

MR. RADEMACHER: I believe that is the case, yes.

MR. EBERSOLE: What about Nine Mile 1 in that aspect? Was that looked at? You know, everybody concentrates on the main steamlines, but I think the mechanical loading problem is probably worse on reversible checks. And, besides, it is worse to lose water than to lose steam.

MR. RADEMACHER: I am afraid I can't answer that

question. I guess we will check on that.

MR. EBERSOLE: Okay. Thank you.

MR. RADEMACHER: There was also one clarification that I guess I would like to make. You asked whether the diesel generator was capable of operating at minus 40. Well, our design number is minus 20 and not minus 40. So I just wanted to clear that up.

MR. EBERSOLE: What is that, outside air temperature?

MR. RADEMACHER: That is outside air temperature, yes.

MR. EBERSOLE: But I heard now a while ago that when you go into operation -- now wait a minute. The room is normally heated though, isn't it?

MR. RADEMACHER: Yes. It goes through heaters as it comes in through the building.

MR. EBERSOLE: When it goes into operation is there a new gale of air that goes through the diesel generator room which becomes subfreezing?

MR. RADEMACHER: The intakes take suction from outside of the diesel.

MR. EBERSOLE: I don't mean the engine combustion air. I am talking about the room cooling.

MR. RADEMACHER: Excuse me. I will ask Don Pracht, our lead mechanical to address that question.

MR. EBERSOLE: I can imagine that you now open the room up to a gale of frigid air and you experience the same things the B-17's did. They cooled so much the oil quit flowing to cool the generator.

MR. PRACHT: Shall we say the normal ventilation for the room is controlled on the basis of temperatures. So you would not get the gale that you are referring to. That is, you would get some cool air coming in in order to keep the room at a reasonable temperature.

MR. EBERSOLE: If necessary, you actually heat the room?

MR. PRACHT: Yes.

MR. EBERSOLE: Even though the engine is running?

MR. PRACHT: I can't believe that you would need to heat the room if the engine were truly running.

MR. EBERSOLE: You just stop the air flow then?

MR. PRACHT: Well, you bring in some outside air to just keep the ambient in the room at a respectable level.

MR. EBERSOLE: What do you do, modulate some dampers?

MR. PRACHT: Correct, sir.

MR. EBERSOLE: Thank you very much. Okay, that fixes that.

MR. RADEMACHER: That was the last of the

responses that I have right now. We owe you one on the crane, and I believe that response will be available the first thing tomorrow morning.

MR. EBERSOLE: That will be fine. Thank you.

MR. SIESS: Is that all, Jesse?

MR. EBERSOLE: Yes.

MR. SIESS: Well, it is not quitting time.

(Laughter.)

MR. ZALLNICK: Would you like to ask your questions on seismic right now?

MR. SIESS: Yes. Let me summarize what the situation is as I understand it on seismic. You are not much different from anybody else. The staff sort of went back and looked at your SSE, the .15G, in relation to site specific spectra, am I correct? You have had a comparison made with site specific spectra?

MR. ZALLNICK: Yes, we did. We did that comparison.

MR. SIESS: And it came out all right. The cooling tower fault and the rad waste fault that caused some concern both turn out to be nonseismogenic, as I believe the term is, and due to changes in load or stress in prehistoric times it no longer exists or at least won't exist until the next glacial period.

MR. ZALLNICK: I am going to ask Mr. Ed Klein to

come up to the podium.

MR. SIESS: Then it is going to be a lot more than minus 40, but I don't think you will be worried about running the plant.

MR. ZALLNICK: Ed, why don't you come up to the podium.

MR. SIESS: And I would like the staff's confirmation that the faults have been found incapable. I am pretty sure that that was the conclusion, but there was some concern that there is still some elastic movement at the rad waste fault; is that correct? So there was a concern about movement of the buildings.

MR. ZALLNICK: Yes, sir.

MR. SIESS: And the staff is satisfied that that has been taken into account?

MR. ZALLNICK: As far as we know, there is no open item on that question in the SER.

MR. SIESS: Okay. Now actually the concerns that exist in the ACRS about seismic are really under the heading of seismic margins. You are going to get some questions on this probably. You may get some questions at the full committee because we are in the process of looking at seismic margins generically for plants in the Eastern United States, and this plant falls in that category.

The concern about seismic margins comes about

simply from the fact that the SSE does not seem to be as low probability an event as some people thought it was when Appendix A was written, that is, it is not a 10 to the minus 6 per year probability event or a 10 to the minus 7. Depending on which seismologist you talk to, it may be 10 to the minus 3 or 10 to the minus 4 probability, which says simply that the probability is not negligible that we will see an earthquake greater than the SSE.

Now we all realize that there are margins. There are conservatisms in the selection of spectra, conservatisms in the damping, conservatisms in the design allowables and there are a number of conservatisms in the assumptions we make about behavior. But nobody has really ever looked at them to quantify them. For all I know they may be unquantifiable, but they are being looked at generically.

There is a little discussion under Tab 12 in here about some of the conservatisms. These are what some people have referred to as the code type conservatisms, the ones that are built in. There is a lot we don't know about the fragility of components which are added conservatisms.

I don't think that any of the concerns we have about what the earthquake might be and what its probability might be can be answered in any other way than simply by

trying to decide how much margin we have got to be sure that we are not on the edge of a cliff and that an earthquake of .165G is not going to cause a core melt because that earthquake is not incredible, depending on your level of credibility.

So I don't really think there is much specifically related to Nine Mile Point 2 that is going to help us with this problem. It is pretty much a generic one that was designed by the same people as a lot of other plants and to basically the same criteria.

I do find something that bothered me a great deal or it bothered me a little bit. It didn't bother me a great deal because it is the kind of nonsense that I have been seeing for a long time. This is in a staff report, and I have date on it. It looks like a memo to file about a summary of a meeting with NMPC concerning equipment qualification, and it said "Seismic margins for NSSS equipment are at least 10 percent. Seismic margins for balance of plant equipment are generally 10 percent, but this is not a design requirement."

Now that is pure nonsense, and I am not addressing it to you, but I get no comfort from somebody telling me that the seismic margins are 10 percent. That is within the noise on any earthquake we have got.

The seismic margins have got to be a lot more

than 10 percent or we have got real concerns, and I don't think they are 10 percent and I don't think you think that 10 percent. It may be that nobody could prove they were any higher than 10 percent for Nine Mile Point Unit 2.

Does anybody remember that particular meeting?

MR. RADEMACHER: I believe that 10 percent margin was between the tested profile and the design profile.

MR. SIESS: That is on the equipment qualification then?

MR. RADEMACHER: That is correct, it was just on the equipment qualification. And recently we have received a letter from Stone and Webster that indicates they have evaluated all of their components and they are meeting the 10 percent as well.

MR. SIESS: Okay. Well, that makes sense then, that that was just on the equipment qualification.

MR. RADEMACHER: That is correct, sir.

MR. ZALLNICK: I was at that meeting and I recall that was the difference on the test and the design.

MR. SIESS: Well, that was the heading of the meeting, but the wording wasn't all that clear.

So I really don't think we have an issue that the subcommittee could find a discussion very enlightening. it may come at the full committee meeting in some context, and I can't be sure exactly what will come up. I would

simply suggest that it will be on the agenda for the full committee as an item to be covered by questions. You should have people there. We will have an item in our agenda that says this is a possible question, and if somebody wants to ask one, the applicant has people here to answer it. Is that satisfactory?

MR. ZALLNICK: Yes.

MR. SCHWENCER: Dr. Siess?

MR. SIESS: Yes.

MR. SCHWENCER: Dr. Siess, with regard to the staff, on page 220 of the evaluation the staff describes that it had looked at this at the CP stage. It goes on to say in effect that the conclusions that also were reached concerning the -- and let me get down a little further here -- "Although these structures are presently considered by the staff to be noncapable. . ." -- and I interpret this to mean that this is a reaffirmation of the noncapability.

MR. SIESS: Well, they weren't even considered at the CP stage because they weren't discovered until they dug the hole. Am I right?

MR. KLEIN: That is correct.

MR. SIESS: These were a little bit different than the faults you usually find when you dig a hole, and there was quite an investigation on both of them, as I recall.

MR. KLEIN: That is correct.

MR. SCHWENCER: Are you referring to the cooling tower fault?

MR. SIESS: Both of them.

MR. SCHWENCER: Okay. They do conclude that the cooling tower fault is not capable either.

MR. SIESS: And I think the rad waste building fault, too, was due to an erosion problem and change in stress that no longer exists, but that there was some possible elastic rebound still there. Is that the correct term?

MR. KLEIN: That is correct. We designed for that possibility of a one-inch movement.

MR. SIESS: What did you design for the one-inch movement, relative movement for pipes?

MR. KLEIN: No. We essentially left a space between the rock and the buildings to allow that rock to be able to move that far.

MR. SIESS: Okay.

MR. KLEIN: And if there was anything across that fault line, then we analyzed that, whether it be piping or pipe tunnel, to be able to sustain that movement.

MR. SIESS: Now that movement, if it should occur, is not going to occur very rapidly.

MR. KLEIN: No, it is very slowly and a

millimeter per year would be a lot.

MR. SIESS: Are you looking at that to follow it?

MR. KLEIN: We did that for four years, sir. We monitored it and we have concluded from that all four years of monitoring that in fact the movement is very cyclic and it follows the temperature and there really is not hardly any accumulative movement.

MR. SIESS: I see. One millimeter a year would be 40 millimeters ---

MR. KLEIN: That would be an inch plus, but as I said it doesn't even come to that and it is considerably less.

MR. SIESS: It just seems to me that when we have got that kind of uncertainty that it is all right to allow for something in design, but I think somebody ought to take a look at it at least every 10 years to be sure that they weren't that far off. I don't know how you calculated the millimeter. That has been based on what four years of observation or eight years of observation?

MR. KLEIN: The consultant with the specific data for that is arriving at the present time. I would like to have ---

MR. SIESS: Well, was it measured or was it calculated?

MR. KLEIN: The movements for the last four years

have been documented and I can tell you what they are the first thing in the morning if that is the case. The one millimeter is just a figure of speech and not an exact figure.

MR. SIESS: I don't think there is an issue here. As I say, we will handle this for the full committee as one.

As we go through this there are going to be a number of items on which presentations have been made today or will be made tomorrow that we will not have presentations on at the full committee obviously. We will only have four or five hours there. And those that we delete, some of them I may mention briefly to the full committee. All of them will be listed somewhere on our agenda as items to be handled by questions only and there may or may not be questions. That will be simply a signal to the full committee that we did hear about them and you have a story on it.

I will tell you tomorrow afternoon which items those are. In fact, I will give you an outline of what I want you to present before we adjourn the meeting tomorrow, which will essentially be the basis for our full meeting agenda. Is that clear?

MR. ZALLNICK: Yes, sir.

MR. SIESS: Okay. You don't have any questions,

do you?

MR. EBERSOLE: No, I have none. Well, I have one, and that is the aspect of the interaction between non-seismic equipment and components to seismic or safety shutdown equipment. I want to know if you have a well developed program to look at this aspect of design.

A model for this in the extreme is of course Diablo Canyon which found some thousands of interference potentials between seismic things getting damaged by non-seismic things falling down or bumping into them.

The other thing is the unsuspected activation of equipment which you would rather not work under seismic influence, a case in point being fire protection.

MR. SIESS: You have an item on systems interactions. Does it include seismic interactions?

MR. EBERSOLE: That is what it is.

MR. ZALLNICK: We were going to discuss that during the systems interaction presentation.

MR. EBERSOLE: That will be fine.

MR. SIESS: Incidentally, Diablo did not find a thousand that they had to do something about.

MR. EBERSOLE: No, no. They just found that many.

MR. SIESS: Not unless you are counting the light fixtures.

(Laughter.)

MR. EBERSOLE: No.

MR. SIESS: Okay. I am not going to touch AC/DC Power Systems Reliability today.

So I am going to recess the meeting until 8:30 tomorrow morning.

(Whereupon, at 4:55 p.m., the subcommittee recessed, to resume at 8:30 a.m., Thursday, February 21, 1985.)

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CERTIFICATE OF OFFICIAL REPORTER

This is to certify that the attached proceedings before the UNITED STATES NUCLEAR REGULATORY COMMISSION in the matter of:

NAME OF PROCEEDING: ADVISORY COMMITTEE ON REACTOR SAFEGUARDS SUBCOMMITTEE ON NINE MILE POINT NUCLEAR STATION, UNIT NO. 2

DOCKET NO.:

PLACE: SYRACUSE, NEW YORK

DATE: WEDNESDAY, FEBRUARY 21, 1985

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

(sigt) Mary Simons/sg

(TYPED)

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Station Shift Supervisor
Lead EOP Writer

NIAGARA MOHAWK

EMERGENCY OPERATING PROCEDURES

- Developed in Accordance with NUREG-0737 Supplement 1
- Based on General Electric BWR Owners Group Emergency Procedure Guidelines
- Symptom-Based Procedures Utilized for Unit 2
- NMPC Developed Emergency Operating Procedures In-House
- 100% of Emergency Operating Procedures Drafted
- Formal Approval Cycle including Verification and Validation

NIAGARA MOHAWK

EMERGENCY OPERATING PROCEDURES

Development Schedule

- EOP Procedures Generation Package
  - EOP Development — May 1984 (Complete)
  - EOP Verification Program — May 1984 (Complete)
  - EOP Validation Program — Dec 1984 (Complete)
  - EOP Writers Guide — May 1984 (Complete)
  - EOP Plant Specific Technical Guideline (PSTG) — May 1984 (Complete)
  - EOP Training Program — April 1985
- EOP Draft — 100% Drafted
- Completion of EOP Verification, Validation, and Approval — April 1985

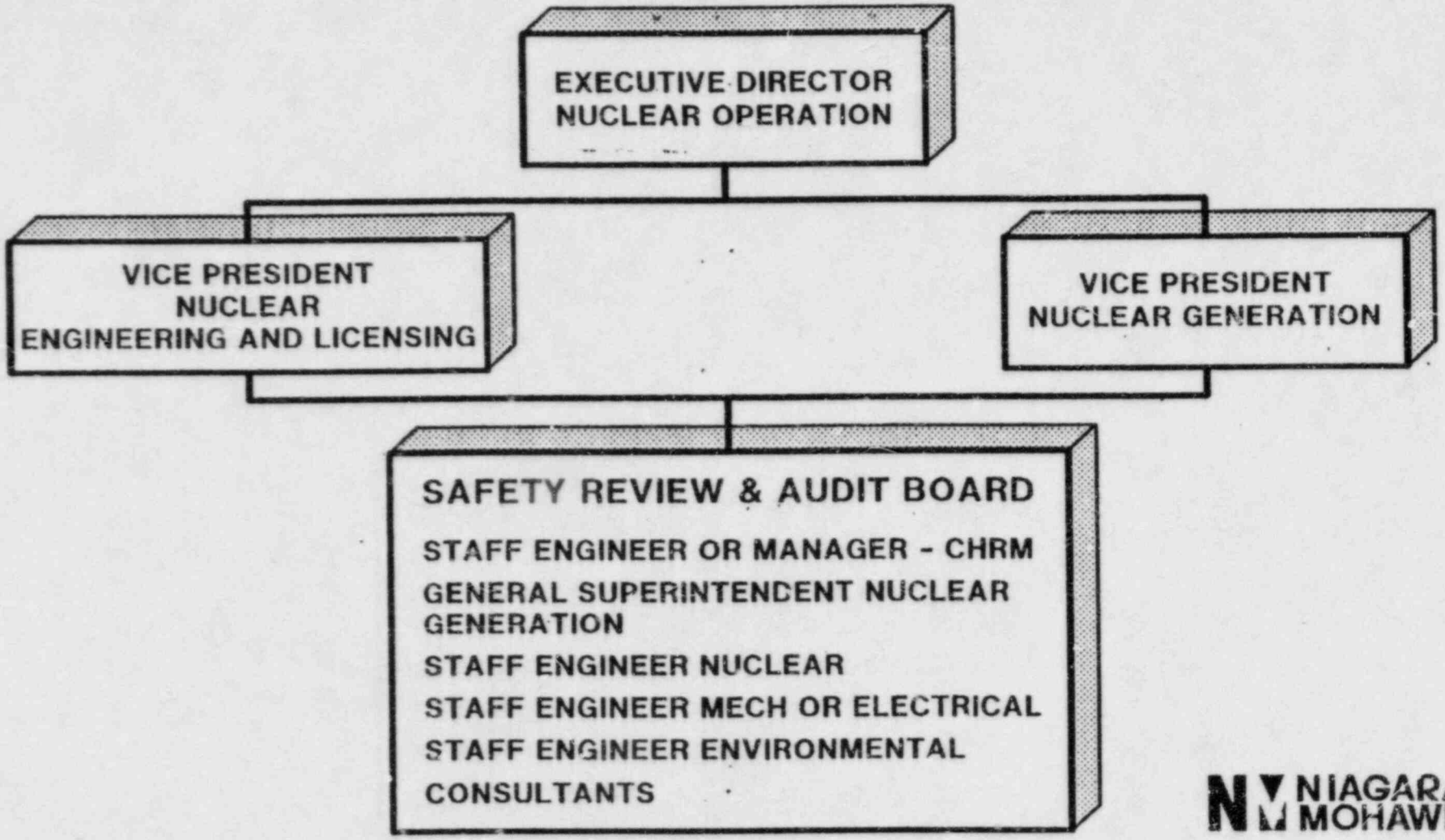
NIAGARA MOHAWK

CHARLES S. STUART

Asst. to the Executive Director - Nuclear Operations

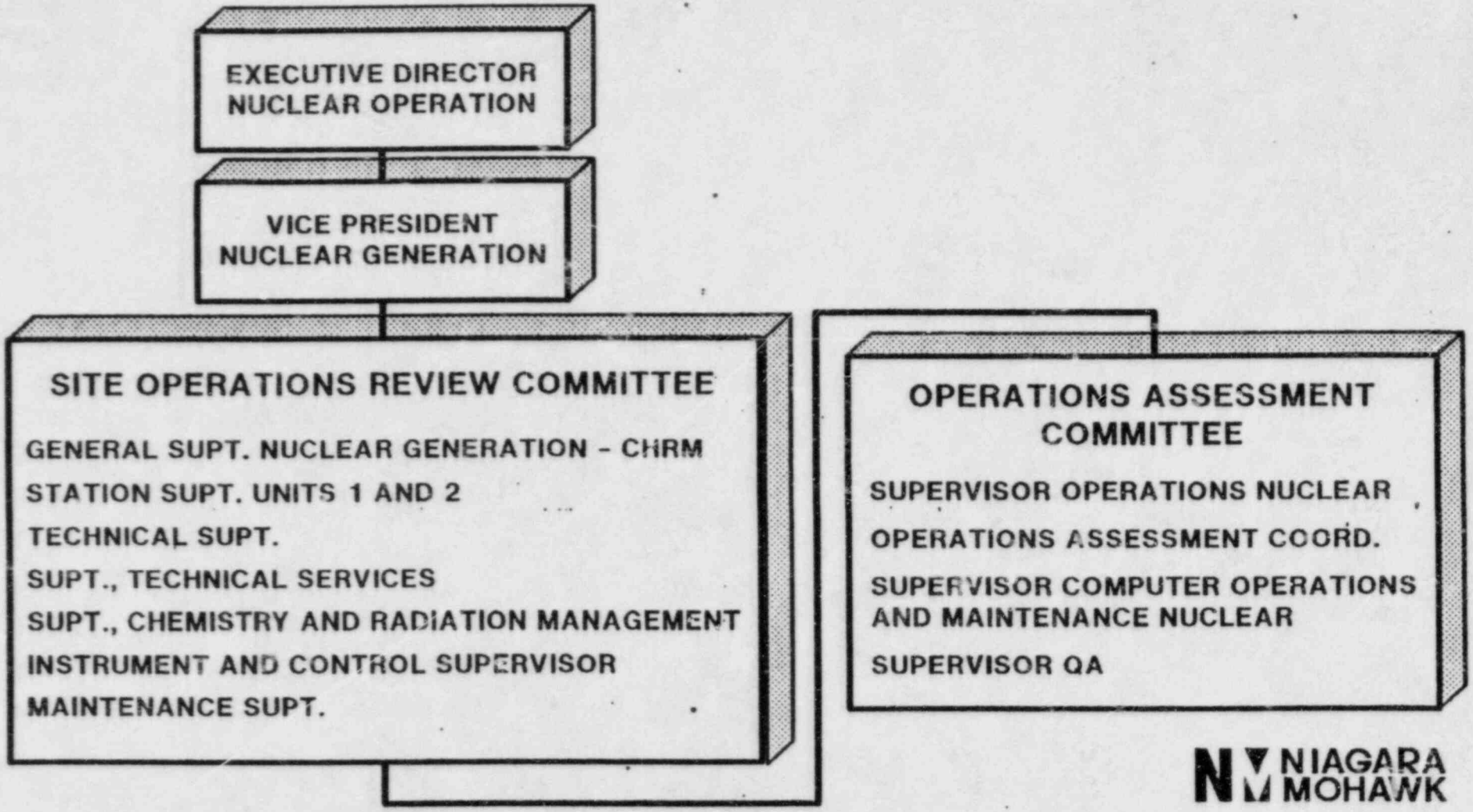
NIAGARA MOHAWK

SAFETY REVIEW AND AUDIT OF OPERATIONS ORGANIZATION



NIAGARA MOHAWK

SAFETY REVIEW AND AUDIT OF OPERATIONS ORGANIZATION



NIAGARA MOHAWK

THOMAS LEMPGES

Vice-President
Nuclear Generation

NIAGARA MOHAWK

INDUSTRY INTERACTIONS

Members of the Following:

- Institute of Nuclear Power Operations
- Atomic Industrial Forum
- Edison Electric Institute
- NUMARC
- BWR Owner's Group
- American Nuclear Society
- Electric Power Research Institute

NIAGARA MOHAWK

INDUSTRY INTERACTIONS

INPO Participation

- Nuclear Network (Formerly Notepad)
- Nuclear Plant Reliability Data System (NPRDS)
- Significant Event Evaluation and Information Network (See-In)
- Various Training and Accreditation Programs

NIAGARA MOHAWK

RICHARD B. ABBOTT

Station Superintendent -
Nine Mile Point 2

NIAGARA MOHAWK

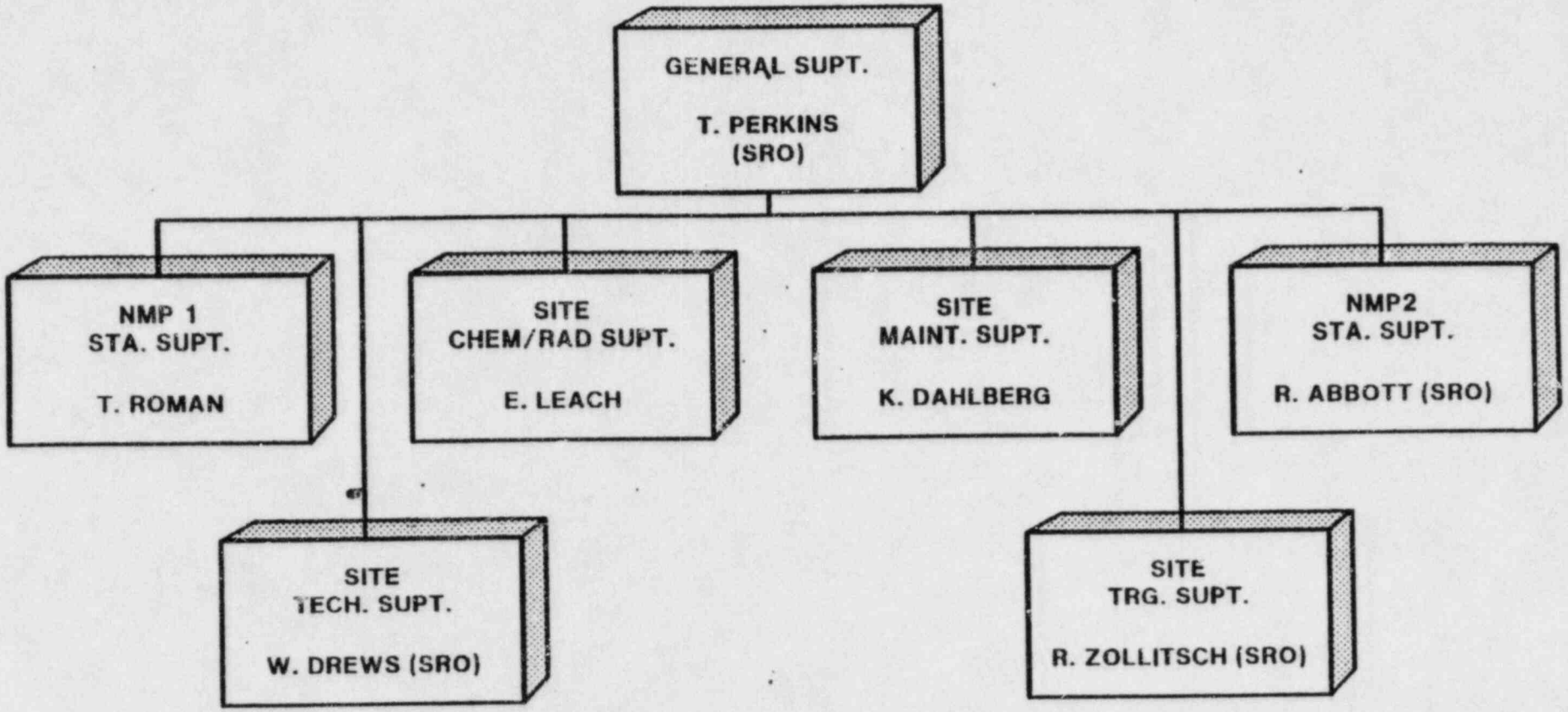
ORGANIZATION AND STAFFING

- Experienced Personnel from Startup and Operation of Fitzpatrick and Nine Mile Point Unit One
- 16 Years of Safe Operation of Nine Mile Point Unit One
- Well Prepared Site Support Organization in Place and Functioning
- Highly Experienced Supervisory Personnel on Shift
- Proven Commitment to Plant Safety

NIAGARA MOHAWK

ORGANIZATION AND STAFFING

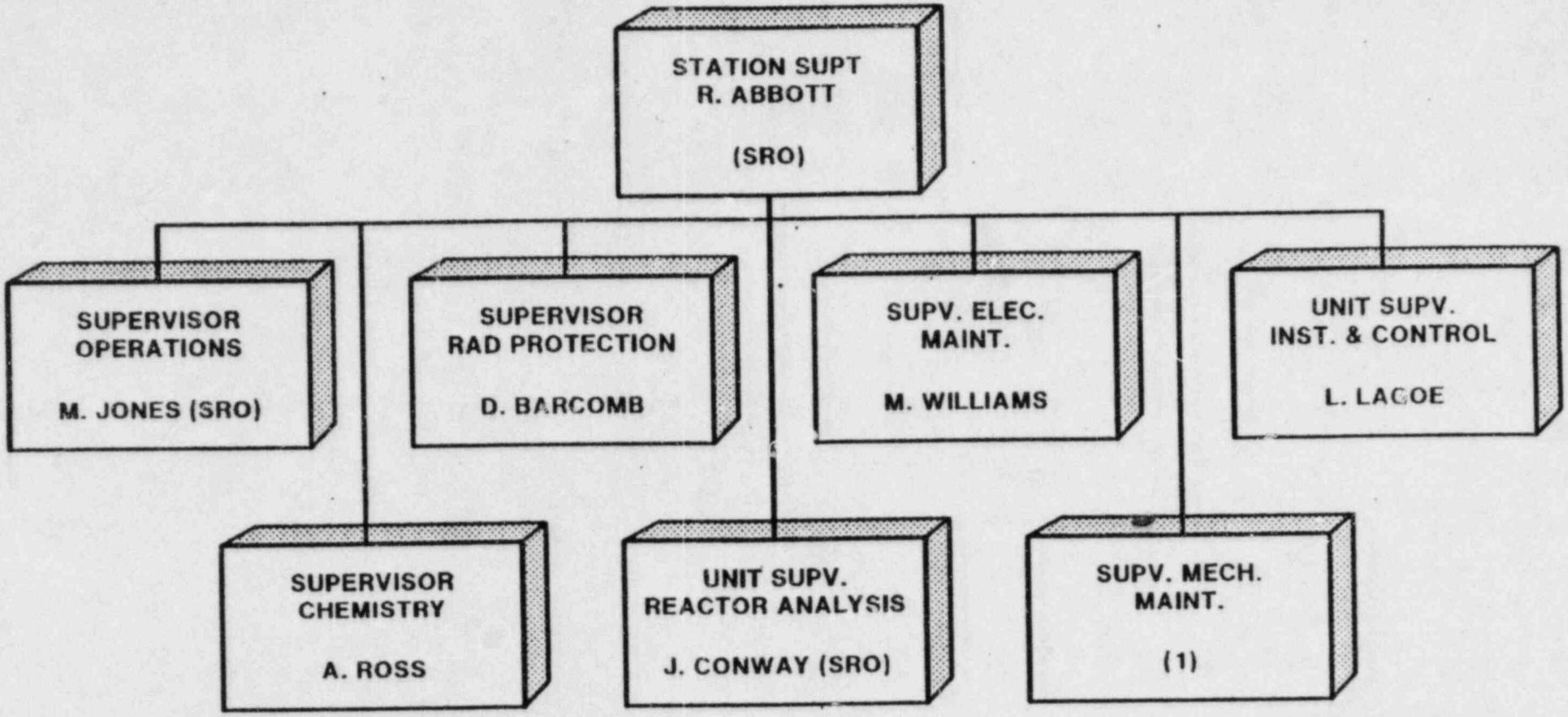
Nine Mile Point
Nuclear Generation Site Organization



NIAGARA MOHAWK

ORGANIZATION AND STAFFING

Nine Mile Point Unit 2
Station Organization

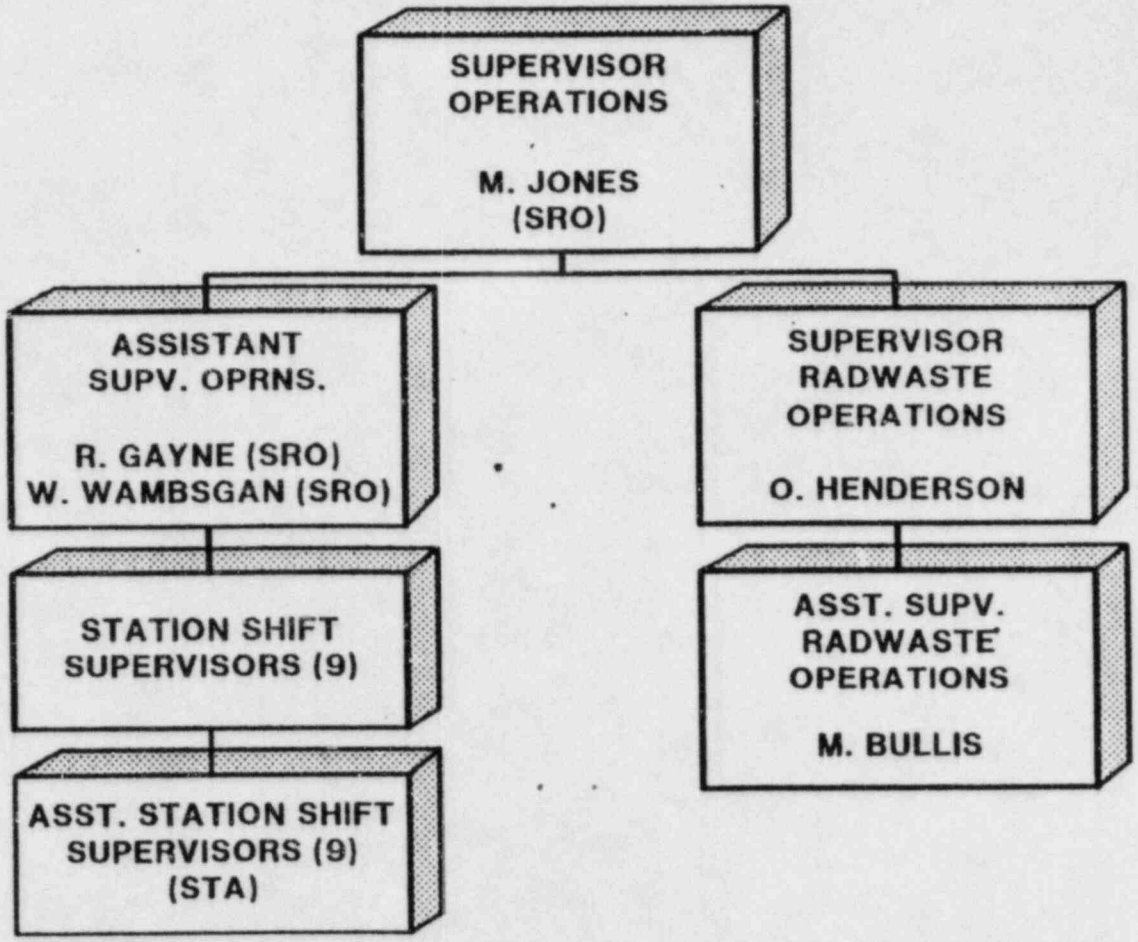


(1) Position Open - Currently Filled by Supt. Mech. Maint.

NIAGARA MOHAWK

ORGANIZATION AND STAFFING

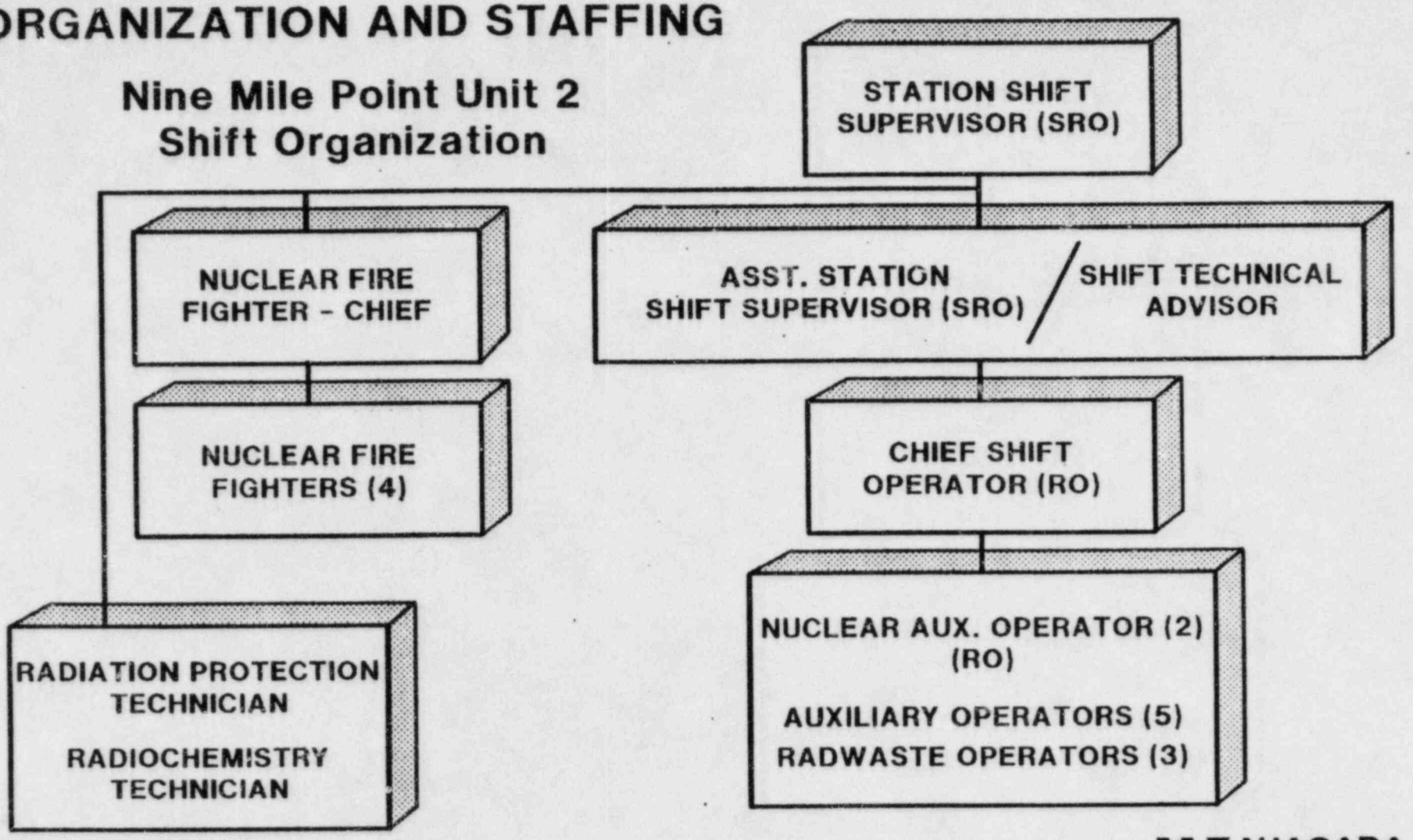
Nine Mile Point Unit 2
Operations Department



NIAGARA MOHAWK

ORGANIZATION AND STAFFING

Nine Mile Point Unit 2
Shift Organization



NIAGARA MOHAWK

ORGANIZATION AND STAFFING

Nine Mile Point 2 Operations Dept. Supervision Qualification Summary

Name	Previous License(s)	Current License	Experience Years			Degree
			Total Power Plant	Total Nuclear	BWR Commercial	
M. Jones Supv. Ops.	RO NMP1	SRO NMP1	13	13	13	B.S.
R. Gayne Asst. Supv. Ops.	RO NMP1 RO JAF SRO JAF	SRO NMP1	16	16	16	-
W. Wambsgan Asst. Supv. Ops.	RO NMP1 RO JAF SRO JAF	SRO NMP1	16	16	16	-
O. Henderson Supv. Radwaste	-	-	7	7	4	B.S.
M. Bullis Asst. Supv. Radwaste	-	-	3	3	3	-

NIAGARA MOHAWK

ORGANIZATION AND STAFFING

Nine Mile Point Unit 2 Station Shift Supervisors Qualification Summary

			Experience Years			
Name	Previous License(s)	Current License	Total Power Plant	Total Nuclear	BWR Commercial	Degree
A. Anderson	RO JAF SRO JAF	SRO NMP1	14	14	10	A.A.S.
M. Colomb	RO JAF	SRO NMP1	16.5	14.5	14.5	A.A.S.
W. Davey	RO JAF	SRO NMP1	16.5	16.5	10.5	A.A.S.
A. Degracia	-	RO NMP1	9	9	9	A.A.S./B.A.
J. Kibbe	RO JAF	SRO NMP1	16	16	16	-
G. Moyer	SRO JAF	SRO NMP1	26	26	10	A.A.S.
J. Poindexter	RO NMP1	SRO NMP1	9	9	9	-
D. Topley	-	SRO NMP1	7.5	7.5	7.5	B.S. P.E.
E. Townsend	RO JAF	SRO NMP1	16	16	12	-

NIAGARA MOHAWK

ORGANIZATION AND STAFFING

Nine Mile Point Unit 2 Asst. Station Shift Supv. (STA) Qualification Summary

Name	Previous License(s)	Current License	Experience Years			Degree
			Total Power Plant	Total Nuclear	BWR Commercial	
B. Boucier	-	-	1.5	1.5	1.5	B.S.
R. Carson	-	-	5	5	1	B.S.
A. Denny	G.E. SRO Cert.	-	16	16	16	B.S.
E. Genova	-	-	5.5	5.5	3.5	B.S.
J. Helker	-	-	8.5	8.5	2.5	B.S.
W. Piccirilli	-	-	6.5	5.5	.5	B.E.
D. Ranalli	-	-	5.5	5.5	.5	B.S.
G. Sanford	-	-	8.0	8.0	1.0	B.S.
D. Wilson	-	-	9.5	9.5	9.5	B.S.

NIAGARA MOHAWK

TRAINING

Simulator

- Meet ANS/ANSI 3.5 (1981) and Regulatory Guide 1.149
- Features
  - Freeze
  - 20 Initial Conditions
  - Fast Time/Slow Time
  - Snap Shot
  - Back Track
- Updating
  - Once per Year
  - 18 Months after Commercial
- Available for First Cold License Class

NIAGARA MOHAWK

TRAINING

Licensed Operator (Cont'd)

- Simulator
  - All License Applicants Attend as Outlined in Enclosure 1 of H. R. Denton Letter 3/28/80 (NUREG .0737)
  - Simulator Examinations Administered on Plant Reference Simulator
- Tests and Audits

NIAGARA MOHAWK

TRAINING

Non-Licensed Operator

- Classroom
  - Nuclear Power Plant Fundamental (2 Weeks)
  - Mathematics (2 Weeks)
  - Physical Science (2 Weeks)
  - Systems Training (4 Weeks)
- On-Job Training
  - Participation in Shift Operations
  - Duration Until Meet Experience Eligibility Reqt. of 10CFR55 to become Licensed Operator
  - Training Manual Indicating Required Evolutions, Reading and Assignments

NIAGARA MOHAWK

TRAINING

Licensed Operator

- Technical Training (Classroom)
  - Reactor Operation/Theory
  - Plant Operating Characteristics
  - Plant Systems
  - Operating Procedures
  - Administrative Procedures
  - Emergency Plan
  - Technical Specifications
  - Plant Transients
  - Use of Installed Plant Systems to Control or Mitigate an Accident
  - Heat Transfer, Fluid Flow, Thermodynamics
- On-Shift Training
  - 3 Months on Shift Participation
  - Training Manual of Minimum Evolutions Which Includes as a Minimum Item Referred to IN10CFR55.23

NIAGARA MOHAWK

TRAINING

Chemistry/Radiochemistry Technician

- Technician A
  - Math
  - Physics
  - Mechanical/Electrical Fundamentals
  - Chemistry
  - Analytical Laboratory
  - Radiochemistry
  - Counting Room Lab
  - BWR Technology
- Technician B
  - Atomic Absorption Spectrosopy
  - Gas Chromatography
  - Radioactive Waste Solidification/Processing
  - Surveillance Testing
  - Water Quality/ Management
  - Effluent Monitoring

NIAGARA MOHAWK

TRAINING

- Non-Licensed Staff Training to Support Nine Mile Point
- Non-Licensed Operator Training Insures Eligibility to become Licensed Operator
- Licensed Operator Training Program Stresses Necessary Knowledge and Skills
- Plant Reference Simulator Available for Cold License Training
- Experienced Training Personnel including SRO and Professional Training Certification

NIAGARA MOHAWK

TRAINING

General Employee

- Administrative Procedures
- Nuclear Security Orientation
- Quality Assurance Training
- Site Emergency Plan
- Industrial Safety
- Fire Protection
- Radiation Protection
- Respiratory Protection

NIAGARA MOHAWK

MR. CHARLES V. MANGAN

Vice President
Nuclear Engineering & Licensing

NIAGARA MOHAWK


Glens Falls
Syracuse
Utica
Albany
Hudson

- Niagara Mohawk has 30 Years of Nuclear Experience

- Nine Mile Point Unit 1 has 15 Years of Operating Experience

NIAGARA MOHAWK

NUCLEAR EXPERIENCE

1953 - Fermi Unit 1 Design

1958 - Peach Bottom Unit 1

1959 - Nuclear Engineering Section

1960 - Vallecitos Design

1963 - Nine Mile Point Unit 1 Design

1969 - Nine Mile Point Unit 1 Operation

1969 - James A. Fitzpatrick Design/Operation

1974 - Nine Mile Point Unit 2 Construction Permit

NIAGARA MOHAWK

NRR STAFF PRESENTATION TO THE ACRS

SUBJECT: NIAGARA MOHAWK POWER CORPORATION
OPERATING LICENSE APPLICATION
FOR NINE MILE POINT NUCLEAR STATION - UNIT 2

DATE: FEBRUARY 20 - 21, 1985

PRESENTER: EDWARD J. WEINKAM, III

PRESENTER'S TITLE/BRANCH/DIV: LICENSING PROJECT MANAGER
LICENSING BRANCH NO. 2
DIVISION OF LICENSING

PRESENTER'S NRC TEL. NO.: 301-492-8349

SUBCOMMITTEE: DR. C. SEISS
MR. J. EBBERSOLE

STATUS OF REVIEW

- SER ISSUED FEBRUARY 1985

- FES SCHEDULED APRIL 1985

- SSER #1 SCHEDULED MAY 1985

- NO HEARINGS SCHEDULED

- CONSTRUCTION COMPLETION SCHEDULED FOR 2/86

FACILITY COMPARISON

	NMP-2 BWR/5, MARK II	WNP-2 BWR/5, MARK II	LASALLE BWR/5, MARK II
RATED THERMAL POWER, (MWT)	3323	3323	3293
GROSS ELECTRICAL OUTPUT (MWE)	1202	1150	1122
MS FLOWRATE (LB/HR)	14,263,000	14,295,000	14,166,000
RECIRC FLOWRATE (GPM)	47,200	47,250	47,250
MAX HEAT FLUX ($BTU/FT^2/HR$)	361,600	428,360	361,000

OUTSTANDING ISSUES

1) SNOW LOADS
2) RWCU LINE BREAK - CONFIRMATORY
3) PRESERVICE INSPECTION/INSERVICE INSPECTION
4) EQUIPMENT QUALIFICATION
5) STEAM BYPASS - CONFIRMATORY
6) SECONDARY CONTAINMENT BYPASS
7) CONTAINMENT ISOLATION
8) CONTAINMENT LEAK TESTING
9) CONTAINMENT FRACTURE TOUGHNESS
10) POST-ACCIDENT MONITORING INSTRUMENTATION
11) SEPARATION CRITERIA
12) SAFE/ALTERNATE SHUTDOWN
13) ESSENTIAL LIGHTING
14) AIR START SYSTEM
15) OPERATIONS MANAGEMENT
16) PGP's
17) PREOP AND S/U TEST ABSTRACTS
18) DCRDR AND SPDS

OUTSTANDING ISSUE NO. 1
SNOW LOADS

APPLICANT

- ORIGINAL DOCUMENTATION OF DESIGN IN FSAR

  °WEIGHT ON GROUND, 100 YEARS RECURRENCE - 85 PSF

  °48-HOUR PMWP-56 PSF

  °YIELDS EXTREME SNOW LOAD-141 PSF

- REVISED DESIGN BASIS DOCUMENTATION (APRIL 1984 FSAR REV)

  °100 YEAR WEIGHT ON GROUND - 45 PSF

  °NO EXTREME SNOW LOAD CONSIDERATION

STAFF REQUEST

- JUSTIFY REDUCTION FROM 85 PSF TO 45 PSF IN LIGHT OF CURRENT AVAILABLE MET DATA

- PROVIDE EXTREME ENVIRONMENTAL LOAD COMBINATIONS

- CAN CATEGORY I STRUCTURES WITHSTAND ABOVE LOADINGS

OUTSTANDING ISSUE NO. 6

SECONDARY CONTAINMENT BYPASS LEAKAGE

- PROVIDE INFORMATION ON OPERATION AND TESTING TO VERIFY LOW LEAKRATE FOR MSIV'S

- PROVIDE INFORMATION ON WATER SEALS IN LINES CONNECTED TO CONTAINMENT ATMOSPHERE/REACTOR VESSEL

OUTSTANDING ISSUE NO. 7

CONTAINMENT ISOLATION

STAFF CRITERIA

- PROVIDE EXEMPTION REQUEST FOR CHECK VALVES OUTSIDE CONTAINMENT IN RECIRC PUMP SEAL COOLING LINE

OUTSTANDING ISSUE NO. 8

CONTAINMENT LEAK TESTING

- PROVIDE EXEMPTION REQUEST FROM TYPE A AND C TESTING FOR RECIRC FLOW CONTROL VALVE HYDRAULIC LINES

- PROVIDE EXEMPTION REQUEST FROM TYPE C TESTING FOR TIP BALL VALVES

OUTSTANDING ISSUE NO. 11

SEPARATION CRITERIA

ISSUE

- CLARIFY WHEN AND WHERE ANALYSIS IS USED TO JUSTIFY LESS THAN REQUIRED 6-INCH SEPARATION IN PGCC CABINETS

OUTSTANDING ISSUE NO. 12

SAFE AND ALTERNATE SHUTDOWN

ISSUE

- STAFF REVIEWING ADDITIONAL INFORMATION ON SAFE AND ALTERNATE SHUTDOWN CAPABILITIES

OUTSTANDING ISSUE NO. 13

ESSENTIAL LIGHTING

ISSUE

- DEMONSTRATE ABILITY TO MAINTAIN LIGHTING IN PLANT SAFETY-RELATED AREAS OTHER THAN THOSE COVERED BY EMERGENCY LIGHTING

OUTSTANDING ISSUE NO. 14

AIR START SYSTEM

ISSUE

- LACK OF DRYERS IN AIR START SYSTEM

NUREG/CR-0660 IDENTIFIES MOISTURE IN AIR START SYSTEM AS LEADING CAUSE OF DG UNRELIABILITY

OUTSTANDING ISSUE NO. 15

OPERATIONS MANAGEMENT

- PROVIDE DETAILS ON REVIEW AND AUDIT FUNCTION OF:

  °SITE OPERATIONS REVIEW COMMITTEE (SORC)

  °SAFETY REVIEW AND AUDIT BOARD

- PROVIDE INFORMATION ON INTERDISCIPLINARY REVIEW OF PROCEDURES PRIOR TO SUBMITTAL TO SORC

- PROVIDE ADMINISTRATIVE PROCEDURE DEFINING WHERE SHIFT SUPERVISOR/ASSISTANT MAY BE WHEN ON SHIFT

- PROVIDE PROCEDURES FOR FEEDBACK OF OPERATING EXPERIENCE (TMI I.C.5)

NRC REGION I

EVALUATION OF CONSTRUCTION QUALITY

at

NINE MILE POINT UNIT 2

AS OF JANUARY 1985

Presented to ACRS Subcommittee

Syracuse, New York

February 20-21, 1985

Approved:

2-19-85

TABLE OF CONTENTS

NINE MILE POINT 2 CONSTRUCTION

1.0 Introduction

Nine Mile Point, Unit 2, is currently under construction on the Southeast shore of Lake Ontario located northeast of Oswego, New York. The plant is jointly owned by: Niagara Mohawk Power Corp. (41%); New York State Electric and Gas Corp. (18%); Long Island Lighting Co. (18%) Rochester Gas and Electric Corp. (14%); and Central Hudson Gas and Electric Corp. (9%). The construction permit for Nine Mile Point 2 was issued on June 24, 1974. Stone and Webster Engineering Corp. serves as the Architect/Engineer and Construction Manager.

The Nine Mile Point, Unit 2, reactor is a General Electric BWR5 with a net electrical output of 1080 MWe. The primary containment is a Mark II over-and-under concept with a reinforced concrete steel lined pressure suppression structure.

NRC Region I (previously the AEC) began performing inspections at Nine Mile Point 2 in 1972 and has completed about 120 inspections since that time. These inspections involved the observation of work in progress, examination of completed work, examination of work control documents, independent measurements, and the examination of quality records.

This report describes the process used by the licensee to monitor and control construction quality, discusses the results of independent evaluations of the licensee performance, and addresses both the NRC inspection program and the Systematic Assessment of Licensee Performance (SALP) efforts conducted by Region I. Numerous deficiencies have been identified with the implementation of site Quality Assurance (QA) programs and the quality of installed hardware. The Regional staff has confidence that current construction activities are generally in compliance with regulatory requirements. Pending Regional verification of licensee corrective actions in response to both team and routine inspection findings, and closure of existing open concerns, the overall plant construction and compliance to NRC regulatory requirements will be assessed at a future date.

2.0 Independent Evaluations

Aside from those quality assurance/quality control (QA/QC) and project management evaluations that normally take place during major facility construction programs, the applicant has participated in evaluation programs sponsored by independent organizations. The independent evaluations include those sponsored by the Institute of Nuclear Power Operations (INPO) and the Joint Utility Assessment Team (JUAT).

Region I is cognizant of the findings generated during the independent evaluations.

2.1 INPO Evaluations

The licensee and other co-tenants conducted a self-evaluation based upon INPO performance objectives and criteria. The self-evaluation was conducted in September 1982 and approximately 2600 man-hours were expended performing direct process observation, personnel interviews and document review. Problems were identified with QA/QC staffing levels, some areas of design control, segregation of nonconforming material. No substantial hardware deficiencies were identified.

An INPO construction audit was conducted from September 24 - October 5 and October 15 to October 19, 1984. The audit was scheduled to address organizational structure, design control, material storage, RHR system design verification, QA program implementation, equipment qualification, hardware installation inspections, plant safety, and test activities. The formal INPO audit report has not yet been released. Three Construction Deficiency Reports were prepared as a result of INPO concerns, regarding control of equipment spare parts; diesel generator voltage profile study for 600 V Class IE starting loads; and the Auxiliary system voltage profile did not include 208 /120 VAC systems.

The audit identified strong points regarding licensee assessment of contractor's performance and the scope of Stone and Webster Engineering Corporation (SWEC) Engineering Assurance audits. The final report is scheduled to be reviewed by Region I when it becomes available.

2.2 Joint Utility Assessments

The Joint Utility Assessment Team (JUAT) program provides independent audits, by utility senior management, of the licensee QA activities. This form of audit satisfies the requirements of 10 CFR 50 Appendix B Criteria II for regular utility oversight of the status and adequacy of the implementation of the QA program. The audits evaluate the licensee performance, and recommendations are made for program improvement as necessary. To date, there have been four audits of the licensee corporate and site QA efforts. The most recent assessment covered the period from March 5 to 9 of 1984. The scope of the audit included QA coverage of Start-up and Test activities; effectivness of nonconformance trending programs; and timeliness of corrective actions to the NRC CAT inspection. Several enhancements were recommended for improving the trending efforts and resultant application of corrective actions. The audit identified inadequate followup to QA nonconformances in that root causes are not identified and corrective action to preclude recurrence are not specified in the nonconformance report disposition.

3.0 Region I and I&E Headquarters Inspection Program

Region I inspections of construction activities at Nine Mile Point 2 have been conducted in accordance with the program established by the Office of Inspection and Enforcement (I&E). The objective of these safety inspections is to obtain sufficient information through direct observation in the field, personnel interviews, and review of procedures and records to determine

whether construction and installation of safety-related components, structures, and systems meet applicable requirements. A portion of the inspection effort is directed toward inspection of the applicant's Quality Assurance Program and its implementation. The Nine Mile Point Unit 2 QA program for the design and construction phase is described in the Preliminary Safety Analysis Report.

The NRC inspection program is currently performed by both resident and region-based generalist and specialist inspectors. This program has been developed over a period of years to place emphasis on potentially generic deficiencies and on areas experience has shown to be problem areas.

The Nine Mile Point 2 site was staffed with a construction resident inspector from October 1981 to May 1983 and from July 1983 to the present. A second construction resident was assigned in October 1984. In November 1984, an additional Senior Resident Inspector was dedicated on a part-time basis to follow the pre-operational testing program. The direct observation, independent verification, and daily presence of resident inspectors at the facility provide a means to detect quality problems and to monitor the licensee compliance to the site QA programs.

3.1 Inspection History

Initial inspection of the applicants QA program was performed in 1972. Followup inspections were subsequently performed to verify the implementation of an acceptable QA program. Regional inspection has been performed in concert with the licensee completion of construction activities.

Region I inspections monitored activities including soils and foundations, concrete work, safety-related structures, piping, welding, electrical activities, safety-related mechanical components, instrumentation, and related areas. The enclosure identifies the inspections performed, the areas inspected, and significant inspection findings. At present, about 120 inspection reports have been issued or are pending for the Nine Mile Point 2 facility. A comparison of inspection hours expended at BWR facilities at a similar stage of construction is shown below:

Nine Mile Point 2	Hope Creek	Shoreham	Susquehanna 1	Limerick
8250 hrs.	7600 hrs.	6500 hrs.	7100 hrs.	7800 hrs.

3.2 Enforcement History

The inspection program uses enforcement measures to promote adherence to regulatory requirements, reduce repeated nonconformances, and encourage self-identification and correction of nonconformances. Notices of Violations, have been issued when necessary. The applicant has been required to respond to these Notices of Violation and provide the proposed actions to correct the nonconforming conditions and to prevent recurrence of similar violations. NRC inspectors and management have reviewed and evaluated these responses for acceptability.

The inspection staff confirms, during subsequent inspections, that corrective actions are properly implemented. The following table gives a comparison of the Nine Mile Point 2 enforcement statistics with those of three other plants. Early enforcement actions were classified as "violations", "infractions", and "deficiencies" (in descending order of severity) while the more recent reports contain violations categorized into severity levels ranging from I to V (again, in descending order) and deviations.

Facility	CPPR	VIOL	INF	DEF	I	II	III	IV	V	DEV	TOTAL
Shoreham	4/14/73	0	38	6	0	0	0	17	13	1	75
Susq. 1	11/2/73	0	47	15	0	0	0	18	19	3	102
Hope Crk.	11/2/74	0	19	5	0	0	0	19	13	2	58
NMP-2	6/24/74	0	12	1	0	1	1	29	20	1	64

The early enforcement history did not identify any significant programmatic weakness within the application of the QA program at Nine Mile Point 2. A greater number of recent violations with higher severity levels has been assessed against Nine Mile Point 2. The level II violation was issued for a multitude of QA problems identified during an I&E CAT inspection. A $100,000 Civil Penalty and Order were simultaneously issued to the licensee. The Level III violation was written for using trainees to conduct inspection efforts, and the identification of falsified inspection records. A $100,000 Civil Penalty was simultaneously issued.

Significant deficiencies have been identified with the application of QC inspection programs and the adequacy of nondestructive examination tests. The licensee has instituted numerous corrective actions including program revisions and hardware reinspections. As a result of the I&E CAT Order, a third party has evaluated the adequacy of the implemented corrective actions. The licensee is formulating plans to address the recommendations of that third party audit. The majority of the CAT concerns are currently carried on the open item list, pending Region I closeout. Until the verification closeout cycle is complete, definitive statements regarding the corrective action implementation, in response to numerous deficiencies, cannot be made.

3.3 Regional Construction Team Inspection (RCTI)

For a more in-depth assessment of construction quality, two Regional Construction Team Inspection (RCTIs) have been conducted.

The first inspection was conducted from November 30 to December 18, 1981 by three region-based inspectors, the resident inspector and a section chief. The inspection covered site quality assurance activities; design controls; project management practices; procurement control; and construction controls in the electrical, mechanical and nondestructive examination areas. The inspection function was to assess the licensee's management control of the Nine Mile Point 2 construction activities. The inspection involved 394 on-site inspection hours.

Several problems were identified as noted below.

- Structural steel items improperly released from storage
- Inadequate training of contractor personnel
- Overdependence on contractor construction personnel to monitor quality related activities
- Nonconformances not evaluated to determine root cause
- Untimely corrective action for QA identified deficiencies
- Project Manual does not define position descriptions, leading to confusion on roles and responsibilities
- Licensee has set inequitable pay and benefits for QA personnel and exercised ineffective management control over SWEC and the sub-contractors.
- Inadequate design control measures to assure translation of regulatory requirements into design criteria.
- Cable tray procurement documents did not conform to NEMA standard.

The Notice of Violation associated with the team's inspection report (50-410/81-13) and the SALP Cycle 2 report, transmitted the fact that the observed deficiencies, when viewed in total, are indicative that an unappropriate and ineffective Quality Assurance program had been implemented at Nine Mile Point 2.

Satisfactory observations were identified in the areas of document control; records control; audit programs; design change control; design interfaces; 10 CFR 50.55(e) reporting; receiving inspection; warehouse facility; weld fitups and welding material control.

The second inspection was conducted from December 3 to December 14, 1984 by six region-based inspectors, the senior resident inspector, and a section chief. The inspection covered site project management; quality assurance; design control; welding; electrical supply and distribution activities; nondestructive examination; structural installations; and mechanical installations. The inspection focused on hardware associated with the High Pressure Core Spray system. Two potential violations were identified; one for particulate contamination of piping systems and another for undersized welds on an instrumentation support rack. THe inspection noted an improvement in the conduct of site quality activities post - I&E CAT inspection and found the installed hardware to meet the regulatory criteria with the exceptions identified above as potential violations. The inspection report has not yet been formally issued, and the licensee will be required to respond to the noted concerns.

3.4 Independent Non-Destructive Examination (NDE)

An independent Non-Destructive Evaluation (NDE) verification by NRC Region I was conducted during Spring 1984 using the Region's mobile NDE laboratory. The inspection involved 662 inspection hours.

The purpose of the inspection was to verify the adequacy of the licensee's quality control program for NDE through independent testing. This was accomplished by performing the same tests that the licensee had performed, and then comparing Region I results to those of the licensee. The program also performed pipe wall thickness measurements and radiographic film comparison.

An NRC inspector made a random selection of weldments. These were intended to provide a representative sample of piping systems, components, and structural weldments which represent various pipe sizes, shop and field weldments fabricated to AWS and ASME Class 1, 2, and 3 codes. The items selected were previously accepted by the licensee based on vendor shop and on site QA/QC records.

The Region I examinations were performed using detailed procedures specifically written for compliance with the licensee's PSAR commitments to the ASME III Boiler and Pressure Vessel Code. The intent was to duplicate, to the extent practicable, the techniques and methods of the original examinations. The results of those independent examinations were as follows:

Radiography (RT) - Thirty-five welds were examined by radiography using an Iridium-192 source. The weld sample included ASME III Class 1,2,and 3 carbon and stainless steels. All welds were found acceptable.

Liquid Penetrant (PT) - Thirty welds and the adjacent base metal were examined by liquid penetrant. All areas examined were found acceptable.

Magnetic Particle Examination (MT) - Thirty ASME III pipe welds and AWS structural welds were examined using magnetic particle techniques. All areas examined were acceptable.

Visual Examination (VT) - Eighty-six weldments and adjacent base material were visually inspected for weld reinforcement, overall workmanship, and surface condition. Forty-one ASME NF pipe support welds and twenty AWS D1.1 structural welds were examined. All areas examined were acceptable.

Thickness Measurement - Thirty-four welds and adjacent pipe material were examined using an ultrasonic thickness gauge. Minimum wall thicknesses were determined from ASTM standard pipe size and nominal thickness charts. One ASME shop weld was found to be 0.015 inches below minimum wall thickness and a violation was issued.

Anchor Bolt Ultrasonic Examination - Forty installed concrete anchor bolts were ultrasonically examined for proper length, all were found to be acceptable.

Hardness Measurements - Twenty-six welds were examined for Brinnell hardness values, all were found to be acceptable.

Radiographic Film Review - One hundred and sixty-eight pipe weld radiographs were reviewed to verify accurate film interpretation and the adequacy of the radiographic program. One unacceptable linear indication was identified for which an interpretation was not recorded on the reader sheet and another film was found to portray an unacceptable transverse linear indication. Two violations were issued.

The Region I independent NDE verification showed generally good agreement with the applicant's determinations. Further licensee review of radiographic film has been accomplished to provide assurance of the technical adequacy of the film interpretations.

3.5 Inspection and Enforcement Construction Appraisal Team (CAT) Inspection

The Office of Inspection and Enforcement (I&E) conducts Construction Appraisal Team (CAT) inspections to evaluate the implementation of management control of construction activities at selected facilities and to evaluate the quality of construction at nuclear plants. The inspection team was comprised to six NRC inspectors; five consultants; and a team leader. The inspection consisted of a detailed examination of selected installed hardware subsequent to the performance of licensee quality control inspections; a selective examination of procedures and records; observation of in-process work; and interviews of site personnel. The CAT inspectors examined the areas of electrical and instrumentation installations; mechanical construction; welding installations; nondestructive examination reviews; structural construction; material traceability, equipment storage and maintenance; and Quality Assurance activities.

The inspection detected a broad range of problems in the construction and inspection programs as identified below:

Electrical and Instrumentation Construction

Electrical cable and raceway installations exhibited separation problems, particularly in the control room complex, that had not been identified by Quality Control nor had the licensee defined how these deficiencies would be rectified at a later date. Indeterminate bolting material was utilized on the station battery racks and at shipping splits for switchgear and motor control center enclosures. Inspection records did not reflect the design documents to which the inspection had been performed. The inspection procedures were found deficient with respect to attributes on raceway marking, acceptance criteria for separation, bolting material identification, and protrusions into cable trays.

Mechanical Construction

The inspection found that HVAC and piping runs were generally erected in accordance with the applicable requirements. Several pipe supports were found to contain deficiencies not previously identified by contractor QC personnel. The concrete expansion anchor installation program acceptability was questioned as the pre-qualification tests had been performed in a

concrete mix of lower compressive strength than normally used for seismic Category I structures. Significant loss of pre-load was observed when the installed expansion anchors were torque tested.

Welding and Nondestructive Examination

The NRC Construction Appraisal Team inspection identified major deficiencies in the ITT Grinnell program for ASME code radiographs. The associated Stone & Webster Engineering Corportaion and the applicant's program for review and acceptance of these radiographs was found to be deficient. Problems involving weld quality, film quality, and inadequate documentation were identified by the NRC Construction Appraisal Team. It was noted that some similar problems were also identified by site quality assurance/quality control programs; yet timely corrective actions were not being taken. Inadequate liquid penetrant surface examination of ASME pressure boundary welds was identified. The site structural welding to the AWS Code was found to be generally satisfactory.

Civil and Structural Construction

The concrete and structural steel installations were found to be in conformance with regulatory and specification requirements. Minor problems were identified with concrete placement activities and records.

Material Traceability, Storage and Maintenance

The project storage and maintenance programs were examined and found to be acceptable. Inadequate control of unused weld filler material was identified and some pipe support members lacked the requisite material traceability.

Quality Assurance

The inspection findings indicated that the licensee had implemented an ineffective audit program. Nonconforming items were found to have been dispositioned on documents other than formal QA documents such that the trend programs were bypassed. Inadequate document control measures were observed in that out of date drawings were utilized in the field and inspection records were found to not reflect the design documents used during the conduct of the inspection. Untimely conduct of Quality Control inspections was observed due to the wide disparity between the number of items completed by construction in relationship to those inspected by Quality Control.

On March 20, 1984 an Enforcement Action (EA) was issued predicated upon the CAT identified problems at Nine Mile Point 2. The Enforcement was composed of a Notice of Violation, an Order, and a proposed Civil Penality of $100,000. The Notice of Violation reiterated the aforementioned CAT deficiencies. The Order called for an independent review of site corrective action programs, the development of a site management quality performance trend program, and the conduct of a management review audit.

The licensee responded to the Enforcement Action with steps to address the specific deficiencies and provided corrective/preventive action plans. A consultant (Management Analysis Company) was retained by the licensee to perform the review of corrective action programs. The licensee committed to develop a site quality trend program that would serve to monitor the quality levels of various installation activities.

In response to the CAT identified deficiencies, the licensee instituted a complete management reorganization at both corporate offices and the site. The following Niagara Mohawk personnel were removed from their involvement with Nine Mile: Senior Vice President; Vice President Nuclear Construction; Vice President of Quality Assurance; Construction QA Manager; Construction Manager; and Site QA Supervisor. The licensee has retained Management Analysis Company (MAC) to provide key nuclear experienced managers to fill both project and quality assurance positions. The licensee has significantly improved their control of site activities. Project management is located on-site and the line organization is such that the Stone and Webster project director now reports directly to the licensee project director. The QA managers of Stone and Webster and subcontractors have either been replaced or augmented with additional corporate level QA management to enhance the effectiveness of the QA organizations.

In addition to the management reorganization outlined above, the following correct actions have been implemented over the course of the past year

-- Increased licensee surveillance/audits of contractor performance, particularly hardware related.

-- Licensee QA review of inspection procedures/attributes to ensure adequate accept/reject criteria definition.

-- Sampling reinspection of mechanical equipment bolting to verify acceptability.

-- Sampling reinspection of structural steel weldments.

-- The Power Generating Control Complex (PGCC) was inspected to identify electrical separation violations.

-- The licensee performed in-depth assessments of the contractor QA organizations.

-- Hardware reinspections of previously accepted installations to establish the quality level of in site hardware.

-- The piping contractor re-performed liquid penetrant tests on ASME pressure boundary welds in response to the CAT identification of deficient weld examinations.

-- ASME pipe weld radiographs were re-interpreted to ensure that all rejectable indications had been resolved as corrective action to CAT identified radiographic violations.

Region I reviewed the CAT report and has identified the items that were classified as Violations or Followup items. These issues are currently tracked as open items. The licensee has implemented numerous corrective actions to address the problems in the form of hardware reinspections, radiographic film reviews; re-performance of nondestructive examinations, testing of concrete expansion anchor bolt to demonstrate load carrying capacity, enhancement of quality programs; increased audit/surveillance conduct, and management personnel reorganization. Region I has closely monitored the implemented actions, however, the majority of the CAT findings are still identified as open concerns pending formal Region I verification of implemented actions and closure within an inspection report.

The licensee developed a Quality Performance Management Program (QPMP) which monitors the quality status of the site. Key parameters such as quantity installed, quantity inspected, and QC acceptance rates are monitored for construction hardware commodities. The program monitors outstanding design changes and open QA deficiency documents. Trending is performed on some of the documented nonconforming conditions. Region I is monitoring the utilization of QPMP by the licensee through management meetings in conjunction with review of QPMP data; and attendance at the QPMP licensee review meetings.

3.6 Review of Construction Deficiencies

Significant deficiencies in design and construction, as defined in 10 CFR 50.55(e), are required to be reported to the NRC. Licensee management attention, has been devoted to this reporting activity and the licensee has been responsive to the 10 CFR 50.55(e) requirements.

Review by Region I indicates the licensee program for significant deficiency reporting is appropriately implemented. Nonconformances and programmatic QA deficiencies are reviewed by Quality Assurance and engineering personnel to determine whether items meet the criteria for reportability. Licensee upper management from QA, construction, operations, and engineering compose a site review committee to further evaluate deficiencies for reportability.

As of January 4, 1985, the licensee had reported 117 significant deficiencies, of which 29 are resolved and 88 remain outstanding. Licensee corrective actions have been instituted in response to the reported deficiencies, however the licensee has yet to verify the corrective actions. The items will be subsequently reviewed by Region I inspectors for closure.

The reported deficiencies for Nine Mile Point 2 have involved a variety of problems. The following item is an example of the licensee identification and correction of a 10 CFR 50.55(e) item:

CDR #82-00-02 - Defective Emergency Diesel Generator Lube Oil Strainer Baskets

The licensee was notified by Cooper Energy Services via a 10 CFR 21 report that a design deficiency existed with the diesel generator lube oil strainer baskets. Performance testing of the diesel by Cooper had demonstrated that the mesh strainer basket liner was torn loose at the top of the basket. Further testing showed the strainer mesh to disintegrate, with the potential to cause a bearing failure thus disabling the diesel generator.

The strainer baskets were redesigned and tested by the diesel manufacturer with no observed problems. SWEC initiated Nonconformance and Disposition (N&D) Report 4923 which reiterated the Part 21 information. The N&D was found to be a reportable item. Region I was verbally notified on February 5, 1982 of the deficiency with a followup report on March 4, 1982. The diesel vendor supplied the new strainer baskets, with installation directions, to the site. The new baskets were receipt inspected via Inspection Report X4002575 and Procurement Quality Assurance certifications were provided. The defective liner was replaced and SWEC QC verified the reassembly of the lube oil strainers. The corrective actions were reviewed by Region I and found to be acceptable as documented within Inspection Report 50-410/84-15.

3.7 Followup on Allegations

Allegations received by NRC Region I addressed both safety-related and non-safety-related areas. Each allegation is reviewed by regional management, and appropriate followup is determined based on potential safety significance. Significant allegations are investigated by members of the NRC Office of Investigations.

Region I records indicate that 25 Nine Mile Point 2 project allegations have been received. Of those allegations which have been substantiated, 3 resulted in enforcement actions as noted below:

- An allegation was received in February, 1983 that ITT welders were not provided weld procedures for ASME piping installation. The concern was substantiated through interviews with craft supervision and rod room attendants and a Level IV violation was issued. The licensee conducted extensive training programs to ensure that craft personnel were aware that weld procedures are maintained for reference at all ITT weld rod issue stations. The licensee verified that the weld procedures were indexed at the field stations.

- An allegation was received in April 1983 that inconsistent diesel generator loading sequences were assumed by General Electric and Stone and Webster Engineering Corporation. The FSAR was found to be inaccurate in regards to the load sequencing. A Level V violation was issued with regard to inaccurate design review. The licensee amended the FSAR to portray the correct load sequencing and instituted measures to enhance the review of FSAR submittals.

- An allegation was received in September 1982 that uncertified quality control personnel were performing inspections. Subsequent Region I investigation verified that inspections of safety-related electrical equipment had been performed solely by uncertified trainees. The associated inspection records were falsified, as qualified Level II inspectors had signed the documents, which signified the inspections were performed by certified personnel. The deficient inspection conduct and falsified inspection records demonstrated the need for the licensee to increase their management involvement with contractor activities to assure proper implementation of site QA/QC programs. The licensee reinspected the work performed by the trainees and did not identify substantive deficiencies.

The licensee has recently established an allegation clearinghouse. The program is identified as the Quality First Program (Q1P). Site employees are encouraged to report any quality concerns so that appropriate investigations can be performed. The Q1P program conducts exit interviews and maintains a toll free telephone line to report concerns. The QIP program provides feedback to the concerned employee after the investigation is completed.

3.8 Systematic Assessment of Licensee Performance (SALP)

The SALP program encompasses an integrated NRC staff review of licensee performance over an annual or eighteen month cycle. An analysis is performed with regards to the NRC observed strong points and weaknesses of the licensee construction and quality assurance efforts. The process serves to identify those areas to which licensee management should devote greater attention and to which greater NRC inspection resources will be allocated to achieve benefits in the quality of facility construction. Since the inception of the SALP program, the performance of the licensee has been assessed three times.

The first SALP addressed performance during the period from February 1, 1980 to January 31, 1981. Inspection activity had covered the containment structure, reactor pressure vessel installation, reactor pressure vessel internals, biological shield wall, and quality assurance. Only one notice of violation had been issued during that time frame for inadequate incorporation of design changes into the associated engineering drawings. The licensee had reported four non-causally linked 10 CFR 50.55(e) construction deficiency reports. No change was found necessary for the implementation of the Region I inspection program.

The second SALP addressed performance during the period from October 1, 1981 to September 30, 1982. The licensee performance was assessed as follows:

Functional Area	Category 1	Category 2	Category 3
Soils and Foundations; Containment and Other Safety-Related Structures	X		
Piping Systems and Supports; Safety-Related Components; Support Systems; Electrical Power Supply; Licensing		X	
Quality Assurance			X

Close licensee surveillance of the Soils and Foundation area contributed to the fact that no safety concerns were identified. A singular violation in regard to steel reinforcing bar substitution was the only adverse finding in the Safety-Related Structures area. A violation was detected wherein ASME Class I weld procedures had not been properly qualified for impact testing. Two enforcement conferences (50-410/82-06 and 50-410/82-08) had been held in June and July 1982 to discuss this particular problem. Region I attributed the deficiency to the following root causes: inexperience of the piping contractor personnel; ineffective Stone and Webster control of the piping contractor; and inadequate licensee attention to sub-contractor activities. The licensee committed to strengthen the piping contractor's QA and engineering staffs; increase Stone and Webster audits of the piping contractor; to increase management involvement with contractor activities; and to reorganize the licensee corporate offices to create a new position of Vice President - QA and Senior Vice President Nuclear Services to serve as responsible licensee management for all project matters, Region I identified deficiencies in the conduct of Preventive Maintenance activities resulted in the assumption of those responsibilities by Stone and Webster. Several concerns with the licensee implementation of the HVAC inspection program were raised. Four violations were identified in the Electrical Power Supply area including failure to specify design separation criteria in the installation specification; failure to assure that cable trays conform to procurement specifications; incorrect design of cable tray weldments; and inadequate welds deposited on cable tray cross braces. Significant weaknesses were identified within licensee an contractor QA programs including: inexperienced personnel on the licensee, Stone and Webster, and piping contractor QA staffs; failure of QA to identify programmatic weaknesses; licensee overdependence upon Stone and Webster QA to assure plant quality; inability of the licensee to resolve audit findings; lack of licensee control of Stone and Webster; and inadequate licensee management involvement in the project. The licensee responded to the identified deficiencies by implementing the following actions: creating a position of Vice President for Quality Assurance; adding personnel to the site QA staff; requiring increased licensee management presence onsite; increased licensee QA surveillance conduct; increased Stone and Webster Surveillance of contractor activities; and increased overall licensee management control of Stone and Webster activities.

The third SALP addressed performance from October 1, 1982 to September 30, 1983. The licensee performance was assessed as follows:

Functional Area	Category 1	Category 2	Category 3
Soils and Foundations	X		
Containment and Other Safety-Related Structures; Safety-Related Components; Electrical Power Supply and Distribution; Instrumentation and Control Systems; Licensing Activities		X	
Piping Systems and Supports			X
Project Management/Quality Assurance			

Region I identified two violations regarding the QC acceptance of non-conforming concrete expansion anchor bolts and the inadequate QC inspection of structural steel bolted connections. The licensee performed re-inspections to assure the adequacy of other hardware. Concrete placement activities were observed to be properly conducted. Major deficiencies were identified by the licensee in the conduct of the piping contractor's radiography program. Several instances of film enhancement were discovered. The questionable welds were re-radiographed and found acceptable. Problems with the piping contractor control of field installations demonstrated that the staff additions implemented previously by the licensee were not totally effective. Three violations were identified in the electrical area on design control of the Standby Diesel Generator load sequencing; acceptance of equipment with deficient vendor internal wiring; and inadequate inspection of partial pulled cable installations. Further problems were identified that illustrate greater licensee attention is necessary to ensure the piping contractor performance meets the requisite quality criteria. The licensee project management direction and contractor oversight functions were found to be lacking as illustrated by the following deficiencies: inadequate QA review of weld planner packages; lack of control over Nondestructive Examination process; use of Stone and Webster trainees to conduct inspections; lack of non-conformance trend analysis by sub-contractor, piping contractor QA management made statements to restrict ability of personnel to express quality concerns to the NRC. An enforcement conference (50-410/82-13) was held on October 20, 1982 to discuss the improper use of QC trainees and falsification of inspection records. Region I expressed that greater licensee overview is required of project QA activities. The licensee committed to increased site QA staffing levels and greater QA management attention. On May 23, 1983 a Management Meeting (50-410/83-09) was held to again discuss the necessity for increased licensee control over the piping contractor. Another Enforcement Conference (50-410/83-14) was convened on August 30, 1983 to discuss the piping subcontractor prohibition on personnel from bringing safety concerns to

the NRC. Steps were taken to increase the piping contractor QA staffing and to increase the licensee surveillance of their contractor's activities. The licensee instituted major organization changes as described in section 3.5 of this report to enhance their control of project activiites.

A region I evaluation board is scheduled to convene on March 18, 1985 to assess the fourth SALP period from October 1, 1983 to January 31, 1985.

3.9 Region I Overview

The early inspections conducted at Nine Mile Point 2 through late 1981 did not identify substantive deficiencies. The work activities involved site preparation, concrete placement, RPV placement, and QA program reviews. While several violations and/or infractions were issued, no programmatic problems were apparent.

The Regional Construction Team Inspection conducted in November, 1981, in concert with the assignment of a site resident inspector, served to identify further deficiencies that were not previously apparent. The concentrated team inspection approach found several problems with the mis-application of site QA programs and the inadequate program implemented by the licensee to monitor their contractors. The resident inspector identified deficiencies within the piping contractor's control of welding activities that resulted in two enforcement conferences between Region I and the licensee. The licensee was informed that greater management attention and surveillances needed to be performed to ensure control of the piping contractor.

Close Region I scrutiny of the site QA programs resulted in the identification of Stone and Webster use of trainees to perform inspections and the associated falsification of inspection records. Further problems indicated that licensee steps to shore up the performance of the piping contractor had not been fully effective. Between October 1982 and August 1983, three more Management meetings/Enforcement conferences were held with the licensee. Region I emphasized throughout, that the licensee needed to implement more effective control of, and perform enhanced surveillance to ensure that the subcontractors adequately performed their work.

The I&E CAT inspection in late 1983, served to bring to a culmination, the fact that the site wide QA programs were deficient.

The licensee subsequently instituted major management reorganizations to bring experienced personnel on-site to guide the remainder of construction activity. Site software, inspection procedures, have been enhanced to closely identify inspection criteria. Numerous reinspections have been performed of plant hardware to assure its adequacy relative to the design criteria. Results of Nondestructive Examination activity have been reviewed to assure pressure boundary integrity. The new project management has instituted changes in both construction and QA activity to enhance the quality of site construction.

Region I continues to inspect on-going work activities, review the adequacy of licensee corrective actions to previously identified deficiencies, monitor actions taken in response to the CAT enforcement action; and will inspect the conduct of preoperational testing. These actions will serve to provide the data base necessary to judge the future licensibility of the Nine Mile 2 project.

3.10 Preoperational Testing

No safety-related systems have been turned over to the Startup and Test Group for preoperational testing. Some safety-related equipment has been released to NMPC for preliminary testing such as flushing. The reactor vessel is scheduled to be filled February 22, 1985. Following an integrated flush, the reactor vessel is scheduled for hydrostatic testing March 18, 1985.

The licensee has established the administrative controls for conducting the Startup and Test Program. Region I has reviewed them and found no unacceptable condition. A resident inspector dedicated to preoperational testing will be on site full-time March 15, 1985.

4.0 Conclusion

Region I finds that the current construction quality program to be generally acceptable. Recent inspection activities continue to identify problems and the licensee will have to institute corrective actions in response to those identified problems. Region I has an extensive list of outstanding problems for which, licensee corrective actions have been instituted, but remain to be verified and ultimately closed out as acceptable. The licensee has assigned experienced quality assurance and project management personnel to resolve site issues. Region I will monitor the remaining phases of construction and pre-operational activity as well as determining the acceptability of previously installed hardware to ensure that regulatory requirements are fulfilled.

NINE MILE POINT UNIT 2

INSPECTION

SUMMARY

INSPECTION NUMBER	INSPECTION DATE	NUMBER OF INSPECTORS	AREAS INSPECTED	FINDINGS	VIOLATIONS
72-01	4/10/72	2	Initial management meeting	None	None
72-02	7/28 - 8/24/72	1	QA Program	3 unresolved items	None
73-01	6/14/73	2	QA Program	None	None
73-02	7/19 - 10/9/73	1	QA Program	None	None
74-01	9/26 - 9/27/74	1	QA Program	6 unresolved items	None
75-01	4/16 - 4/17/75	2	QA Program for procurement, and surveillance review	None	None
75-02	7/9 - 7/10/75	1	Excavation progress, engineering review/ approval program, review of construction procedures	2 unresolved items	None
75-03	7/29-8/1/75	1	Environmental protection program	None	None
75-04	10/21 - 10/22/75	2	Site preparation activities and procedure review	2 unresolved items	None
76-01	2/24 - 2/26/75	2	Specification review, review of audits, material storage, corrective action controls, review of project manual	2 unresolved items	Infraction: Requisite QA requirements not identified in specification. Infraction: Specification review not performed in accordance with procedures. Deficiency: Audit findings not properly documented.
76-02	4/12 - 4/14/76	2	Blasting records, QA procedures for concrete and foundations, site preparation, groundwater control	4 unresolved items	None

INSPECTION NUMBER	INSPECTION DATE	NUMBER OF INSPECTORS	AREAS INSPECTED	FINDINGS	VIOLATIONS
76-03	5/25 - 5/27/76	2	Site preparation excavation mapping, design review meetings, porous concrete foundation drainage system, batch plant qualification, concrete mixes	3 unresolved items	None
76-04	7/19 - 7/21/76	1	Concrete activities, batch plant operation	None	Infraction: Inadequate cadweld inspections
76-05	8/16 - 8/20/76	1	Environmental protection activities	1 unresolved items	None
76-06	9/28 - 9/30/76	1	Foundation backfill operations, site preparation	3 unresolved items	Infraction: Concrete curing inspections not performed
76-07	11/16 - 11/18/76	1	Site preparation and foundation records, QC personnel qualification, batch plant operation	1 unresolved	Infraction: Uncon- repair of cadwelds
77-01	3/22 - 3/24/77	1	Containment base mat concrete, geologic investigation on rock stress	None	None
77-02	4/5 - 4/7/77	2	Containment reinforcing steel cadwelding, QA Manual review for containment liner contractor	2 unresolved items	None
77-03	4/14/77	1	Containment steel liner installation, geologic investigation review	None	None
77-04	5/2 - 5/5/77	2	Containment structural steel, containment concrete procedures, containment base mat concrete activities, nonconformance program review	2 unresolved items	None
77-05	5/17 - 5/19/77	1	Containment base mat concrete, containment liner welding	1 followup item	None

INSPECTION NUMBER	INSPECTION DATE	NUMBER OF INSPECTORS	AREAS INSPECTED	FINDINGS	VIOLATIONS
77-06	6/8 - 6/10/77	1	Containment base mat concrete, containment structural steel welding, component storage, reinforcing steel erection	3 unresolved items	None
77-07	6/15/77	2	Containment base mat concrete	None	None
77-08	7/18 - 7/20/77	1	Primary containment steel liner welding, control of weld material, weld inspection	None	None
77-09	8/3 - 8/5/77	1	Environmental protection program	None	Infraction: Settling pond operation procedures not followed.
77-10	8/23 - 8/25/77	2	Component storage and maintenance, containment base mat concrete records	1 unresolved	Deficiency: Failure to perform proper preventive maintenance on recirculation pump motors.
77-11	10/11-10/13/77	3	QA record review for concrete base mat concrete	1 Followup	Infraction: Failure to follow procedures for batch plant uniformity tests Infraction: Failure to document and report corrective actions to management relative to I&E Bulletins and Circulars
77-12	11/15 - 11/17/77	2	Installation and welding of containment liner	1 unresolved item	None

INSPECTION NUMBER	INSPECTION DATE	NUMBER OF INSPECTORS	AREAS INSPECTED	FINDINGS	VIOLATIONS
78-01	1/31 - 2/2/78	1	Measuring and test equipment non-destructive weld examination	None	None
78-02	3/28 - 3/31/78	1	Reinforcing bar installation, I&E Bulletins and Circulars	None	None
78-03	4/24 - 4/26/78	3	Piping and supports installation, penetrations, geotechnical review	None	None
78-04	5/15 - 5/18/78	2	Equipment storage, surveillances, concrete activities	None	None
78-05	6/14/78	1	Cable tray support records	None	None
78-06	7/25 - 7/27/78	1	Mechanical equipment installation, equipment maintenance, I&E Bulletins and Circulars	1 unresolved item	None
78-07	9/26 - 9/28/78	1	Risk release program, equipment installation documentation	1 unresolved item	None
78-08	9/25 - 9/29/78	1	Management controls	2 unresolved items	None
78-09	10/30 - 11/2/78	1	Concrete activities, equipment installation	1 unresolved item	None
79-01	1/8 - 1/11/79	1	Structural steel erection, cad weld operations	2 unresolved items	None
79-02	3/20 - 3/23/79	2	Containment liner welding, structural steel erection, stud welding, equipment storage	None	Infraction: Required radiography examination not performed.
79-03	4/24 - 4/26/79	1	Reinforcing bar,concrete activities, backfill operation	1 unresolved item	None
79-04	7/10 - 7/12/79	1	Containment liner installation, piping, structural steel erection	None	None

INSPECTION NUMBER	INSPECTION DATE	NUMBER OF INSPECTORS	AREAS INSPECTED	FINDINGS	VIOLATIONS
79-05	5/14 - 5/17/79	1	Structural steel erection, containment liner installation	None	Infraction: No procedure for ultrasonic examination
79-06	8/27 - 8/31/79	1	Concrete activities, reinforcing bar storage, electrical installation	1 unresolved item 1 followup item	None
79-07	10/9- 10/12/79	2	Suppression pool downcomers, electrical activities	4 unresolved items 2 followup items	None
79-08	11/6 - 11/8/79	1	Reactor pressure vessel transport/ rigging/lifting	None	None
79-09	11/28 - 11/30/79	2	Containment liner welding, equipment rigging, valve installation	1 unresolved item	None
80-01	1/9 - 11/11/80	1	Equipment maintenance and storage	1 unresolved item	Infraction: Invalid preventive maintenance records
80-02	3/19 - 3/21/80 & 4/10 - 4/11/80	3	Reactor pressure vessel storage, biological shield wall installation	None	None
80-03	4/24/80	2	Plant Tours	None	None
80-04	5/12 - 5/15/80	2	Repair of biological shield walls welds	2 unresolved items	None
80-05	6/17 - 6/19/80	1	Containment reinforcing bar cadweld operations	2 unresolved items	None
80-06	7/14 - 7/18/80	1	Reactor pressure vessel storage and placement	None	None
80-07	7/15 - 7/18/80	2	QA procedure review, review of engineering design changes, nonconformance report disposition, trend analysis, audit program	1 unresolved	None

INSPECTION NUMBER	INSPECTION DATE	NUMBER OF INSPECTORS	AREAS INSPECTED	FINDINGS	VIOLATIONS
80-08	8/4 - 8/8/80	2	Reactor pressure vessel placement	None	None
80-09	9/9 - 9/11/80	1	QC record review, reactor pressure vessel storage, CRD hydraulic control unit storage	1 unresolved item	None
80-10	9/23 - 9/26/80	1	QA Program review	None	None
80-11	10/21 - 10/23/80 & 11/4 - 11/6/80	1	Concrete record documentation review	None	Infraction: Inadequate document control of engineering changes.
81-01	1/20 - 1/23/81	1	Concrete placement, reinforcing bar cadwelds, engineering change document review	1 unresolved item	None
81-02	2/18 - 2/25/81	1	Environmental protection program	None	None
81-03	4/21 - 4/23/81	1	Plant tour, cadweld operations	None	None
81-04	4/22/81	2	SALP management meeting	None	None
81-05	6/23 - 6/25/81	1	Primary containment liner, equipment storage, housekeeping	3 unresolved items	None
81-06	7/14 - 7/16/81	1	I&E Bulletin and Circular review	None	None
81-07	7/27 - 7/31/81	2	Electrical procedure review, installed raceway, geologic fault study review, primary containment concrete	1 unresolved item	Violation: Pump motor electrical test data not submitted to engineering
81-08	8/4 - 8/6/81	1	QA program personnel certifications, licensee audits	None	None
81-09	8/18 - 8/21/81	3	Primary containment record review, biological shield wall welding, ROV records, weld filler metal control, pipe welding	1 unresolved	None

INSPECTION NUMBER	INSPECTION DATE	NUMBER OF INSPECTORS	AREAS INSPECTED	FINDINGS	VIOLATIONS
81-10	9/1 - 9/3/81	2	Plant tour, concrete aggregates, corrective action programs	1 unresolved	None
81-11	9/29 - 9/30/81	3	Plant tour, review of QA organization	None	None
81-12	10/13 - 11/13/81	1	Containment penetrations, piping and structural steel erection	1 unresolved item 1 followup item	Violation: Incorrect weld data sheet Violation: Inadequate corrective actions
81-13	11/30 - 12/18/81	5	Region I CAT inspection, welding, non-destructive examination, electrical, structural, procurement	1 unresolved item	Violation: Ineffective QA program Violation: Lack of design control Violation: Inadequate equipment qualification
81-14	12/21/81-1/15/82	1	Structural steel erection, piping activities, welder qualification	1 unresolved item 1 followup item	Violation: Failure to implement checklists
82-01	1/18 - 2/26/82	1	Pipe whip restraints, structural steel, welder qualification, nondestructive examination, piping, procurement	3 unresolved items 2 followup	Violation: Inadequate QC personnel training Violation: Failure to follow instructions
82-02	3/1 - 3/26/82	1	Pipe supports, RPV nozzle modifications, structural steel, receipt inspection, nondestructive examinations, piping	3 unresolved items	Violation: Failure to record data in accordance with instructions.
82-03	3/29 - 4/30/82	1	Structural steel, cadwelding, expansion anchors, piping, equipment, design control	4 unresolved items 4 followup items	Violation: Failure to to correctly translate design information Violation: Failure to impose QA requirements on purchase orders

INSPECTION REPORT	INSPECTION DATE	NUMBER OF INSPECTORS	AREAS INSPECTED	FINDINGS	VIOLATIONS
82-04	5/11 - 5/13/82	1	Electrical components	3 unresolved items	None
82-05	5/10 - 6/3/82	1	Piping, HVAC installation, structural steel	1 followup item	None
82-06	6/1/82	4	Enforcement conference on ITT Class 1 weld procedures	None	None
82-07	6/21 - 7/23/82	1	Piping, rigging, mechanical equipment storage, structural steel	1 unresolved item 4 followup items	Violation: Inadequate control of rigging operations Violation: Failure to identify a nonconforming condition.
82-08	7/16/82	5	Meeting on ITT welding procedures	None	Violation: Failure to control welding processes
82-09	7/13 - 7/16/82 & 7/20/82	2	Management controls	1 unresolved item	None
82-10	7/26 - 8/27/82	1	Concrete testing, concrete expansion anchors, piping, reactor head cavity, pit, review of engineering design changes	2 unresolved items	Violation: Underlength welds on cable tray braces Violation: Aggregate material not properly tested. Violation: Inadequate inspection of concrete expansion anchors
82-11	8/30 - 9/30/82	2	Mechanical equipment erection, piping diesel generator building, weld rod control, welder qualification, pipe supports, raceway	4 unresolved items 2 followup items	Violation: Work performed without planner package Violation: Weld filler material not properly stored

INSPECTION NUMBER	INSPECTION DATE	NUMBER OF INSPECTORS	AREAS INSPECTED	FINDINGS	VIOLATIONS
82-12	10/12 - 11/12/82	1	Small bore piping, instrumentation, structural steel, recirculation pipe welds, nonconformance reports	2 unresolved items 2 followup items	Violation: ASME piping planner package not properly reviewed
82-13	10/20/82	1	Enforcement conference regarding use of trainees to conduct inspection	None	None
82-14	11/15 - 12/22/82	1	High strength bolting, electrical support welds, structural steel welder qualifications, measuring and test equipment	1 unresolved item 2 followup items	Violation: High strength bolts not inspected per AISC Violation: Weld material requisition improperly filled out Violation: Improper concrete anchor bolt installations.
82-15	12/13 - 12/17/82	1	Bioshield wall fill material placement reactor building concrete activities	None	None
82-16	12/14 - 12/16/82	1	Equipment storage, raceway installation	2 unresolved items	None
83-01	1/3 - 2/4/83	2	Instrumentation, pipe whip restraints, engineering change documents, pipe supports, piping, cables	4 unresolved items 7 followup items	Violation: Weld procedures not available to welders
83-02	2/7 - 3/11/83	1	Safety related equipment, concrete installation, cables, structural welding, piping	3 unresolved items 2 followup items	Violation: Planner package not adhered to for pipe installation activities
83-03	3/1 - 3/3/83	1	Electrical equipment storage raceway installation	5 unresolved items	None

INSPECTION NUMBER	INSPECTION DATE	NUMBER OF INSPECTORS	AREAS INSPECTED	FINDINGS	VIOLATIONS
83-04	3/14 - 4/15/83	1	Piping, licensee surveillances and audits, instrumentation supports, structural steel, HVAC duct	2 unresolved items 1 followup item	None
83-05	4/25 - 5/27/83	2	Recirculation piping, containment liner, procurement, corrective action, instrumentation supports, piping and pipe supports	1 unresolved item 4 followup items	Violation: Inadequate trend analysis Violation: Underlength fillet welds
83-06	5/16 - 6/1/83	1	QA record review, design verification procedures, as-built plant verification	2 unresolved items	Violation: Inconsistent FSAR diesel generator load sequencing
83-07	6/13 - 6/17/83 & 7/13 - 8/5/83	1	Pipe supports, piping, structural steel, weld filler material control, cable and equipment installation	3 unresolved items 3 followup items	None
83-08	6/7 - 6/9/83	1	Switchgear installation and instrumentation	3 unresolved items	Violation: Deficient vendor wiring on electrical equipment
83-09	5/23/83	1	Management meeting regarding licensee overview of contractor performance	None	None
83-10	7/25 - 7/29/83	2	Corrective action programs, piping and plant housekeeping	2 unresolved items 1 followup item	None
83-11	8/2 - 8/4/83	1	Cables, raceway, motor control centers, electrical QA records	1 unresolved item 1 followup item	None

INSPECTION NUMBER	INSPECTION DATE	NUMBER OF INSPECTORS	AREAS INSPECTED	FINDINGS	VIOLATIONS
83-12	8/8 - 9/21/83	2	Preventive maintenance, pipe supports, cables, concrete placement, recirculation piping nozzle modification	5 unresolved items 5 followup items	Violation: Installed cable not properly inspected Deviation: Inspection hold points not specified in QC inspection plans
83-13	9/14/83	2	Environmental protection program	None	None
83-14	8/30/83	1	Enforcement conference on licensee overview and investigations of the piping contractor	None	None
83-15	10/18 - 10/20/83	1	Electrical cables, motor control centers and QA records	1 unresolved item	None
83-16	10/1 - 12/2/83	1	Equipment turnover, piping, pipe supports, reactor building enclosure, CRD piping, fire protection, instrumentation QA program	6 unresolved items 2 followup items	Violation: Nonconforming welds accepted by quality control
83-17	12/5/83 - 1/20/84	2	RPV storage, hydraulic control unit installation, piping, pipe supports, welder qualification, HVAC systems	4 unresolved items 5 followup items	None
83-18	11/7 - 11/19/83 & 11/28 - 12/9/83	7	I&E CAT inspection	None	Violation: Inadequate review of design change documents, Inadequate review of radiographic film,deficient inspection procedures, nonconforming pipe supports, electrical separation violations, Inadequate inspection documentation, Inadequate weld filler metal control, Deficient NDE weld surface exams, nonconforming conditions not identified on NCRs, Inadequate corrective action programs, Ineffective audit programs.

INSPECTION NUMBER	INSPECTION DATE	NUMBER OF INSPECTORS	AREAS INSPECTED	FINDINGS	VIOLATIONS
84-01	1/23 - 3/2/84	2	Pipe supports, diesel generator cranes, reactor vessel internals, QA program	4 unresolved items 1 followup item	Violation: Nonconforming pipe supports Violation: Failure to follow procedure for handling of significant deficiency
84-02	2/7 - 2/9/84	1	Cables, switchgear and QA records	5 unresolved items	Violation: Wrong nonconformance form in use
84-03	2/22/84	1	Management meeting on licensee corrective actions for CAT findings	None	None
84-04	3/12 - 3/16/84	1	Concrete anchor bolts and structural steel welding	None	None
84-05	3/5 - 4/7/84	1	Electrical terminations, piping, pipe supports, QA surveillances, contractor audits, design control of II/I items	3 unresolved items 1 followup item	Violation: Inadequate design control for Seismic II/I items
84-06	4/9 - 5/11/84	2	Structural steel, weld material control, pipe supports, housekeeping, post inspection rework control	2 unresolved items 2 followup items	Violation: Weld filler material not controlled Violation: Rework to structural beams not controlled Violation: Inadequate inspection of bolting and pipe supports Violation: Lack of inspection status for structural steel Violation: Inadequate plant housekeeping
84-07	5/14 - 5/18/84	1	Large and Small bore pipe supports	None	None

INSPECTION NUMBER	INSPECTION DATE	NUMBER OF INSPECTORS	AREAS INSPECTED	FINDINGS	VIOLATIONS
84-08	4/30 - 5/25/83	3	NDE van inspection of ASME and structural weldments by independent examination	3 unresolved items	Violation: Film indication not evaluated/ documented Violation: Inadequate review of RT film Violation: Minimum wall violation
84-09	5/14 - 6/15/84	2	Corrective action programs, electrical penetrations, pipe whip restraints, component supports	1 unresolved item 4 followup items	Violation: Adverse trends not detected by analysis Violation: Penetration NDE not performed
84-10	5/21 - 5/24/84	2	Pre-operational security inspection	25 followup items	None
84-11	6/18 - 7/27/84	3	Document control, containment supports, design change control, plant stack, battery installation, equipment preventive maintenance	5 unresolved items 2 followup items	Violation: Hold points violated during pipe whip restraint installation Violation: Inadequate review of design change documents
84-12	cancelled				
84-13	7/30 - 9/6/84	1	Design change control, revetment ditch, pre-op personnel qualifications, hydrotests, preventive maintenance, standby liquid control system, weld filler metal control	4 unresolved items	Violation: Inadequate tread engagement of strainer top bolts Violation: Field issued weld filler metal not controlled
84-14	8/20 - 8/24/84	1	Welder qualifications, welding, welding records	4 unresolved items	None

INSPECTION NUMBER	INSPECTION DATE	NUMBER OF INSPECTORS	AREAS INSPECTED	FINDINGS	VIOLATIONS
84-15	9/10 - 11/2/84	3	Electrical cable separation, containment penetrations, diesel generator modifications	6 unresolved items 3 followup items	None
84-16	10/29 - 11/2/84	1	Radiological Control staffing	None	None
84-17	10/29 - 11/2/84	1	Safety related equipment installation, inspection of equipment, preventive maintenance	1 unresolved	None

INSPECTION HISTORY

- INITIAL INSPECTION - APRIL, 1972

- MONITORED CONSTRUCTION ACTIVITIES

  SITE PREPARATION AND FOUNDATION
  CONCRETE WORK
  SAFETY-RELATED STRUCTURES
  PIPING AND WELDING
  ELECTRICAL ACTIVITIES
  MECHANICAL COMPONENTS
  INSTRUMENTATION
  QUALITY ASSURANCE PROGRAMS

- TO DATE - 120 INSPECTION REPORTS ISSUED

- COMPARISON OF INSPECTION HOURS (APPROXIMATE)

NINE MILE POINT 2	- 8250
HOPE CREEK	- 7600
SHOREHAM	- 6500
SUSQUEHANNA 1	- 7100
LIMERICK	- 7800

- RESIDENT INSPECTOR LOCATED ON-SITE
  OCTOBER, 1981 - MAY, 1983
  JULY 1983 - PRESENT

ENFORCEMENT RECORD

- NOTICE OF VIOLATION ISSUED FOR ENFORCEMENT
- LICENSEE RESPONDS TO NOTICE WITH PROPOSED CORRECTIVE ACTION
- RESPONSE REVIEWED BY COGNIZANT INSPECTORS AND REGIONAL MANAGEMENT
- CORRECTIVE ACTION IMPLEMENTATION VERIFIED DURING FOLLOWUP ROUTINE INSPECTIONS
- ENFORCEMENT COMPARISON

NINE MILE POINT 2	- 65
SHOREHAM	- 75
SUSQUEHANNA 1	- 102
HOPE CREEK	- 58
LIMERICK	- 86

- ESCALATED ENFORCEMENT ACTIONS

I&E CAT	LEVEL II	100,000 CIVIL PENALTY
FOR QA PROGRAM BREAKDOWN/ STONE AND WEBSTER USE OF TRAINEES TO PERFORM QC INSPECTION	LEVEL III	100,000 CIVIL PENALTY

REGIONAL CONSTRUCTION TEAM INSPECTION

- PERFORMED BY REGION I NOVEMBER-DECEMBER 1981
- COORDINATED TEAM APPROACH

  QUALITY ASSURANCE
  DESIGN CONTROLS
  PROJECT MANAGEMENT
  PROCUREMENT CONTROL
  ELECTRICAL & MECHANICAL CONSTRUCTION
  NONDESTRUCTIVE EXAMINATION

- INSPECTION EFFORT ONSITE - 394 HOURS
- RESULTS: LOW LEVEL VIOLATIONS CITED IN:
  - VIOLATION OF REQUIREMENTS TO ESTABLISH AND EXECUTE AN EFFECTIVE QA PROGRAM INCLUDING A LACK OF NMPC INVOLVEMENT IN AN OVERSIGHT OF QA PROGRAM
  - DESIGN CONTROL IMPLEMENTATION AND REVIEW
  - PROCUREMENT SPECIFICATIONS
- SECOND TEAM INSPECTION - DECEMBER 1984
- PRELIMINARY RESULTS
  - VIOLATION FOR PARTICULATE CONTAMINATION IN PIPING SYSTEMS AND UNDERSIZED WELD ON INSTRUMENTATION SUPPORT.
  - IMPROVED CONDUCT OF QA ACTIVITIES

NDE VAN INSPECTION
APRIL 30 - MAY 25, 1984

- TOTAL OF 662 INSPECTION HOURS

- PURPOSE OF INSPECTION IS TO VERIFY THE ADEQUACY OF SITE NDE PROGRAMS THROUGH INDEPENDENT TESTING

- EXAMINED NUMEROUS WELDS

  35 ASME PIPE WELDS RADIOGRAPHED
  30 ASME PIPE WELDS LIQUID PENETRANT TESTED
  30 WELDS MAGNETIC PARTICLE TESTED
  86 ASME PIPE WELDS VISUALLY EXAMINED
  41 ASME PIPE SUPPORT WELDS VISUALLY EXAMINED
  20 STRUCTURAL WELDS VISUALLY EXAMINED
  34 WELDS ULTRASONICALLY THICKNESS MEASURED
  186 RADIOGRAPHIC FILM RE-INTERPRETED

- THREE VIOLATIONS

  UNACCEPTABLE INDICATION PRESENT ON RT FILM
  MINIMUM WALL THICKNESS VIOLATION
  READER SHEET DID NOT DOCUMENT EVALUATION OF LINEAR INDICATION

- SUMMARY OF NDE STATUS

THE LICENSEE HAS EXAMINED THIRTY NINE (39) ADDITIONAL WELDS TO DETERMINE IF MINIMUM WALL THICKNESS REQUIREMENTS WERE MET. APPROXIMATELY ONE HALF OF THE WELDS WERE FOUND TO BE UNDER MINIMUM WALL THICKNESS REQUIREMENTS. THE LICENSEE DETERMINED THAT THE CONDITION WAS REPORTABLE UNDER 10CFR50.55(e). THE ITEM IS AN OPEN REGION I CONCERN. TO ADDRESS THE TWO OTHER VIOLATIONS IN REGARD TO FILM INTERPRETATION AND ASSOCIATED DOUCMENTATION, THE LICENSEE DIRECTED STONE AND WEBSTER TO REVIEW ALL ITT-GRINNELL RADIOGRAPHS ONSITE FOR CODE ACCEPTABILITY. THE RESULTS HAVE YET TO BE REVIEWED BY REGION I.

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE
(SALP)

- PURPOSE - TO EVALUATE LICENSEE PERFORMANCE
  - IDENTIFIES AREAS REQUIRING INCREASED/DECREASED REGIONAL INSPECTION RESOURCES
- PREPARED BY REGION I - INPUT FROM
  - RESIDENT INSPECTORS
  - REGIONAL SPECIALIST INSPECTORS
  - NRR PROJECT MANAGER
- NINE MILE POINT 2 SALP RESULTS
  - CYCLE 1 FEBRUARY 1, 1980 - JANUARY 31, 1981
    CATEGORY 2 IN 16 AREAS
  - CYCLE 2 OCTOBER 1, 1981 TO SEPTEMBER 30, 1982
    CATEGORY 1 IN 2 AREAS
    CATEGORY 2 IN 5 AREAS
    CATEGORY 3 IN 1 AREA - QUALITY ASSURANCE
  - CYCLE 3 OCTOBER 1, 1982 TO SEPTEMBER 30, 1983
    CATEGORY 1 IN 1 AREA
    CATEGORY 2 IN 5 AREAS
    CATEGORY 3 IN 2 AREAS -
    PIPING SYSTEMS AND SUPPORTS,
    PROJECT MANAGEMENT/QUALITY ASSURANCE

REGION I OVERVIEW

- PAST INSPECTIONS HAVE DETECTED NUMEROUS DEFICIENCIES

- CURRENTLY LARGE NUMBER (APPROXIMATELY 350) OF OPEN ITEMS FOR WHICH CORRECTIVE ACTIONS REMAIN TO BE VERIFIED, COMPOSED OF

  - 50.55(e) REPORTS, VIOLATIONS, BULLETINS, CIRCULARS, UNRESOLVED, FOLLOWUP ITEMS

- LICENSEE HAS INSTITUTED CORRECTIVE ACTIONS SINCE CAT INSPECTION

  - MANAGEMENT REORGANIZATION
  - HARDWARE REINSPECTIONS
  - PROGRAM ENHANCEMENTS
  - SITE QUALITY TRENDING

- DEFINITIVE STATEMENT REGARDING CONSTRUCTION QUALITY CANNOT BE MADE UNTIL COMPLETION OF VERIFICATION OF CORRECTIVE ACTIONS, ASSURANCE OF INSTALLED HARDWARE DESIGN CONFORMANCE AND SATISFACTORY COMPLETION OF PRE-OPS PROGRAM.

REGION I - NMPC MEETINGS
QA OR PROJECT MANAGEMENT RELATED

JUNE 1, 1982 82-06 ENFORCEMENT CONFERENCE
SAME TOPIC AS 82-08 REORGANIZATION VP-QA AND SR. VP POSITIONS

JULY 16, 1982 82-08 ENFORCEMENT CONFERENCE

ASME C1.1 WELDING PROCEDURES NOT PROPERLY QUALIFIED FOR IMPACT TESTING. ROOT CAUSES FROM NRC STANDPOINT: INEXPERIENCE OF ITT PERSONNEL, INEFFECTIVE SWEC CONTROL OF ITT ACTIVITIES, INADEQUATE NMPC ATTENTION TO CONTRACTOR AND SUB-CONTRACTOR ACTIVITIES. LICENSEE COMMITTED TO: STRENGTHEN ITT QA/ENGINEERING, INCREASE SWEC AUDITS OF ITT, AND IMPOSE SWEC REVIEW OF ITT PLANNERS, INCREASE ITT/SWEC MANAGEMENT INVOLVEMENT

OCTOBER 20, 1982 82-13 ENFORCEMENT CONFERENCE

USE OF SWEC QC TRAINEES TO INSPECT ELECTRICAL INSTALLATIONS. CONTINUED REGION I CONCERN OVER NMPC LEVEL OF INVOLVEMENT WITH PROJECT OVERVIEW AND QA ACTIVITIES OF CONTRACTOR AND SUB-CONTRACTORS. LICENSEE COMMITTED TO INCREASE SITE QA STAFFING AND HAVE ADDITIONAL QA MANAGEMENT INVOLVEMENT

MAY 23, 1983 83-09 MANAGEMENT MEETING

REGION I CONCERN WITH NMPC OVERVIEW OF CONTRACTOR PERFORMANCE IN PARTICULAR ITT QA/QC. LICENSEE COMMITTED TO INCREASED ITT QA STAFFING

AUGUST 30, 1983 83-14 ENFORCEMENT CONFERENCE

ITT VP-QA SUPPRESSED QC PERSONNEL ABILITY TO CONTACT NRC. REGION I EXPRESSED CONTINUED CONCERN WITH REGARDS TO NMPC QA PROGRAM AND CONTROL OF ITT ACTIVITIES.

FEBRUARY 22, 1984 84-03 MANAGEMENT MEETING

DISCUSSED MAC MANAGEMENT REVIEWS OF NMPC (PRE-CAT ORDER), NMPC ORGANIZATION CHANGES, INTERIM SALP/CAT CORRECTIVE ACTION STATUS

NOVEMBER 14, 1984 84-20 MANAGEMENT MEETING

CAT CORRECTIVE ACTIONS, RT FILM REVIEWS, QPMP, MAC AUDIT (CAT ORDER), HARDWARE VERIFICATION

FEBRUARY 6, 1985 85-05 (IN PREPARATION) MGT MEETING

MAC AUDIT (CAT ORDER), CAT CORRECTIVE ACTIONS, HARDWARE VERIFICATION

I&E CONSTRUCTION APPRAISAL TEAM INSPECTION

- PERFORMED BY I&E HEADQUARTERS NOVEMBER - DECEMBER 1983

- TEAM INSPECTION - AREAS INSPECTED

  ELECTRICAL AND INSTRUMENTATION
  MECHANICAL
  WELDING AND NONDESTRUCTIVE EXAMINATION
  CIVIL AND STRUCTURAL
  MATERIAL TRACEABILITY, STORAGE AND MAINTENANCE
  QUALITY ASSURANCE

- INSPECTION EFFORT ONSITE 1900 HOURS
- RESULTS LEVEL II VIOLATION INDICATIVE OF QA PROGRAM BREAKDOWN
  $100,000 CIVIL PENALTY

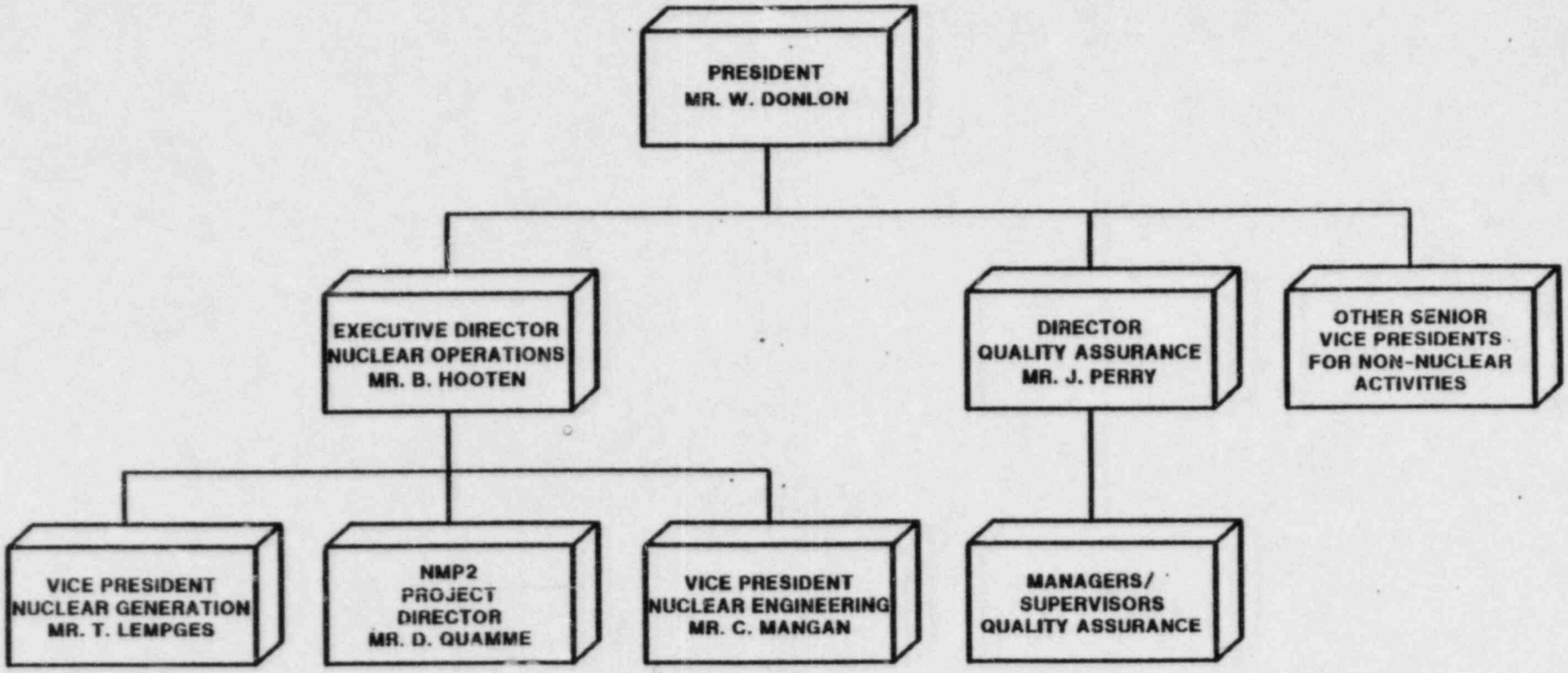
  MAJOR DEFICIENCIES WITH PIPE WELD RADIOGRAPHS
  DOCUMENT CONTROL PROGRAM DEFICIENT
  INADEQUATE NIAGARA MOHAWK MANAGEMENT INVOLVEMENT
  INADEQUATE QC INSPECTION PERFORMED
  UNTIMELY IMPLEMENTATION OF CORRECTIVE ACTIONS

MR. BILLY G. HOOTEN

Executive Director
Nuclear Operations

NIAGARA MOHAWK

NMPC UPPER MANAGEMENT
NUCLEAR ORGANIZATION



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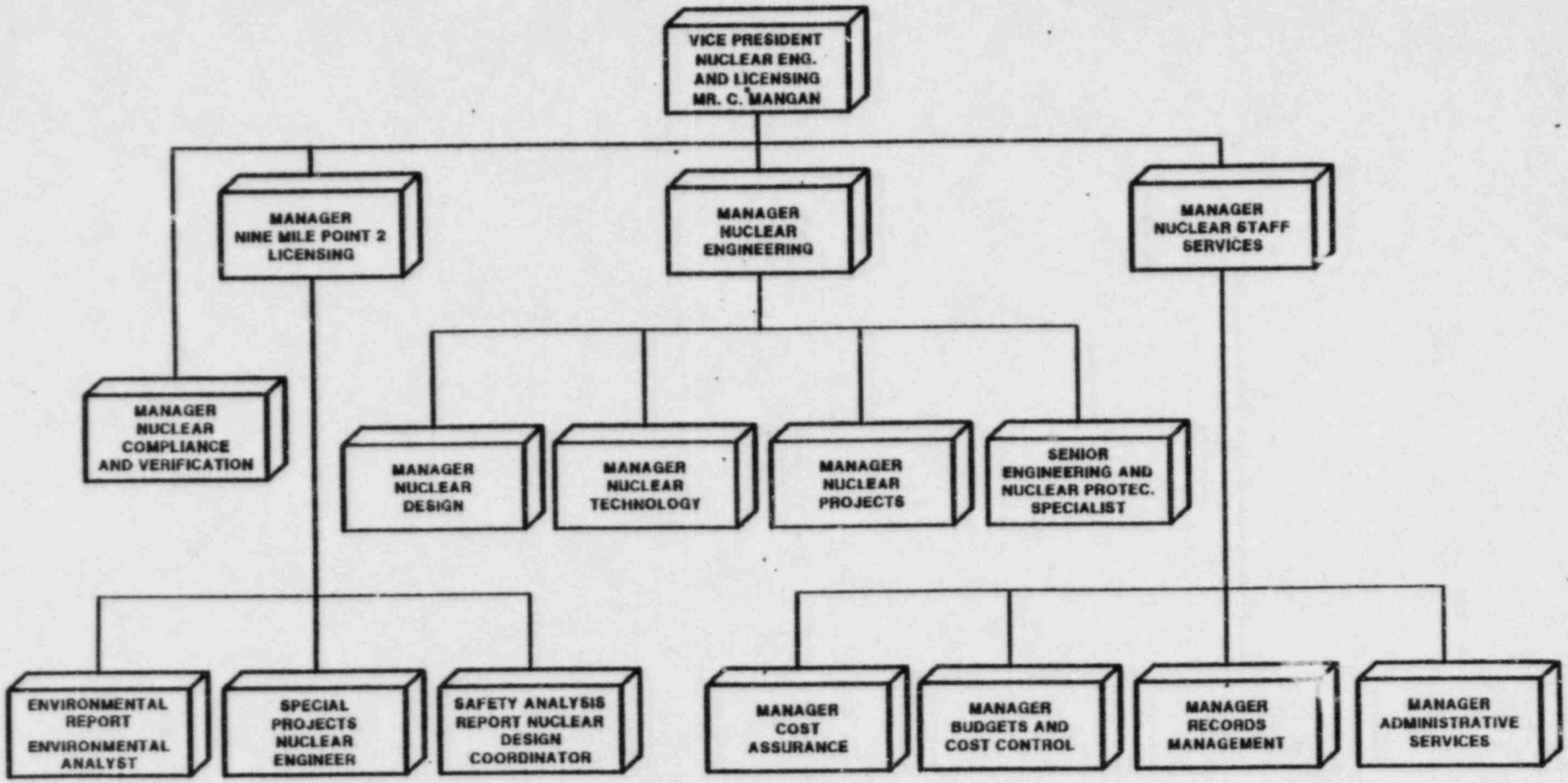
NUCLEAR ENGINEERING ORGANIZATION



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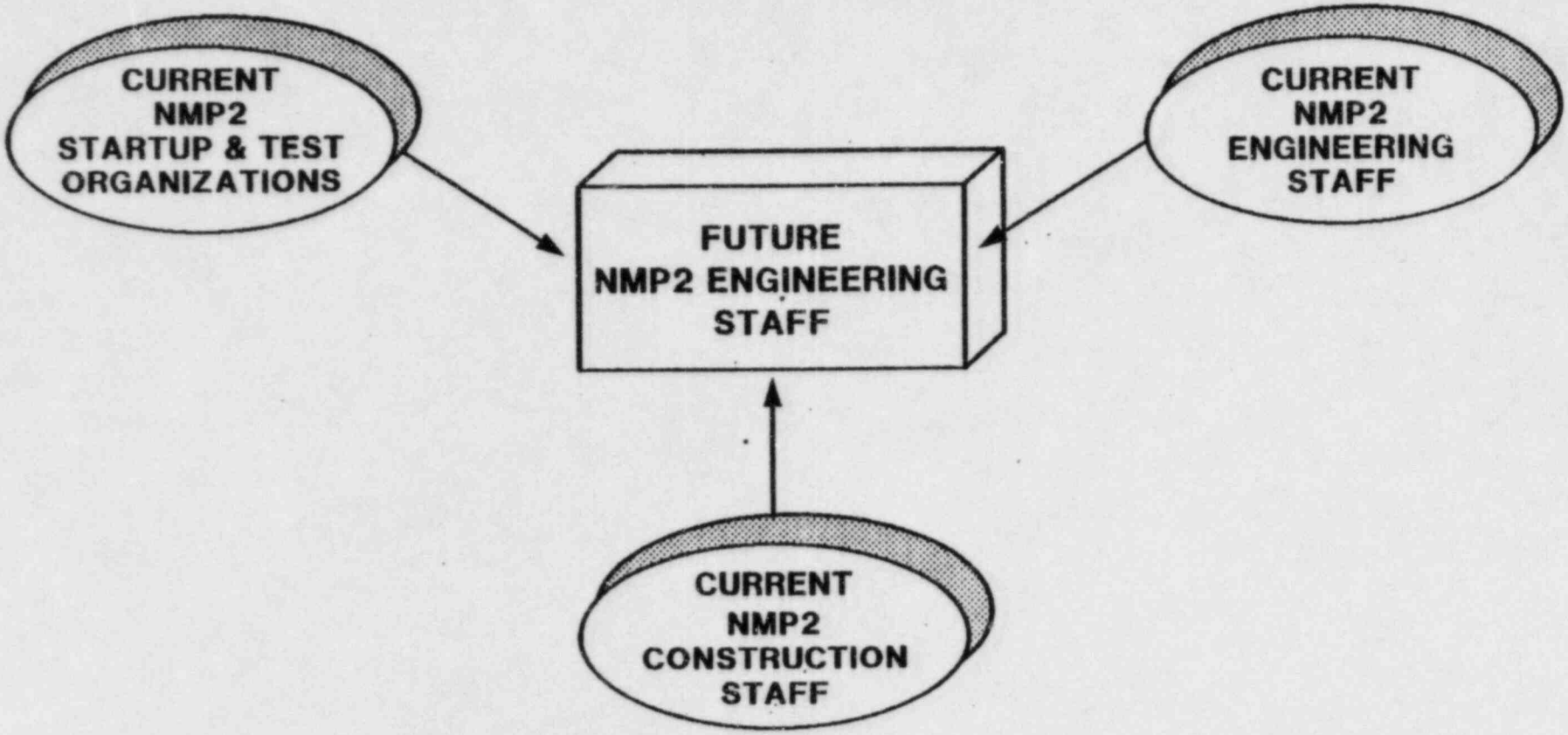

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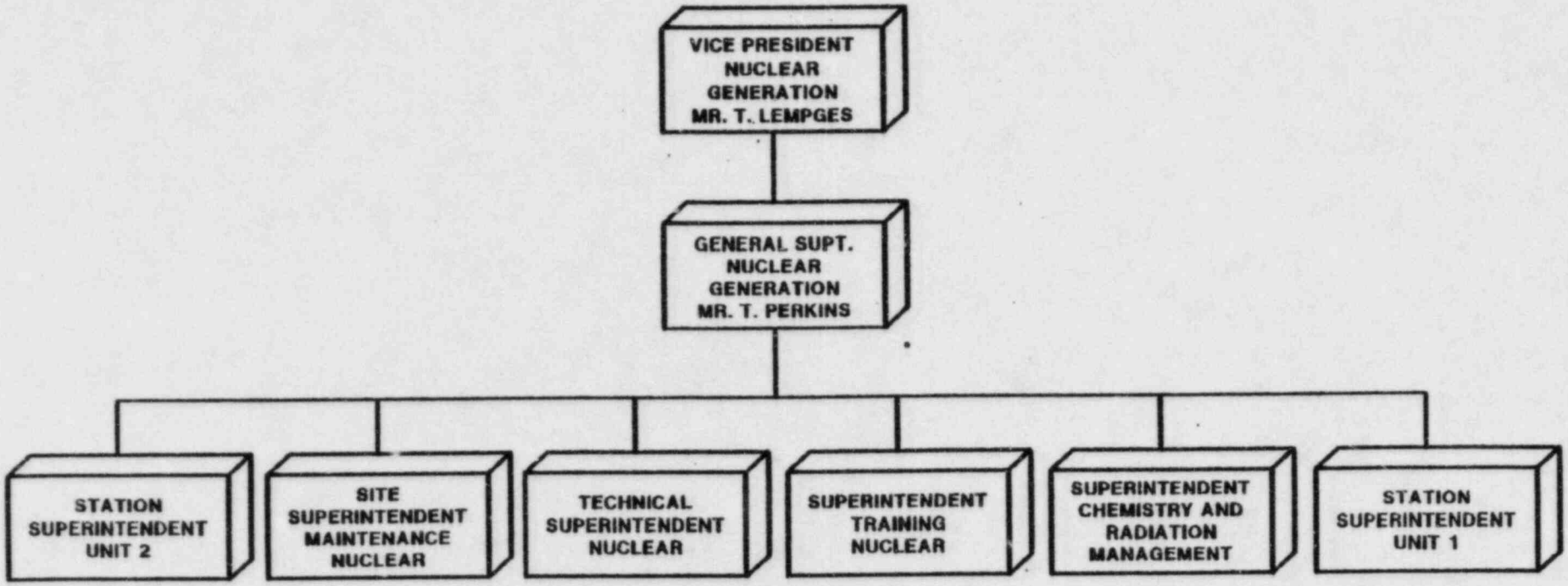
NUCLEAR GENERATION ORGANIZATION



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JAMES PERRY

Director - Quality Assurance

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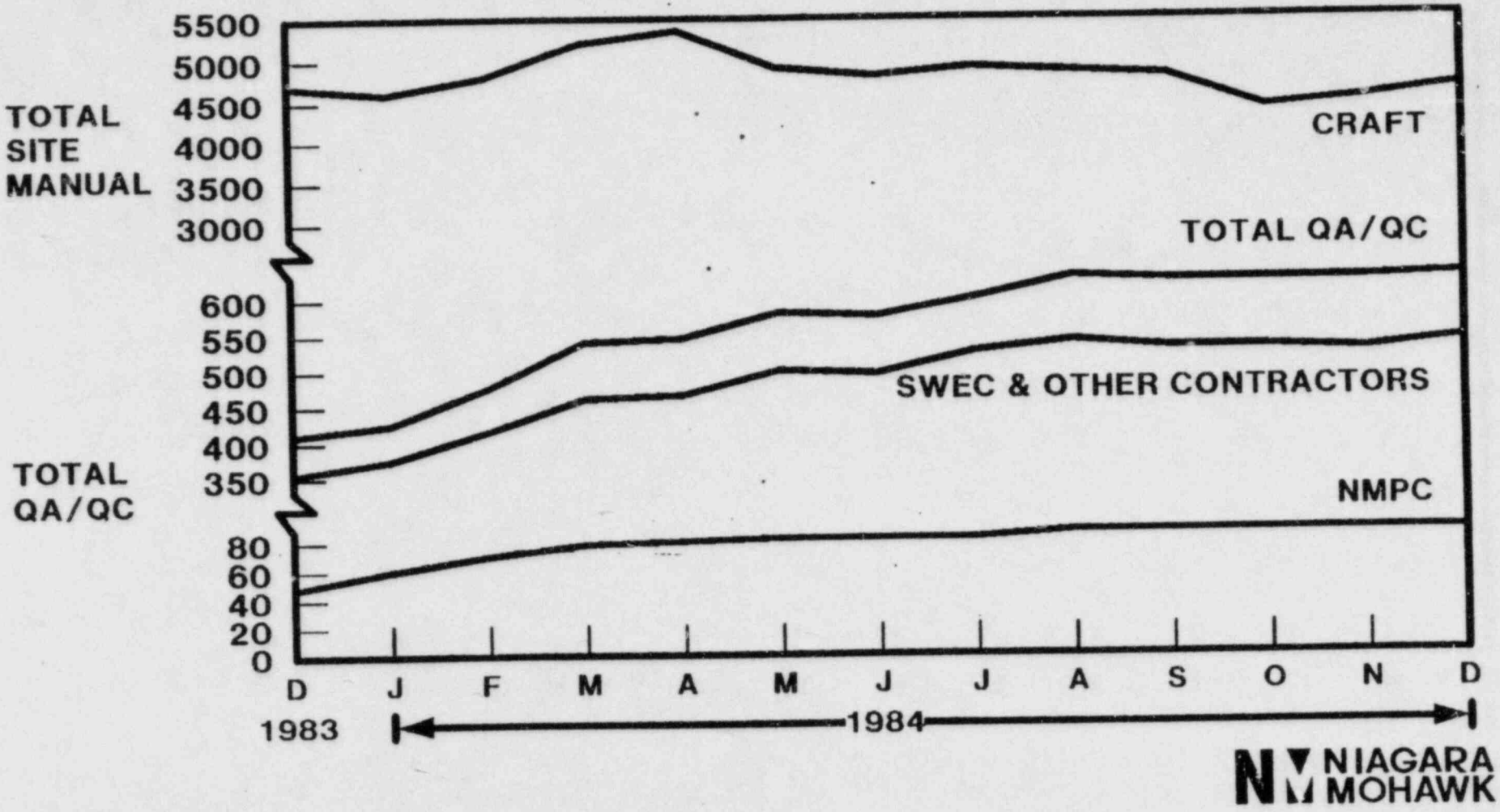
NINE MILE POINT UNIT 2 QUALITY ASSURANCE

NMP2 MANPOWER (TOTAL SITE MANUAL VS. TOTAL QA/QC NON-MANUAL)



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NINE MILE POINT UNIT 2
QUALITY ASSURANCE

NMPC Current QA Department Staffing and Experience

I. Total Personnel in QAD 194

II. Total Individuals with College Degrees 117

III. Total Years of Nuclear Experience 1,221

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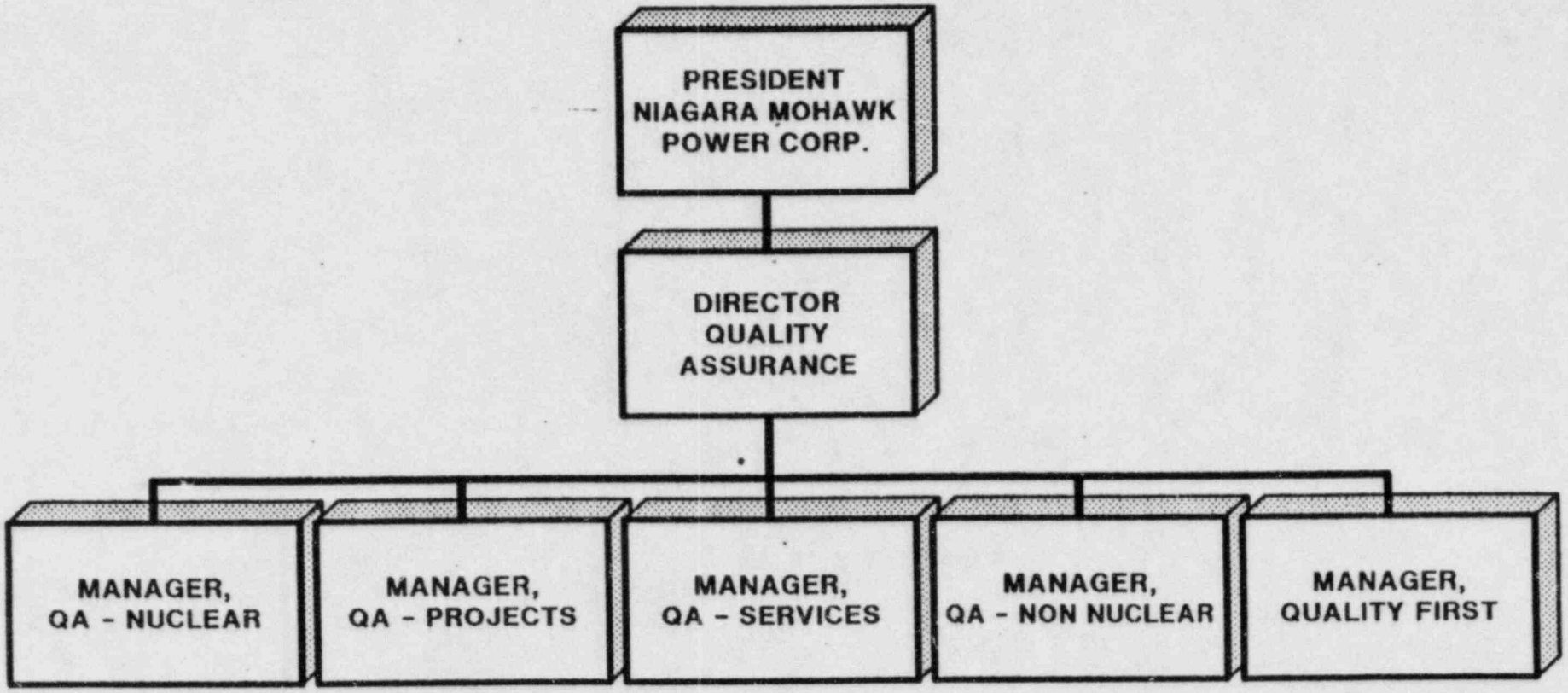
NINE MILE POINT UNIT 2 QUALITY ASSURANCE

NIAGARA MOHAWK POWER CORPORATION QUALITY ASSURANCE DEPARTMENT
CURRENT ORGANIZATION



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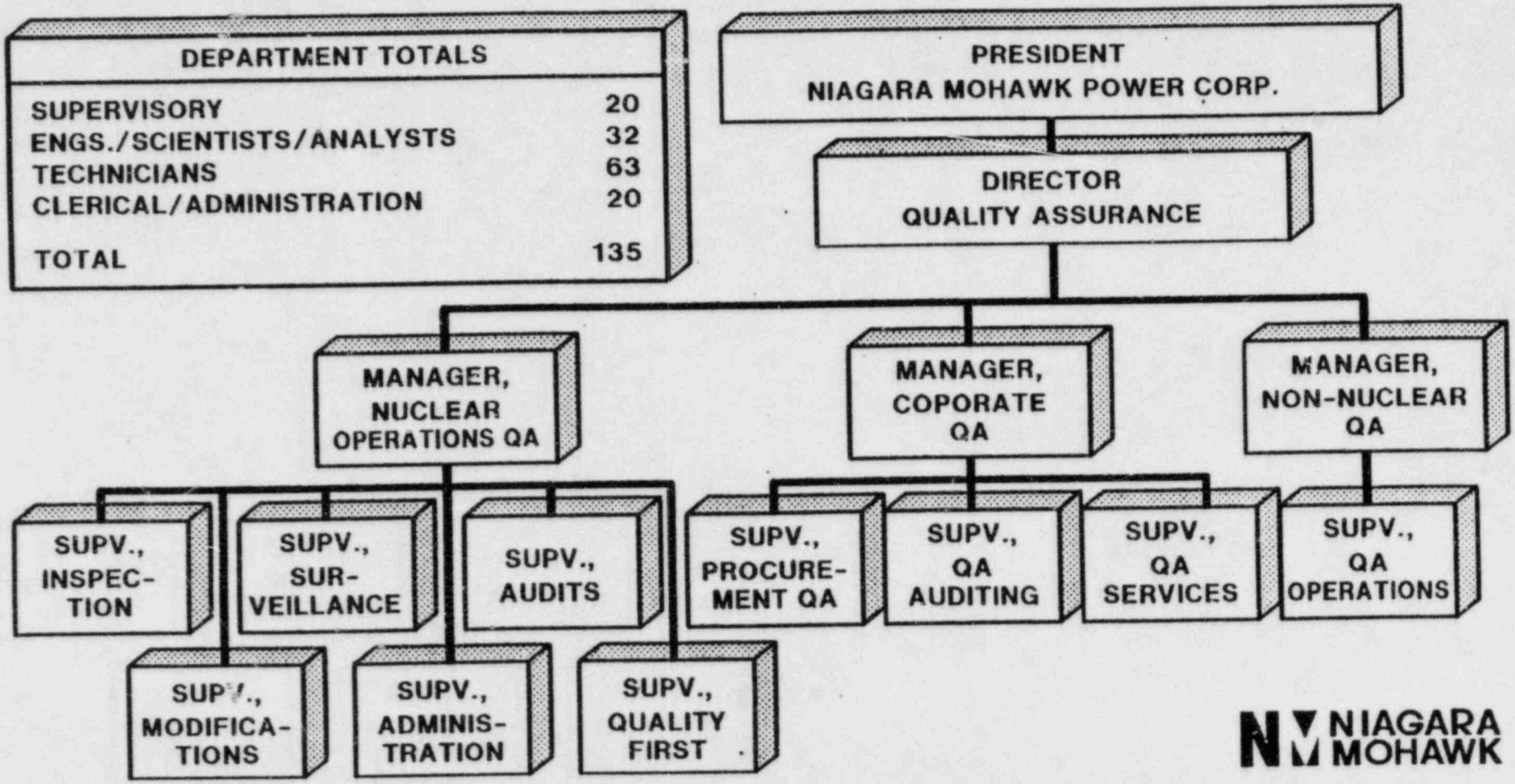
NINE MILE POINT UNIT 2 QUALITY ASSURANCE

NIAGARA MOHAWK POWER CORPORATION QUALITY ASSURANCE DEPARTMENT
NUCLEAR OPERATIONS NMP1 & 2 PROJECTED ORGANIZATION



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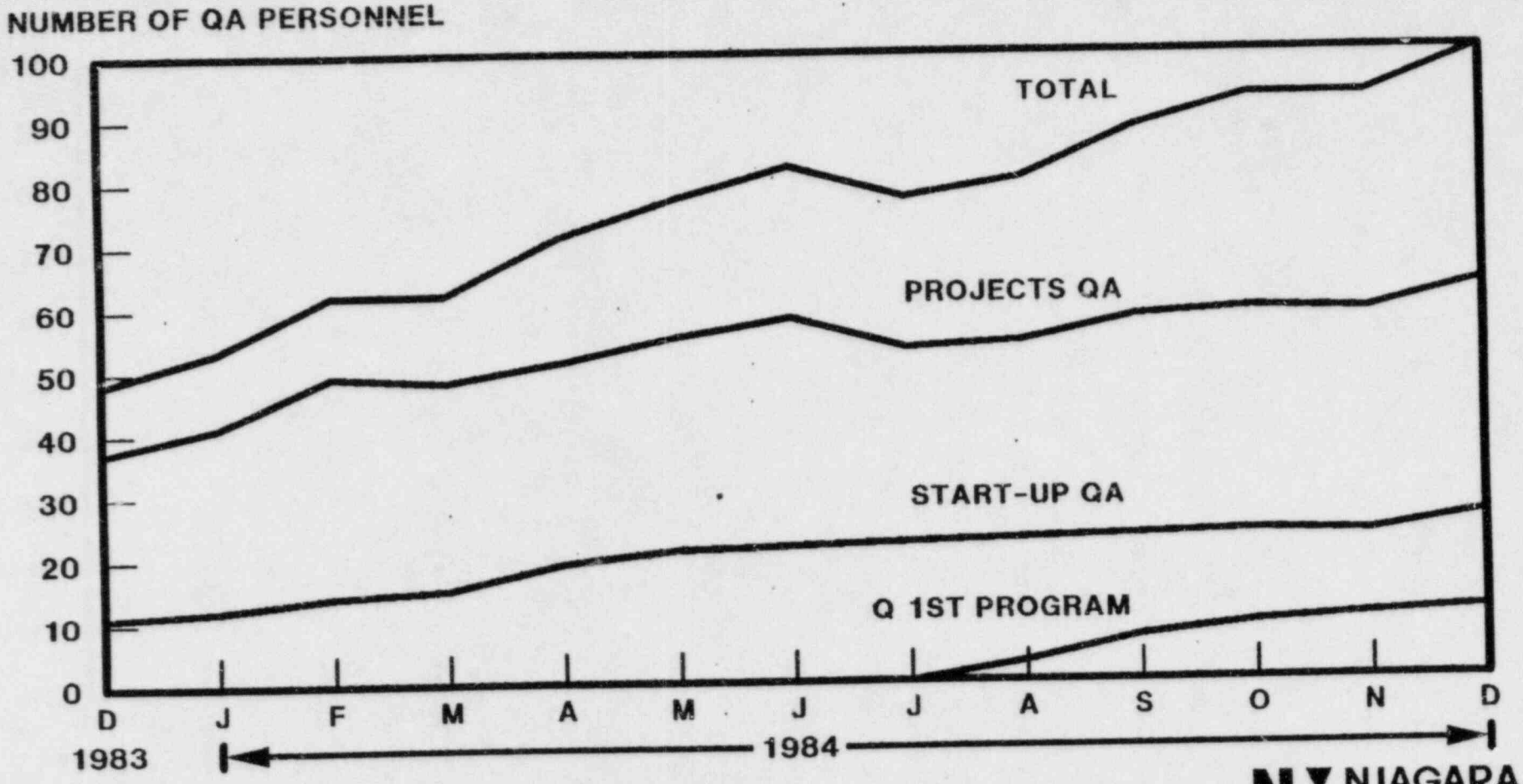
NINE MILE POINT UNIT 2 QUALITY ASSURANCE

QA PERSONNEL WITHIN NMPC ORGANIZATION AT NINE MILE POINT UNIT 2 SITE



NINE MILE POINT UNIT 2
QUALITY ASSURANCE

NMPC Summary of MAC Independent Assessment Final Report by Project Phase

	Phase	Items Assessed	Unsat. Items	CAR's Issued	IR's Issued	Observed % Acceptable	No. of Recom.
I.	CAT	365	37	12*		89.9	24
II.	SALP	192	1	1		99.5	8
III.	NMPC DEF.	189	4	4		97.9	38
IV.	CONTR. DEF.	2,644	90	62*	6	96.6	150
	Total	3,390	132	77	6	96.1	220

Note: *CAR's No. 42 and 140 Include Phase I & IV and are Shown in Both Areas

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NINE MILE POINT UNIT 2
QUALITY ASSURANCE

QA Program Assessment

- NMPC Conducted Assessment of Contractors' QA Program Effectiveness During August/ September 1984
- Results Indicated Many Program Elements Effective, However, Some Elements Needed Strengthening
  - NMPC Issues CAR's and Specific Recommendations to Enhance QA Programs
- Actions have been Initiated by Contractors and Site Project Management to Increase QA Programs Effectiveness on the Project

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NINE MILE POINT UNIT 2
QUALITY ASSURANCE

Hardware Surveillance/Inspection Assessment

- As Part of NMPC Surveillance/Inspection Activities, Assessment of Contractor-Accepted, Safety-Related Hardware was Conducted
- Assessment was Performed in Last Quarter of 1984 and Included a Re-Inspection of a Sample of Hardware Involving 15 Different Commodities
- Although Some Deficiencies were Identified, Based on Engineering's Evaluation of Deficiencies, have Concluded that Sufficient Confidence Exists to Provide Adequate Assurance that Hardware Installed will Perform its Intended Function

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NINE MILE POINT UNIT 2 QUALITY ASSURANCE

Nonconformance and Disposition Reports vs. Significant Deficiency Reports

	Number	% Dispositioned Accept As-Is
• N & D's		
- Total N & D's Issued Through November 1984 Cat I, II, and III	9,422	45%
• Significant Deficiency Reports (Ref. Title 10 Part 50.55e Reportable)		
- Total Called into NRC as of November 1984	145	

• $\frac{\text{Total Significant Deficiencies}}{\text{Total N \& D's}} = \frac{145}{9,422} = 1.5\%$

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NINE MILE POINT UNIT 2 QUALITY ASSURANCE

Allegations/QIP Reported Concerns

- Allegations
  - Allegations Reported to NRC Brought to NMPC's Attention 11 Total
- NMPC Quality First Program Reported Concerns
  - Program Started September 14, 1984. Data Through January 19, 1985

	Quality	
	CAT I	BOP
• Concerns Reported	27	20
• Investigations Complete	20	16
• % of Investigated Concerns Valid	20%	19%

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