NUCLEAR REGULATORY COMMISSION

PUBLIC COMMISSION MEETING

In the Matter of:

DISCUSSION AND POSSIBLE VOTE ON LaSALLE-1

(PUBLIC MEETING)

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UNITED STATES OF AMERICA

NUCLEAR REGLATORY COMMISSION

DISCUSSION AND POSSIBLE VOTE ON LaSALLE-1

PUBLIC MEETING

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

Thursday, August 5, 1982

The Commission convened, pursuant to notice, at 11:05 a.m.

BEFORE:

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

STAFF AND PRESENTERS SEATED AT COMMISSION TABLE:

J. HOYLE
L. BICKWIT
T. BOURNIA
D. EISENHUT
H. DENTON
J. KEPPLER
A. KENNEKE

AUDIENCE SPEAKERS:

J. KNIGHT
C. NORELIUS

P R O C E E D I N G S

CHAIRMAN PALLADINO: Good morning, ladies and gentlemen. The Commission meets this morning for discussion of and a possible vote on a full power operating license for LaSalle Unit 1.

On April 17th, 1982, the director of the Office of Nuclear Reactor Regulation issued a license limited to low power operation for LaSalle Unit 1. On June 21, 1982, the LaSalle Unit 1 reactor achieved initial criticality. During the last several months, the Region 3 office has received allegations regarding construction activities at the LaSalle nuclear facility. A special inspection was conducted in response to several allegations regarding the adequacy of construction at the LaSalle station.

On July 19th, the regional administrator issued a report on the special safety inspection. This report concluded that LaSalle Unit 1 can be operated safely above zero power. On July 26th, 1982, we received a letter from the Government Accountability Project that provided allegations associated with heating, ventilating, and air conditioning system work at LaSalle. On July 27th, 1982, the Commission was briefed by the NRR and the Region 3 staff on the status of allegations and other review items of the proposed

full power operating license for LaSalle Unit 1.

The Commission deferred action on the full power license pending a report of further investigation by the staff.

I should point out that Commissioner Gilinsky had planned to be here for this meeting, but travel difficulties have prevented his getting back on time.

Now, unless any of my fellow Commissioners have any opening remarks, I propose to turn the meeting over first to Mr. Keppler, for us to receive a report from him on the allegations concerning LaSalle Unit 1, and then turn the meeting to Mr. Denton, for us to receive the staff recommendations regarding the full power license for the facility.

Are there any other opening remarks?

(No response.)

CHAIRMAN PALLADINO: I suggest then we proceed with Mr. Keppler.

MR. KEPPLER: Thank you, Mr. Chairman.

A week ago Tuesday, when we were back here for the Commission meeting on LaSalle, the Government Accountability Project left a package with the Commission that raised serious questions about the work provided by the Zack Corporation responsible for the heating, ventilating, and air conditioning work at

LaSalle. They also expressed some concerns with respect to the past investigation work that was done in a rather general way. I would like to bring you up to speed on what has happened in the last nine days with respect to our efforts and where we are continuing in this effort.

First of all, last Thursday, which would have been, I believe, July 29th, the Zack Company submitted a Part 21 report to the Commission concerning a potential defect problem in that welding work may have been done by different people than were alleged to have -- than were reported to have done the welding work on the records, so there is a question of welder qualification work raised by the Zack Company.

In addition, we had a meeting on the next day with a representative of GAP and key principal witnesses that provided information to elaborate on the information that had been provided to the Commission.

On August 2nd, we had a meeting with Commonwealth Edison to explore the company's evaluations of the problems and what they have been doing with respect to the allegations at Zack to confirm the adequacy of the system. At that time, the Government Accountability Project left additional allegations with us, one more by an ex-Zack employee that will have to be looked into. In addition, there were statements --

affidavits provided to us that related to two previous areas that had been investigated in our earlier investigation. One of these relates to the reactor building block walls, and in particular the quality of the mortar in there and whether all of the reinforcing pieces are there, and there was an additional affidavit related to the barrel that had been alleged to be on the pedestal. These allegations or affidavits will be pursued by us. We have done nothing further on that at this time.

The NRC's investigation of the allegations, of all of these allegations is going to take some time. The paper work problems at Zack are going to take time to go through, and we are estimating right now it will take us another six to eight weeks to complete the investigation of all of the allegations involved.

We have, in addition to the Region 3 staff involvement, we have participation by the Region 4 Vendor Inspection Branch, and in addition to pursuing the allegations, the Vendor Inspection Branch is conducting a separate fresh audit of the Zack Company itself.

COMMISSIONER ROBERTS: What is the level of effort? How many people are involved?

MR. KEPPLER: I would say right now there are

probably of the order of five to seven people involved overall, including the Region 4 people. I can get you a number if you want an exact number.

What I would like to do is tell you what information we have obtained to date before I turn the meeting over to Harold, let you know what we have obtained. With respect to the Zack issue, there appear to be what I will call three significant areas of concern. One is the area related to the materials involved, the materials of the ducting, the stiffeners, the hangers, and the welding. The second area has to do with the quality of the welding, and the third area basically has to do with the records themselves and the quality assurance aspects, and possible enforcement action that may have to be taken with respect to that.

Now, when we met with Commonwealth Edison, some of the things that we have learned that I think are important to the Commission is that of the materials used in the HVAC system, all of the material furnished by the Zack Company was supplied to what is called commercial grade standards with two exceptions. One were some bolts that were used in the system, and the other was the weld rod fuller material. I included this information, by the way, in a response to Commissioner Gilinsky's questions.

All of the rest of the material that was provided by Zack, as I said, was to commercial specifications.

Secondly, Commonwealth Fdison purchased much of the material in there to specifications in excess of commercial, and that also was included in the information provided in the response to Commissioner Gilinsky's letter.

In addition, the NRC took 30 samples of material, and -- let me just get something here. We received the verbal report on this from Argonne National Laboratory that indicated of the 30 samples taken all met the chemical specifications with the exception of one sample that had a sulfur content which was slightly in excess of the allowable standard, .052 versus .050. We did receive a written confirmation report from Argonne, and I need to update that information.

In fact, there are four chemicals that are slightly in deviation from the standards. The carbon specifications for 8575 material calls for .17 to .24 percent. One of the samples had .16 percent, slightly low. In addition, there were two samples involving manganese having a content of .61 percent, where the allowable is .25 to .60.

CHAIRMAN PALLADINO: Are these in addition to

the sulfur?

MR. KEPPLER: That's correct. The written report -- We picked this up out of the written report. When we received the oral report by telephone, they just told us about the sulfur, so what I am giving you is an update and a change.

Now, we intend to continue our review, as I said, of the records. We intend to take some more samples to have analyzed for chemical content based upon what we consider to be discrepant records, those records that are the most questionable, and we will pursue that analysis within the next couple of weeks.

Let me talk about the welding briefly.

CHAIRMAN PALLADINO: These material samples, were they all duct work, or were they some hangers and --

MR. KEPPLER: We took samples out of the safety portions of the plant, and they included duct work, stiffeners, angle pieces, and hanger pieces, so we took a spectrum, but they were taken at random, just out of different safety related portions of the plant.

CHAIRMAN PALLADINO: Did the ANL report indicate any implications of these minor deviations from the specs, or what appear to be minor? I don't want to characterize them.

MR. KEPPLER: I haven't read the report. It

was handed to me this morning. But I have some people here. Maybe they can answer that. We just received the report, and they quickly reviewed the numbers. I was told that the sulfur content was not believed to be any significant deviation, and we will pursue that aspect with respect to the carbon and the manganese.

You will recall that at the last Commission meeting I spent some time talking about the efforts that have been undertaken by Commonwealth Edison to require a review of the welding work that had been involved, particularly the support welding work, and I mentioned that the Conam Corporation had been brought in to do a review of past work and to do a continuing review of the ongoing welding work, and that to us represented some confidence in the welding aspects.

I don't have anything new to add to that with respect to what we have done, but I want to report something new to the Commission with respect to some welding work that was done in the ducting.

CHAIRMAN PALLADINO: In the what?

MR. KEPPLER: On the ducting, and I am talking about what I will call tack welding or stitch welding, angle pieces to the ducting, stiffener pieces to the ducting. When Commonwealth Edison met with us on Monday, they reported that a review of that welding had

disclosed some 160, approximately 160 rejectable welds out of a sample of over 2,000 that were looked at, roughly a 7 percent reject rate. Their evaluation of the matter in specifying these welds was that they be 80 percent effective, or 20 percent reject rate, and that was assuming a uniform type of distribution of problem areas.

A further review of this was reported to me today that in three ducts, six connections, they feel that the distribution of failures is something that should be corrected, and they have declared the system inoperable, and intend to fix those pieces. So I wanted to bring that to the attention of the Commission.

CHAIRMAN PALLADINO: When do they intend to fix them?

MR. KEPPLER: I am told promptly, and we will follow up on that.

With the exception of that, our review of the records thus far has not disclosed any hardware problem with respect to the records, but we intend to continue our review of the records, and if we find a problem during the interim, then we will deal with it at that time.

I mentioned that the other -- the third issue was the quality assurance aspects of that, and we will

continue our review at Zack of the quality assurance records, and complete that investigation work, and determine whether or not -- what action needs to be taken after we complete that review.

CHAIRMAN PALLADINO: Are all your pending reviews related to the Zack heating, ventilating, and air conditioning system?

MR. KEPPLER: I mentioned to you that we had received some additional information with respect to the block walls.

CHAIRMAN PALLADINO: Oh, yes.

MR. KEPPLER: We will be pursuing that on a timely basis. You will recall that in response to a concern that had been raised in this area, we did what we felt was a pretty comprehensive review of the matter. We followed the actions that the licensee had taken in response to a bulletin. We looked at some core sample results that had been taken, and in fact we even required some additional core drillings to be made, borings to be made, and we found no problem in this area.

Now, what needs to be looked at, in my view, is that we have had more people come forth to tell us that this work wasn't good, and until I talk to them I really can't define the scope of what we feel is necessary, but I intend to look at these matters.

CHAIRMAN PALLADINO: Does that conclude your presentation?

MR. KEPPLER: Yes. I would be glad to ask any questions.

CHAIRMAN PALLADINO: John?

COMMISSIONER AHEARNE: Two questions. First, Jim, the last time one of the problems at least I was struggling with was the significance of the work that Zack had done. That is, how did it relate with respect to safety questions. At the time you were a little uncertain about that. Can you be clearer now?

MR. KEPPLER: I think Carroll is going to addres safety aspects of the plant.

COMMISSIONER AHEARNE: Okay. The second question relates to a PN that we got. I notice that there is another stop work order out -- this is with respect to Clinton -- on the Zack Company's work. Does that relate in any way to the issue that you are addressing here?

MR. KEPPLER: No. I think it relates only in this way, that it is clear to us that the Zack work at both Clinton and Midland is going to have to be looked at very carefully. The work that -- we had known there were problems before at Midland, and it appears that the types of issues that have been looked at with respect to

paper work are clearly evident at both Clinton and Midland, but I think on top of that there have been significant problems with installation work at Clinton identified.

In fact, that PN is really the result of an effort that we in effect pushed with the licensee to conduct a review of a number of areas where they were behind in their quality assurance -- where the quality assurance activities were lagging the construction activities, and based upon some significant problems we found at Clinton in the electrical area, we required the company to start looking into some of these other areas.

And I guess about a month or so, maybe six weeks ago, they stopped work in about six or seven areas down at Clinton because the quality assurance work was not keeping pace. Now, as they have looked into the work done by Zack down there, including both review done by the architect engineer and constructor and a review done by a special task force of Illinois Power people, they have found what I will call significant problems with respect to both the field work going on there and with respect to the documentation. So there is clearly a problem to be reviewed at Clinton and, we think, at Midland as well.

COMMISSIONER AHEARNE: Are you, in looking at

the work at Clinton or Midland or LaSalle, are you keeping in mind that this is the same company that is doing all this work, so that a problem that shows up in one plant, at least you ought to initially start out with the suspicion that it may very well show up in those other two plants?

MR. KEPPLER: That is one of the reasons why I asked the Vendor Inspection Branch to do a separate audit of Zack.

CHAIRMAN PALLADINO: Has the heating, ventilating, and air conditioning system at LaSalle been tested?

MR. KEPPLER: Yes, it --

CHAIRMAN PALLADINO: Has it been under operation for any extended period of time?

MR. KEPPLER: It has been preoperationally tested successfully, and in fact much of the system is in operation at this very time supplying the ventilation and the heating as needed. I can't tell you what percentage is in operation, but I would expect a substantial percentage of the system, two-thirds of it --

CHAIRMAN PALLADINO: Have any operational problems arisen?

MR. KEPPLER: Not that I am aware of.

MR. EISENHUT: The only problems that we are

aware of, and we went through this with the licensee, were things like sticky dampers originally on the original preop test. I believe one damper was found to be in an inverted position. Of course, on a major system such as this, you have to do the flow balancing, those kinds of things, but nothing of a major nature.

CHAIRMAN PALLADINO: Were those deficiencies corrected?

MR. EISENHUT: Yes, during the preoperational testing phase, which included a leak tightness, that is, can you deliver enough air. It included the logic of operation of the system testing. It included a number of those kinds of tests. Can it fulfill its function. The system or portions have been in operation for up to about three years. The last portions went into operation, I believe, something on the order of a few months ago. The major portions of the system are operating in fact today, cooling and ventilating the facility.

CHAIRMAN PALLADINO: Commissioner Roberts?

COMMISSIONER ROBERTS: No.

CHAIRMAN PALLADINO: Commissioner Aselstine?

COMMISSIONER ASSELSTINE: No questions.

CHAIRMAN PALLADINO: Okay. Why don't we go to Mr. Denton's presentation?

MR. DENTON: In parallel with Jim's efforts, we have been conducting an engineering evaluation of the significance of the system and the allegations that have arisen about it. Maybe I should bring up first the status of the various petitions that I have received with regard to any licensing action. I have received three petitions, and two of the three I have acted on.

One was from the State of Illinois, and the second one was from the Friends of the Earth. They were the ones I denied when I originally permitted low power operation, and those petitions are pending now before the Commission. I received on July 28th a petition from the Citizens Against Nuclear Power, who requested that I immediately suspend and revoke any license regarding LaSalle Unit 1, halt all proceedings, and hold public hearings on the allegations, and the latter one is one I intend to act on prior to any authorization to go above 5 percent power, and the method that I would plan to act would be what we propose to tell you today.

If there are no questions about the petitions, I will go into our engineering evaluation.

CHAIRMAN PALLADINO: I don't see any signs of questions. Why don't you proceed?

MR. DENTON: Okay. Our engineering review has recognized that numerous QA deficiencies have been

identified in certain aspects of this system, so we have focused on what is this system intended to do, and what is the significance of the allegations that have been made, assuming that the allegations are true. We will have a detailed presentation made by Darryl Eisenhut on these. I would like to summarize principally my own conclusions.

One is with regard to the safety significance of the system. It is very unlikely that failures in this system can cause any significant release of radioactivity. If the system fails during normal operation, you can get a heatup in various rooms in which there are electrical gear, and it takes hours, and the temperature in certain rooms could rise to the point which, if you did not provide additional ventilation, could lead to system failures in certain equipment, but there are certain reasons -- we think the plant has fans and could cope with equipment breakdowns.

We also looked at whether in the event of an earthquake the system could cause an accident by falling on certain critical components. We think that is very unlikely. So, it is very unlikely that failures can cause accidents.

Also, the system, as we have heard, has been operating, parts of it, for some time, and has been

preoperationally tested with regard to the functions that it is intended to perform. That is with regard to providing ventilation, filtration, and these types of functions. So, in large measure, a lot of the system has been tested out functionally.

We have made a number of material checks. The company has reported to us a number of the material checks they have made. These checks tend to confirm that what is there meets the operable specifications. We have also looked at what stress assumptions went into the design of the system by Sargent Lundy. What we find is that the supports and struts for this system are designed very conservatively, and that the material strength properties assumed in the design are in fact met by any obtainable industrial grade struts and duct work. So we think that from a design standpoint, even if the documentation or records turn out to have been completely inadequate, the properties of a material fulfill the design values.

However, there are these numerous questions about the adequacy of the records and the documentations, questions relating to Zack and other aspects, and because of this the company has committed to have an expert in heating, ventilation, and air conditioning design, construction, and operation do a

thorough review of the system, taking into account all of the information that has turned up about the system.

COMMISSIONER ROBERTS: Is this their letter to you of yesterday?

MR. DENTON: That is correct. So they have committed to have an expert in the system do the kind of review of the actual installation of the system, review the preop test and the methods of installation to provide added assurance that the system will in fact do the type of job it is intended to do.

So, based on the fact that from an engineering evaluation, we think there is confidence that the system will perform its safety function, that during the low power testing phase there was very little risk to the public from any accident in the plant, that failures of this are very unlikely to cause any accident, and we think that if we formalize their commitment to us in the license, that provides an adequate basis for authorizing full power operation for the license containing conditions of the type that have been made in their letter.

So, Mr. Eisenhut will describe these matters in more detail, but I think we have looked at the engineering implications of the classes of allegations in reaching this decision.

MR. EISENHUT: Thank you. Could I have slide number 2?

(Slide.)

MR. EISENHUT: This is a little bit of a summary, and I will just try to walk through briefly in a little bit more detail the key points that Harold made. First, the HVAC system is certainly not one of the most important safety critical systems in the plant. It is certainly beyond the engineered safety features, the primary coolant pressure boundary. It is redundant in its active components. There is some common duct work in certain places. The active components that are needed is in fact required to be redundant. It is seismic category 1. It is a class 1E system. So we do require that the system, the portions that are needed from a safety aspect -- it is generally a commercial grade system. Commercial grade simply means there is no specific additional standards for things that go into the system.

Appendix B does apply because it is a -- applies for the portions of the system that are safety related. What Appendix B requires is simply that you have a certificate of compliance. To say that in a little simpler language, if in this case the HVAC company that is installing the equipment should have a

certificate back from whoever supplied it that in fact they were getting and installing what it was it was supposed to be, that is, what they ordered. The design for the system, remember, was laid out by Sargent Lundy with Commonwealth Edison. It was in fact installed by the Zack Company. So that is the framework I am working through on all of this.

Most of the system is outside the primary containment. That is, it is accessible during operation of the facility. A very small portion is inside the primary containment, and that is simply for the ventilation aspects inside.

There are two aspects of the safety questions that come up concerning the HVAC system. One is, can a failure of it cause an accident. That is, can it literally fall on something, and there, as Harold pointed out, it is highly unlikely that the system as installed can fall and cause a major accident. The second piece is, assume an accident occurs such as a design basis loss of coolant accident. Could an HVAC system failure complicate that and lead you into problems? The answer is, it could. The basic way it could is through overheating, but through overheating you have time, it is detectable. The active components have redundancy. You have backups in the form of

portable equipment and can get into those locations, and you have time to put those in. They will be summarized in some greater depth in a followup slide if you choose to go into those.

COMMISSIONER AHEARNE: Darryl, one question relating to that. Is there any linkage -- I noticed in the answer from Dircks to one of Commissioner Gilinsky's questions -- let me find the exact quote. The question was, what is the safety significance of the equipment, and one of the answers was, the key objectives of the safety related portions, and Item C is to control, limit, or prevent the release or transfer of airborne radiological contaminants. Now, you just mentioned overheating as being the only real possible complicating factor in that.

MR. EISENHUT: No, I am sorry. If I said only, I meant it is the most critical.

COMMISSIONER AHEARNE: All right.

MR. EISENHUT: It is the first thing you get to in time.

MR. DENTON: There are naturally these reductions in radioactive concentrations functions, and they are listed on Slide 5, and they are the types of functions which have already been demonstrated in preoperational testing to work.

COMMISSIONER AHEARNE: That is a different aspect. One question is, does it work. Now, another question is, if it does not work, how serious is it? And I think Darryl was addressing that subject.

MR. DENTON: Well, we weren't trying to be exclusive. We were just trying to put the major ones. We think the functionality of the plant has been largely demonstrated through performance testing, and one of our concerns, though, has been suppose there is an earthquake during the initial period of operation. What would happen if this equipment failed? I think that is why you focused on it.

MR. EISENHUT: That is right.

MR. DENTON: We didn't focus on radioactivity during this period, because you won't have that much radioactivity in the plant. You have low fission product inventories.

MR. EISENHUT: Well, the heating is certainly the most critical, but we do -- we have looked at the radiological in a sort of a limited sense. If, for example, you have a loss of coolant accident, you have a question, what is the airborne radioactivity in the control room. The limiting dose to the people that stay in the control room is airborne radiation. This plant has two forms of bottled air, if you will. They have

literally plug-in bottled air that they can have remote masks that they can move around in the control room, and they also have something, I think it is like Scott airpacks in the control room. If in fact they put on the airpacks or in fact they switch to the plug-in type units, I believe the number from a very rough preliminary evaluation from Commonwealth was, you would get something on the order of four rem maximum dose over 30 days, and in fact it is -- that assumes design basis loss of coolant, it assumes a complete total failure of the HVAC, and still would likely stay below the threshold.

Because of the order of magnitude of those numbers with those assumptions, it became not the primary concern at this point, because we felt it was not the most limit, so we therefore went to overheating as the first kind of consideration that would in fact lead you into trouble. I didn't mean, as Harold said, I didn't mean for this to be excluding anything else. I was trying to summarize the key points.

CHAIRMAN PALLADINO: Harold, as long as we are correcting the record, you had said that all of this material was generally commercial grade equipment, and no specific standard. In response to Commissioner Gilinsky, there was identified the fact that certain

material had been purchased by Commonwealth Edison, installed by Zack to specifications in excess of commercial grade.

MR. EISENHUT: Yes, there are two pieces of equipment, and that is what is generally meant to summarize.

CHAIRMAN PALLADINO: I appreciate that. I just thought we ought to correct it. There are two, four, six, seven --

MR. EISENHUT: I will summarize it.

MR. DENTON: We are trying to give an overall summary rather than the detail first.

CHAIRMAN PALLADINO: But the statement was made that there were no specific standards, and I think there were some components that went beyond that.

MR. DENTON: Yes, that's correct.

MR. EISENHUT: From a system capability standpoint, as I mentioned, the entire system was designed by Sargent Lundy. You basically use standard materials except for those cases that we will summarize as we go further on. The materials, as Mr. Keppler mentioned, samples of the materials were checked. In addition, the utility went in with a small testing piece of equipment that basically takes an arc across the material -- I would characterize it as sort of a mini

mass spectrometer -- to check pieces of equipment -- pieces of material, and I think they have checked something over 100 more samples of equipment that are verified. The proper materials were in fact installed in the system.

The supports have also been inspected, as Mr. Keppler pointed out.

A piece that is missing off this slide is, in fact the components were in fact all specified with a couple of minor exceptions, were all specified specifically by Sargent Lundy or Commonwealth Edison by model number or specified by actual serial number. In essence, they told the Zack Company, go purchase these pieces of equipment to put inside your heating and ventilation system.

As was mentioned earlier, the system was preop tested. It is in operation. The basic failures that could occur in the system are detectable. They are principally, the primary one that gets you there first, as we mentioned, is overheating. You do have capability for manual action, and the first place you would overheat is on the order of about two hours. That is the auxiliary electric equipment room. Given an accident environment with a total failure of the HVAC, you have something on the order of two hours to take

some manual action. That is a rough yardstick calculation that was done.

If I could have the next slide.

(Slide.)

MR. EISENHUT: Where this left us after we looked at the, from an engineering standpoint, we concluded that we certainly do have some confidence in the system. We don't have the absolute upper bound threshold that we would normally like to have. There are no stones left unturned. The allegation areas are basically limited to work done by the Zack Company.

CHAIRMAN PALLADINO: Could I ask you a question on the word "some?" Some could be very little, very low confidence, it could be very high confidence.

MR. EISENHUT: Well, if I were to have said it and not wrote it down, it probably wouldn't have prompted the question. I think I did say it. In retrospect, it would have been better, clearer for me to say it. It is not the high level of assurance that we normally have. We do have quite a bit of confidence, as I said, on the different aspects that I pointed out, and taken as a whole. There are a number of areas where certainly questions remain. We clearly believe there were QA breakdowns in the Zack Company's work, and they principally so far have been identified in the areas

that Mr. Keppler pointed out.

MR. DENTON: Well, I guess for myself I have reasonable confidence to advocate what we are doing. It is somewhat like the confirmatory safety research or unresolved USI's. I want more information because of the numerous unsettled questions about the Zack allegations.

CHAIRMAN PALLADINO: Well, I was just trying to find out, is there some means, whether you have some low level, or is it a higher level, approaching --

MR. EISENHUT: We have adequate assurance for the action we are proposing. It is not adequate and we don't feel comfortable without these actions going for the long term.

MR. DENTON: I think the purpose of having this independent look is to try to put to bed some of these questions. In my mind, I think it is doubtful that the records will ever get completely straightened out to everyone's satisfaction. That is why I put a great deal of weight on whatever an independent person finds when he looks at the actual system and the way it is performed, designed, and installed, and we have tried to design an approach here which does not require ultimate resolution of all the documentation deficiencies, and that really looks like a major task.

MR. EISENHUT: Region 3 has indicated the investigation will take something on the order of one to two months, six to eight weeks, I believe Jim mentioned. Commonwealth has proposed, as has been referenced in this letter of August the 4th, that rather than -- that in parallel with trying to resolve all these individual aspects, to add a broad level, another level of assurance over all of this. They have proposed having an independent review of the safety related portion of the HVAC system performed by consultants with expertise in HVAC system design, installation, and operation, and they proposed a general scope of that which is aimed principally at ensuring that the HVAC system as installed in the plant today is in accordance with the design that was laid out originally and all aspects therein, that is, it is a safety system, and it in fact is of the necessary quality to fulfill its function.

They propose that the study be completed, the evaluation be completed by September 15th, and in their letter they also committed that operation beyond 50 percent power will not proceed until the assessment and any required remedial actions are completed. Another key point of the letter, of course, was that while this effort is going on, the review by the independent group

will not be constrained by operational considerations. That is, this takes preference over operation of the facility.

We took that and put that in parallel with the proposed startup activities that have been laid out, remembering that this is a first of a kind Mark II in the United States. It has a testing program laid out over some period of time. The program with the required test would have this plant between now and September 15th at all times under 50 percent power. In fact, all except about four or five days they would propose the plant be operating under 20 percent power, either at or under 20 percent power.

The proposed program would have them go up for a couple of tests above 20 percent, something less than one week of the total time. The average is something less than 20 percent power.

CHAIRMAN PALLADINO: Do you feel that this program will satisfy the need for a record trail that is lacking now or to compensate for it?

MR. DENTON: I think it will be a substitute for it. I think Jim will continue to try to straighten that out and take whatever action is appropriate based on the documentation defects or inadequacies that are found. So you will continue to pursue the records. I

saw this program as being one which could -- would work independent of the ultimate resolution of the records.

CHAIRMAN PALLADINO: It would provide assurance comparable to that which might be provided by the record. Is that correct?

MR. KEPPLER: Yes. I think it is an added insurance and recognizes that we may not be able to complete the record trail.

MR. DENTON: Being the first GE plant to start up in a long time, I think their startup schedule is ambitious, and I would be surprised if in fact they achieved the type of operation that Darryl has talked about. First of a kind reactors tend to run into unexpected delays. So they may not actually achieve 50 percent power by the time that we are talking about. They have also committed in their letter that any time that this outside expert finds that the system cannot perform its safety function, that function -- that system would be declared inoperable under the tech specs, and actions would be taken, whatever the license would require. If they can't operate -- if that system is inoperable, then they would have to shut down. So, any findings during this period of operation that cast doubt on the functionality of the system would affect operations.

MR. EISENHUT: If I could have the next slide.

(Slide.)

MR. EISENHUT: With this package, what we recommend is, the issuance of approval to issue the full power license, subject to two conditions. The first condition is simply the recognition that over the last two, three, four days we have been having a number of intensive meetings with the utility, with the ANE, their independent testing agency's representative from Conam. We have been getting a lot of information in discussions over the table, informal documents.

The first condition is that prior to exceeding 5 percent operation, they must provide that information formally on the record, and we would in fact look at that to be sure that it is in fact the same bases that we are proceeding here with today. To give you an idea of what that is, remember, this plant shut down early last week. They were shut down for something like about eight days. I believe the day before yesterday they went back critical and started back up. They would not expect to exceed 5 percent power operation before August 12th, and this goes along with what Harold was just saying about the startup schedule.

COMMISSIONER AHEARNE: So whereas last week we

were told that they would need it within seven to ten days --

MR. EISENHUT: It is now within seven days.

MR. KEPPLER: Now within seven days.

COMMISSIONER AHEARNE: Yes, but the seven days from last week has passed.

MR. EISENHUT: The second condition we would propose is that prior to exceeding 50 percent operation, the licensee shall submit the results of the review that we identified in the August 4th letter. The review should encompass all safety related HVAC systems and the effect of non-safety related HVAC system failures on safety systems, and that is in fact the scope before. Recognize there are non-safety grade heating, ventilation, and air conditioning systems that have no bearing on safety related work whatsoever.

MR. DENTON: And we would add words to any license condition that would indicate this has to be subject to satisfaction of the staff.

CHAIRMAN PALLADINO: I was just going to ask you how this would be resolved, so you are saying this would be resolved to your satisfaction.

MR. DENTON: Yes.

CHAIRMAN PALLADINO: At least that is what you are recommending?

MR. DENTON: That is correct.

MR. EISENHUT: Now, the rest of the package here has some background information basically supporting the line items and the summary that I tried to glean the key points out of to go through in summary fashion. I don't really propose going through those unless there are some questions about the individual pieces that are contained back there.

MR. DENTON: I did want an opportunity to answer a question you had raised, Commissioner Ahearne, last time, when the appropriate time comes today.

COMMISSIONER AHEARNE: I was going to make sure you had the appropriate opportunity.

(General laughter.)

COMMISSIONER AHEARNE: As Jim also.

CHAIRMAN PALLADINO: Why don't we proceed to those questions, unless other Commissioners have other questions?

MR. DENTON: Well, you had asked about -- one question, at least, I wanted to answer is whether or not the number of holes that had been drilled in the walls and the cores that have been taken was typical or not, and I indicated last time that I didn't know. I have since asked Jim Knight of our engineering department to look into that area, and I would like to have him answer

that question.

MR. KNIGHT: The number of holes roughly that one would attribute to LaSalle is on the order of 50,000, in round numbers. The best estimate of the architect engineer and our own people from other experiences they have had is that that is probably -- well, first of all, it is a large number, and it is not just in and of its own -- not by itself. In comparison to other projects, it is a relatively large number.

COMMISSIONER AHEARNE: Would you quantify that?

MR. KNIGHT: It may be twice what one might expect in normal practice. The largest single factor we believe is the necessity of going in and making modifications to accommodate the hydrodynamic loads from loss of coolant accident and SRV loads.

COMMISSIONER AHEARNE: Are you saying that your estimate is that the very large number is based upon additional requirements which were levied on them after the plant was designed?

MR. KNIGHT: Yes.

COMMISSIONER AHEARNE: Would you therefore then conclude that you would expect to see this in all other GE plants that were under construction in the last few years?

MR. KNIGHT: To some degree. Practices do vary. Some architect engineers may well go further in trying to preplan for the systems. I would go so far as to say that it might also be an element of luck as far as being able to have inserts and such in the right place to accommodate the rather marked changes that were necessary for the Mark II loads.

MR. DENTON: The Mark II loads were not defined and agreed upon until very late in the review, and I think that is what leads to the atypicality here. Apparently it is industry practice to put in a large number of embedded plates, assuming that the equipment will be located where they think it will be, but then as they purposely for construction purposes go ahead and pour walls and then are willing to accept the problems that come from having a completed design done later and having to come back and put in supports and brackets that don't coincide but where they may have provided embedded plates.

MR. KNIGHT: I think it is singularly important to note that the impact of what seems to be a very large number of holes is extremely small, that particularly when you are drilling in reinforced concrete to put inserts in walls in the range of half-inch or below, or maybe three-quarter inch, you are

only drilling in a few inches. You may well not get into steel at all.

COMMISSIONER AHEARNE: But I thought in this particular case the crux of the issue was that they had gotten into steel a great number of times.

MR. KNIGHT: Well, it also depends on what you mean by got into steel. If you go in, say, with a carbide chip drill, hit a steel bar, you in effect have, you know, it is something that needs to be recorded, it needs to be kept in mind, but the likelihood of damage is extremely small, and then if you go further and take those cases where you have cut bars, unless you are in -- I would go so far as to say exquisitely sensitive area, you simply -- you have redundancy of steel, and you have the capacity, so that the impact is small.

COMMISSIONER AHEARNE: Jim, is that based upon your experienced engineering judgment or on analysis?

MR. KNIGHT: On analysis.

COMMISSIONER AHEARNE: Which then would, I guess, bring me to the second question, which I think that you were going to answer or expand on.

MR. DENTON: Metal detectors?

COMMISSIONER AHEARNE: No, the documentation, the expansion of the Appendix B --

MR. DENTON: I have asked Jim to document the

basis for the conclusions that they had reached when they reviewed this area. Maybe Jim would like to give it verbally now.

MR. KNIGHT: Just very quickly, could I have the first slide from engineering please?

(Slide.)

MR. KNIGHT: Just to go over the steps that were followed by the staff, and I think this perhaps would help in our getting a better feel for the type of documentation. I should have given you the backup slides.

When the allegations were first made, we asked for drawings which would show us the location of the drill holes, and we received some 100 drawings. The staff went over those drawings to understand the types of structural elements which were penetrated and drilled into. By structural elements I mean slabs, floors, columns, this type of thing.

Having done that and gotten what we considered to be a good understanding of the structural -- the type of structures we were dealing with here, they then went to the field and using the drawings that seemed to indicate the highest density of drilling, they actually went to that location in the building to determine whether or not the drawing was in fact an accurate

characterization or representation of what was in the field, and we found that they were.

While at the site and at the engineering offices, we looked at the quality control procedures and procedures for documentation that were employed. That is, were there procedures in place which would require not post hoc but require during the process the recording of holes, the recording of bar strikes, and we found what we thought were in fact quite adequate controls in place.

We looked at the method of engineering assessment, and I think this may get more to what you were talking about and thinking about in terms of technical bases. In fact, there were no unique criteria that had to be employed. What was done was, they simply went back to the design for that section, looked at the required capacity, say, versus momentary capacity. Then took into consideration, for instance, if bars had been cut, they simply deleted the steel area that had been cut and saw that in fact they could still meet the original requirement. So there were no unique studies or unique analyses necessary.

We did go through and audit a number of the calculations where they had in fact gone back and checked, to assure ourselves that that method in fact

had been used and that it did work, and we came away with the feeling that that was in fact the case.

And finally, we looked at their method of evaluation of so-called nicked bars. These are bars that are struck by a drill that is incapable of really cutting them. And satisfied ourselves that they had done physical testing of bars taken from another site, but the bars were the same type of material, and had demonstrated, we felt, adequately that there really was no effect on bar strength. It can be best characterized by saying that in some cases the nicked bars showed higher strength than the unnicked bars within the statistical spread of the material variations themselves.

COMMISSIONER AHEARNE: I thought last time, I thought Harold mentioned that for purposes of calculation, the assumption was made that if the bar had been nicked, it was removed.

MR. DENTON: Yes, I think I need to correct that. I think what Jim has said is what I meant to say. If a bar had been cut at all as opposed to being bumped into, then you assume that the entire bar had been severed. I am still using the word "nicked." I should have used "cut."

COMMISSIONER AHEARNE: So if a bar had been

nicked, it was assumed not to have lost strength based upon that test that you just mentioned.

MR. KNIGHT: Yes. The deciding factor by and large is the type of instrument that was used to drill the hole.

CHAIRMAN PALLADINO: So that everybody knows what we are talking about, I was asking could you redefine what nick means at least in your assumptions.

MR. KNIGHT: Would I redefine it?

CHAIRMAN PALLADINO: Or define it.

COMMISSIONER AHEARNE: State your definition again, Jim.

CHAIRMAN PALLADINO: Restate it.

MR. KNIGHT: A nick is a strike of the bar typically by a carbide tipped drill which does not have the hardness necessary to actually cut into the bar. It might leave some mark on it and it might deform the outer surface, but it does not have the capacity to actually dig into the material and remove a piece of material.

CHAIRMAN PALLADINO: Okay, thank you.

MR. KEPPLER: We did get some information from four other utilities, or four other plants in the region on the numbers of bored holes and partially bored holes and concrete expansion anchors. I will leave that information with you, if you would like afterwards.

COMMISSIONER AHEARNE: Very good. Thank you.

Jim, just one last question. Perhaps you are the right person since you mentioned it briefly in your passing.

Harold, I think we are going to address the OGC's point with respect to the metal detector and requirements.

MR. DENTON: Let me ask Jim. He is the right person for that.

MR. KNIGHT: It appears to us that there has been some confusion about whether or not the use of metal detectors was in fact required. It was required by some specifications in areas where you would prefer to avoid removing a bar. Now, for instance, if you look at the specification it may show a picture of a floor slab. On the bottom side of that slab you would be in tension. In the center of the slab where you would be in high tension, the specification would require or call for the use of a metal detector. In an effort to avoid hitting bars if possible, in other portions where you are far less critical, drilling was allowed without the use of metal detectors.

In any event, we have concluded, and I think reasonably, that the use of the metal detector was not an outright requirement because if you didn't use it you were going to do something unacceptable, but a prudent action which was desirable and avoided the necessity of remedial action and going back and evaluating the cut.

COMMISSIONER AHEARNE: Having said that, what

is the region's finding with respect to whether the metal detectors were used in those high-tension regions?

MR. NORELIUS: I don't know that we did a one hundred percent verification, and In fact, I am quite sure we did not, to see that it had been used there. The reasoning was that we thought the basic question was did the drilling and coring problem unecessarily damage rebar to the point where it weakened the structure.

In all cases where the coring was being done and the metal detector was prescribed to be used, the analysis was done beforehand to assume that certain of the bar was hit. So if in fact the metal detector had not been properly used and the rebar was hit, then the analysis was correct. If it turned out that they did use the metal detector as had been indicated, then the analysis would be on the conservative side. Similarly on the drilling, any case where a rebar was hit by drilling, that was recorded after the fact on these hit sheets.

Now we do know that some of the companies did have a place on the form where they indicated yes or no that a metal detector was used, but we did not go back and go through that record in a one hundred percent fashion. We did not identify any "Noes" that I am aware of, but we did not in a disciplined sense go back and

look at that record.

COMMISSIONER AHEARNE: But to the best of your understanding, at least some of them did use metal detectors?

MR. NORELIUS: Yes. In scanning through the records our inspectors have said they did notice places where that was indicated and there was an indication that, yes, it was used. We also are aware from other of our inspectors who have visited the plant periodically that the companies did have metal detectors, they had records to indicate that they had those and that they were used. So we do have some, you know, general confidence that metal detectors were used.

COMMISSIONER AHEARNE: But am I correct in that your underlying reason for having confidence in the adequacy at the present time, both I&E and NRR, is that the reanalysis of what you concluded were the most vulnerable locations that led you to conclude that whatever damage was done was not significant?

MR. KNIGHT: I don't believe I disagree with that, but just to be certain ---

(Laughter.)

MR. KNIGHT: --- I would be inclined to say that it was a good system in place and we think it has been demonstrated to have been used well. It required

recording of bars when they were cut, and where they were cut analyses were done that assured that that section still had its design basis capability.

CHAIRMAN PALLADINO: Any other questions?

COMMISSIONER AHEARNE: No.

CHAIRMAN PALLADINO: Tom, do you have any other questions?

COMMISSIONER ROBERTS: No.

CHAIRMAN PALLADINO: Jim?

COMMISSIONER ASSELSTINE: No.

CHAIRMAN PALLADINO: Do you have more information?

MR. DENTON: This concludes our planned presentation.

CHAIRMAN PALLADINO: I wonder if I could ask General Counsel a question. Would it be legal or proper for us to act on the recommendations of the staff without having had these petitions all settled?

MR. BICKWIT: With respect to the petitions that are now before you on review, as I said at the last meeting, the Commission remains capable, pursuant to that review process, to grant some of the relief requested in that petition if it chooses to, even if it votes to authorize the issuance of the license today.

With respect to the petition which is not

before the Commission but is before the staff, Harold has said that he intends to act on that petition before allowing this plant to go above five percent power. To me there would be no legal bar to the Commission authorizing the issuance of this license with the understanding from Harold that he would do that.

COMMISSIONER AHEARNE: I have one more question.

CHAIRMAN PALLADINO: Sure, go ahead.

COMMISSIONER AHEARNE: I guess Harold is probably the right person. Going also through the answers, Mr. Dircks provided a series of answers to questions raised by Commissioner Gilinsky's office. One of the questions was "What is the safety significance of the heating, venting and air conditioning equipment which is not properly documented?" This is question 10.

The last line of the answer section says that "Commonwealth Edison has conducted a preliminary assessment of the safety consequences associated with the failure of materials with questionable records. Commonwealth Edison has completed the major concerns with personnel accessibility due to high temperatures." That is I think the point you people have been making.

But then this answer goes on to say "The

staff's review of this assessment is not yet complete," which I guess raises to me the question of when you were just saying that the significant hazard is due to high temperatures, is that your assessment or are you reiterating ---

MR. EISENHUT: No, let me explain the difference on this. Jim and I had a little bit of a logistics problem. The answer he wrote was written based on the Monday information. While he was on an airplane coming in yesterday and while I was in a meeting working with the continuing of the review, the answer had to be sent forth. So my information supersedes the end of that ---

MR. DENTON: That package was put together I think on the 3rd of August, and since that time we have satisfied ourselves on that area.

COMMISSIONER AHEARNE: Fine.

CHAIRMAN PALLADINO: Any other questions?

(No response.)

CHAIRMAN PALLADINO: Then let me ask the Commissioners are they prepared to vote on the recommendations on slide 4 of the staff's presentation, with the additional understanding that this matter is to be resolved to the satisfaction of the staff?

COMMISSIONER ROBERTS: I have a question.

Assuming the Commission accepts these recommendations and all these steps are taken, do we have to vote again to above 50 percent? I would like to have that clarified.

CHAIRMAN PALLADINO: If we add the sentence that this matter is to be resolved to the satisfaction of the staff, I would take that to mean that when the staff is satisfied they can proceed above 50 percent power. Is this a reasonable way ---

MR. BICKWIT: That would be my construction.

May I ask one question with respect to Harold's representation? Are you saying that if the Commission votes today to authorize the issuance of a license that you would not in fact issue it until you acted on the 2206 request?

MR. DENTON: That is correct. I don't think there is any legal requirement as to the order that I act on them, but as a matter of policy we have acted on 2206's prior to any pending licensing action, and I would follow the same practice now.

MR. BICKWIT: I think either course would be legal. I just wanted to clarify.

MR. DENTON: I would anticipate in the next day or two that I would act on the petition and then act on the license between now and the time that they could

use the license above five percent power.

COMMISSIONER AHEARNE: There obviously is a linked assumption there on the way you are coming out on the petition.

(Laughter.)

MR. DENTON: Yes, and I would tend to deny the request of the petition.

CHAIRMAN PALLADINO: Are you ready to vote on this matter?

COMMISSIONER AHEARNE: Yes.

COMMISSIONER ROBERTS: (Nodding affirmatively.)

COMMISSIONER ASSELSTINE: Yes.

CHAIRMAN PALLADINO: All those in favor of adopting the recommendations made by the staff with the addition that this matter is to be resolved to the satisfaction of the staff will indicate by saying Aye.

COMMISSIONER AHEARNE: Aye.

CHAIRMAN PALLADINO: Aye.

COMMISSIONER ROBERTS: Aye.

COMMISSIONER ASSELSTINE: Aye.

CHAIRMAN PALLADINO: Contrary?

(No response.)

CHAIRMAN PALLADINO: I think we agreed unanimously on this matter.

Are there any other issues regarding the

subject of LaSalle to come before us today?

(No response.)

CHAIRMAN PALLADINO: All right, if not, thank you.

We will stand adjourned.

Whereupon, at 12:10 p.m., the meeting adjourned.)

* * *

NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the

PUBLIC COMMISSION MEETING

in the matter of: DISCUSSION AND POSSIBLE VOTE ON LaSALLE-1

Date of Proceeding: August 5, 1982

Docket Number:

Place of Proceeding: Washington, D.C.

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

Mary C. Simons

Official Reporter (Typed)

Mary C Simons

Official Reporter (Signature)

OUTLINE

- RECENT ALLEGATIONS RE: ZACK (REG. III)
- HVAC - SAFETY ASPECTS # 2
- CONCLUSIONS # 3
- RECOMMENDATIONS # 4
- BACKGROUND
  - HVAC DESCRIPTION # 5
  - DESIGN REQUIREMENTS # 6
  - DESIGN REVIEW # 7
  - FABRICATION AND INSTALLATION # 8
  - SAFETY-RELATED HVAC EQUIPMENT # 9
  - SOURCE OF MATERIAL #10
  - INSTALLATION OF HVAC #11
  - HVAC FAILURE CONSEQUENCES #12
  - SUMMARY #13

HVAC - SAFETY ASPECTS

- NOT ONE OF MOST CRITICAL SAFETY SYSTEMS
  - Redundant, Seismic Class I
- GENERALLY COMMERCIAL GRADE EQUIPMENT
  - No specific standards
  - App. B applies (Cert. of Conformance)
- MOST OF SYSTEM IS OUTSIDE OF PRIMARY CONTAINMENT
- SAFETY QUESTIONS RE:- HVAC FAILURES
  - Failures causing an accident
  - Failures following an accident
- SYSTEM CAPABILITIES
  - Designed/Components specified by CECo/S&L
  - Standard Materials
    - . . Materials checked
    - . . Supports inspected
  - System Pre-Op tested/In operation
  - Failures detectable (overheating)
    - . . Capability for Manual Action

CONCLUSIONS

- HAVE SOME CONFIDENCE NO MAJOR DEFICIENCIES EXIST
- ALLEGATION AREAS LIMITED-RELATED TO ZACK
- REGION III INVESTIGATION MAY TAKE 1-2 MONTHS
- CECo PROPOSED INDEPENDENT REVIEW OF HVAC SYSTEM USING CONSULTANTS WITH EXPERTISE IN HVAC SYSTEM DESIGN AND INSTALLATION
  - COMPLETED BY SEPTEMBER 15, 1982
  - COMMITTED TO LESS THAN 50% POWER UNTIL AFTER ANY NECESSARY REMEDIAL ACTION HAS BEEN COMPLETED
- PROPOSED STARTUP ACTIVITIES UNTIL SEPTEMBER 15
  - ALL UNDER 50% POWER
  - AVERAGE ABOUT 20% POWER

RECOMMENDATIONS

APPROVE ISSUANCE OF FULL-POWER LICENSE SUBJECT TO TWO LICENSE CONDITIONS:

1. PRIOR TO EXCEEDING 5% POWER OPERATION, THE LICENSEE MUST PROVIDE FORMAL DOCUMENTATION OF INFORMATION REGARDING HVAC DESIGN FABRICATION AND INSTALLATION, DISCUSSED IN MEETINGS WITH THE NRC ON AUGUST 2-4, 1982.

2. PRIOR TO EXCEEDING 50% POWER OPERATION, THE LICENSEE SHALL SUBMIT TO THE NRC THE RESULTS OF AN INDEPENDENT REVIEW OF THE HVAC SYSTEM, INCLUDING DESIGN CHANGES, FABRICATION, AND INSTALLATION. THE REVIEW SHOULD ENCOMPASS ALL SAFETY-RELATED HVAC SYSTEMS AND THE EFFECT OF NON-SAFETY-RELATED HVAC SYSTEM FAILURES ON SAFETY SYSTEMS.

HVAC DESCRIPTION

- FUNCTIONAL REQUIREMENTS
  - SUITABLE ENVIRONMENT FOR:
    - . SAFETY-RELATED EQUIPMENT
    - . PERSONNEL
  - PREVENT TRANSFER/RELEASE OF:
    - . RADIATION
    - . TOXIC GASES

- HVAC SYSTEM TYPES
  - SAFETY RELATED/SEISMIC
    (E.G., CONTROL ROOM HVAC, SWITCHGEAR VENTILATION)
  - NON-SAFETY RELATED/SEISMIC
    (E.G., PRIMARY CONTAINMENT VENTILATION)
  - NON-SAFETY RELATED/NON-SEISMIC
    (E.G. TURBINE BUILDING VENTILATION)

DESIGN REQUIREMENTS

- SAFETY-RELATED HVAC INCLUDED ON Q-LIST
- SEISMICALLY QUALIFIED
- NO IMPACT ON SAFETY RELATED SYSTEMS
- NO SPECIFIC INDUSTRY STANDARDS
- PRIMARILY COMMERCIAL GRADE

DESIGN REVIEW

- ENTIRE SYSTEM DESIGNED BY S&L, UNDER CECo REVIEW

- DUCT MATERIAL
  - ORDERED BY ASTM SPEC (NO SPECIFIED YIELD STRESS)
  - ANALYSIS ASSUME MINIMUM YIELD IS 18 KSI
  - MINIMUM YIELD FOR ALL AVAILABLE DUCTING IS 25 KSI; FOR TYPE USED IN LASALLE - 35 KSI

- HANGER DESIGN
  - LIMITED BY HYDROYNAMIC LOADS/SEISMIC
  - DESIGN USED STANDARD 14-FOOT SPACING

- INTERNALS AND ASSOCIATED EQUIPMENT
  - DESIGN SPECIFIED BY S&L/CECo

- DESIGN REVIEWED BY S&L, CECo, AUDITED BY NRC, NO SPECIAL QUESTIONS RAISED

FABRICATION AND INSTALLATION

THREE GROUPS OF SAFETY-RELATED EQUIPMENT

- FURNISHED BY ZACK, INSTALLED BY ZACK
- PURCHASED BY ZACK, INSTALLED BY ZACK
- PURCHASED BY CECo, INSTALLED BY ZACK

SAFETY RELATED HVAC SYSTEM AND EQUIPMENT CHECKLIST LASALLE COUNTY NUCLEAR GENERATING STATION

SCOPE OF HVAC WORK	Items Identified On Safety Related HVAC Systems					
	System Acronym					
	VC	VD	VE	VG	VX	VY
Furnished By Zack, Installed By Zack						
Ductwork	X	X	X	*	X	X
Supports	X	X	X	-	X	X
Welding	X	X	X	-	X	X
Refrigerant Piping	X	-	X	-	-	-
Purchased By Zack, Installed By Zack						
Fasteners	X	X	X	*	X	X
Sealants	X	X	X	*	X	X
Flexible Connections	X	X	X	X	X	X
Access Doors	X	X	X	-	X	X
Refrigerant Specialties	X	-	X	-	-	-
Fire Dampers	X	X	X	-	X	X
Gravity Shutters	X	X	-	-	X	-
Balancing Dampers	X	X	X	-	X	X
Grilles, Registers and Diffusers	X	X	X	-	X	X
Airflow Measuring Stations	X	-	X	X	X	X
Silencers	X	-	X	-	X	-
Filters	-	X	-	-	X	-
Purchased By CECo, Installed By Zack						
Heat Exchange Coils and Cabinets	X	-	X	-	-	X
Atmospheric Clean-Up Filter Units	X	-	X	X	-	-
Vaneaxial Fans	X	X	X	-	X	X
Centrifugal Fans	X	X	-	-	X	X
Air Cooled Condensing Units	X	-	X	-	-	-
Isolation Dampers	X	X	X	-	X	X
Check Dampers	X	-	-	-	-	-

*Limited Scope i.e. Less 5 Feet Of Ductwork.

SOURCE OF MATERIAL

(FABRICATION)

- FURNISHED BY ZACK
  - FABRICATION OF DUCTING
    - . ALL AVAILABLE MATERIAL ACCEPTABLE
  - SUPPORTS
    - . MATERIAL ACCEPTABLE
    - . SUPPORTS INSPECTED
- PURCHASED BY CECo
  - IDENTIFIED/SPECIFIED BY S&L/CECo
- PURCHASED BY ZACK
  - ALL SUCH COMPONENTS IDENTIFIED BY S&L/CECo WITH SPECIFIC COMPONENT IDENTIFIED
  - ZACK INSTALLED ONLY

INSTALLATION OF HVAC

- ALL DONE BY ZACK
- INSTALLED MATERIALS
  - CHECKED BY CECo
  - NRC SAMPLE AUDIT
- INSTALLATIONS VERIFIED BY:
  - ZACK QA/INSPECTIONS
  - CON-AM INSPECTIONS
    - INDEPENDENT TESTING AGENCY
  - CECo INSPECTIONS
- AS-INSTALLED CAPABILITY VERIFIED
  - PRE-OP TESTS
  - IN OPERATION

CONSEQUENCES OF HVAC FAILURE

- o Structural Failure
  - minimal consequences
- o Functional Failure Following an Accident
  - active components redundant
  - limiting aspect - overheating for complete HVAC failure
    - ..equipment limited (104°F)
    - ..equipment qualified for mild environment
    - ..aux. equipment room overheats in 2 hours
    - ..control room overheats in 5 hours
  - have fans available
    - ..fire team on shift
    - ..trained with use, location
  - radiation - for LOCA with HVAC failure, CR dose expected w/i allowables
    - ..air supplies available in control room
- o During Initial Rise to Power
  - extra augmented staff
- o For Lower Initial Power Levels, Minimal FP, Consequences

SUMMARY

- o HVAC Design
  - DESIGNED BY CECO/S&L
  - ZACK QA
  - CON-AM LIMITED CHECK OF AS-BUILT
  - NRC REVIEWED (SER - 3/81)
- o HVAC Fabrication/Components
  - COMPONENTS AND INTERNALS
    - . SPECIFIED/IDENTIFIED BY CECO/S&L
  - DUCTING
    - . ALL AVAILABLE MATERIALS EXCEED MINIMUM REQUIREMENTS
    - . NRC SAMPLES VERIFIED CORRECT MATERIALS
  - SUPPORTS
    - . INSPECTED BY ZACK/CECO/CON-AM
- o HVAC Installation
  - ZACK QA/INSPECTIONS
  - CON-AM INSPECTIONS
  - CECO INSPECTIONS (4 STOP WORK ORDERS)
    - . NUMEROUS PROBLEMS FOUND
- o System Checked
  - PRE-OP
  - IN OPERATION

CHRONOLOGY OF EVENTS

. SEPTEMBER 14, 1981	ZACK FINDS VENDOR AUDIT PROBLEM.
. SEPTEMBER 25, 1981	LASALLE NOTIFIED OF 50.55(E).
. SEPTEMBER 30, 1981	RIII NOTIFIED OF 50.55(E).
. FEBRUARY 15, 1982	CECO RECEIVES FIRST ZACK ALLEGATION.
. FEBRUARY 18, 1982	CECO AUDITS ZACK.
. APRIL 15, 1982	HOWARD MAKES ALLEGATION TO MIDLAND.
. APRIL 16, 1982	RIII CLOSES 50.55(E).
. APRIL 17, 1982	MIDLAND INITIATES ZACK AUDIT.
. APRIL 30, 1982	HOWARD FIRED.
. MAY 3, 1982	HOWARD MAKES ALLEGATIONS TO RIII.
. MAY 20, 1982	INVESTIGATORS TO MIDLAND.
. JUNE 2, 1982	INVESTIGATORS TO MIDLAND.
. JULY 22, 1982	RIII TAKES SAMPLES.
. JULY 26, 1982	GAP PROVIDES ALLEGATIONS. RIII MEETS WITH CECO AND S&L. RIV PROVIDES ASSISTANCE.
. JULY 30, 1982	RIII MEETS WITH HOWARD, MARELLO AND DEVINE. RIII NOTIFIED OF PART 21 DISCREPANCY.
. AUGUST 2, 1982	RIV AUDITING ZACK. RIII RECEIVED PART 21 REPORT, MEETS WITH CECO, S&L, AND GE, AND RECEIVES ADDITIONAL AFFIDAVIT.

ANALYSIS OF SAMPLES TAKEN BY NRC

SAFETY RELATED

A. HVAC SYSTEM SAMPLES:

1. CONTROL ROOM
2. AUXILIARY ELECTRIC EQUIPMENT ROOM
3. DIESEL GENERATOR FACILITIES
4. SWITCHGEAR HEAT REMOVAL
5. ECCS EQUIPMENT AREA

B. PORTIONS OF HVAC SYSTEMS SAMPLED AND NUMBER OF SAMPLES:

1. HANGERS/SUPPORTS - 19
2. DUCTWORK - 4
3. STIFFENERS - 5
4. COMPANION FLANGES - 2

TOTAL NO. SAMPLES - 30

C. MATERIAL TYPES INVOLVED AND RESULTS:

MATERIALS WERE ANALYZED FOR: CARBON
MANGANESE
PHOSPHOROUS
SULFUR

ALL SAMPLES WERE FOUND SATISFACTORY EXCEPT ONE SAMPLE WHICH WAS FOUND BORDERLINE OUT-OF-SPEC, BUT HAS BEEN EVALUATED TO BE SATISFACTORY.

RESOLUTION OF ZACK ISSUE

A. MATERIAL

1. NRC HAS:
   - A. TAKEN RANDOM SAMPLES
   - B. REVIEWED RECORDS
   - C. REVIEWED ONSITE S&L'S HVAC DESIGN BASES
   - D. STARTED VENDOR INSPECTION
   - E. INTERVIEWED PRIMARY ALLEGERS
   - F. PERFORMED A DESIGN REVIEW OF HVAC
   - G. REVIEWED CECO'S ANALYSIS

2. CECO HAS:
   - A. REVIEWED APPLICABLE RECORDS
   - B. PERFORMED MATERIAL STRENGTH ANALYSIS
   - C. INPLACE MATERIAL TESTING
   - D. REVIEWED AUDITS PERFORMED
   - E. PERFORMED ANALYSIS OF CONSEQUENCES OF HVAC LOSS

3. ITEMS PENDING:
   - A. SAMPLE MATERIAL WITH QUESTIONABLE RECORDS
   - B. COMPLETE RECORD REVIEW
   - C. COMPLETE VENDOR INSPECTION
   - D. INTERVIEW ALL REMAINING PEOPLE
   - E. THIRD PARTY SYSTEM REVIEW

B. WELDING

1. NRC HAS:
   A. REVIEWED PART 21 REPORT
   B. STARTED ZACK RECORD REVIEW
   C. EVALUATED CECO'S ANALYSIS ON LOSS OF HVAC

2. CECO HAS:
   A. REVIEWED PART 21 REPORT
   B. REQUIRED PREVIOUS INSPECTIONS OF WELDS
   C. PERFORMED ANALYSIS OF CONSEQUENCES OF HVAC LOSS

3. ITEMS PENDING:
   A. COMPLETE REVIEW OF ZACK RECORDS
   B. REVIEW RESULTS OF ZACK'S INVESTIGATION

CONAM INSPECTION AGENCY COVERAGE OF ZACK COMPANY
INSTALLATION ACTIVITIES AT THE LASALLE SITE

ACTIVITY	DURATION
GENERAL INSPECTION OF ZACK FIELD ACTIVITIES	2/24/78 - 6/24/79
100% RE-INSPECTION OF FUTURE AND PAST ZACK "SAFETY-RELATED WELDING ON SITE (HANGERS)	6/25/79 - 6/07/81
50% RE-INSPECTION ON-SITE OF ZACK WELDING	6/08/81 - 6/21/81
25% RE-INSPECTION ON-SITE OF ZACK WELDING	6/22/81 - 7/05/81
10% RE-INSPECTION ON-SITE OF ZACK WELDING	7/06/81 - PRESENT
100% INSPECTION OF ZACK DUCTWORK ENTERING THE BUILDING AND BEING ERECTED AT LASALLE	4/02/80 - 5/10/82

MASONRY WALLS

ALLEGATION	.	IMPROPER MASONRY WALL CONSTRUCTION AND POOR MORTAR QUALITY
STAFF RESPONSE	.	INTERVIEW LICENSEE AND CONTRACTOR PERSONNEL
	.	REVIEW QUALITY CONTROL RECORDS AND TEST RECORDS
	.	CONDUCT PLANT TOUR WITH CONCERNED INDIVIDUALS
	.	PERFORM INDEPENDENT VERIFICATIONS
STAFF CONCLUSION	.	MASONRY WALLS AT LASALLE CONSTRUCTED IN ACCORDANCE WITH DESIGN REQUIREMENTS
ADDITIONAL CONCERNS	.	FOUR AFFIDAVITS RECEIVED

SUMMARY OF NUMBER OF CONCRETE ELEMENTS FOR WHICH DETAILED CALCULATIONS WERE MADE

Concrete Elements	Total Number of Concrete Elements		Number of Concrete Elements Where Rebar Damages Are Identified		Number of Concrete Elements Reviewed In Detail		Percent of Concrete Elements for Which Detailed Calculations Were Made
	Unit 1 Areas	Unit 2 Areas Required for Unit 1 Operation	Unit 1 Areas	Unit 2 Areas Required for Unit 1 Operation	Unit 1 Areas	Unit 2 Areas Required for Unit 1 Operation	
Slabs	894	81	285	50	285	50	100
Walls	390	76	170	36	170	36	100
Beams	308	22	38	0	38	0	100
Columns	214	20	68	0	68	0	100
TOTAL	1,806	199	561	86	561	86	100

Summary of Reinforcing Steel Damage Due to Cored Holes Passing Thru Concrete

Item	Unit 1 Areas	Unit 2 Areas Required for Unit 1 Operation
Number of Cored Holes	844	127
Number of Reinforcing Bars Assumed to have been Damaged	3632	584
Number of Structural Drawings Indicating Cored Holes	76	22

Summary of Reinforcing Steel Damage Due to Cored Holes Partially Penetrating Concrete

Item	Unit 1 Areas	Unit 2 Areas Required for Unit 1 Operation
Number of Cored Holes*	512	4
Number of Reinforcing Bars Assumed to have been Damaged	512	4
Number of CHS Drawings Indicating Cored Holes	12	1

*These cored holes are those associated with the mechanical and electrical equipment foundation anchor bolts. Cored holes for mechanical pipe support baseplate assemblies have not been plotted on the CHS set or included in the above tabulation, since damage to the reinforcing steel was not permitted.

Summary of Reinforcing Steel Damage Due to Drilling Operations

Item	Unit 1 Areas	Unit 2 Areas Required for Unit 1 Operation
Estimated Number of Drilled Holes	50,000	8,000
Number of Reported Damaged Reinforcing Bars*	3,498	213
Number of RHS Drawings Indicating Reinforcing Steel Damage	118	20

*This does not include those bars which are known to have been only nicked during the drilling operation.

REASONS FOR ON-SITE CORING AND DRILLING IN AS-BUILT STRUCTURES

- BECAUSE DESIGN OF ANCHORS AND CUT-OUTS IS UNECONOMICAL AND TOO TIME AND ENGINEERING MANPOWER INTENSIVE.

- BECAUSE CONSTRUCTION TOLERANCES WOULD CAUSE MUCH REWORK AND USE OF DRILLING ANYWAY.

- BECAUSE STRUCTURAL DESIGN AND CONSTRUCTION TYPICALLY PRECEED THE AVAILABILITY OF DETAILED INSTALLATION INFORMATION FOR PIPING AND EQUIPMENT.

- BECAUSE OF LACK OF COORIDINATION BETWEEN DESIGN GROUPS TO IDENTIFY THE LOCATIONS OF NEEDED INSERTS AND CUT-OUTS.

LASALLE - STAFF REVIEW OF ALLEGATION - DRILLED HOLES

(1) REVIEW OF STRUCTURAL DRAWINGS THAT MARKED LOCATIONS OF DRILLED HOLES

(2) VERIFICATION OF DRILLED HOLES AT THE PLANT SITE

(3) REVIEW OF QUALITY CONTROL PROCEDURES AND DOCUMENTATION PROCEDURES

(4) REVIEW OF METHOD OF ENGINEERING ASSESSMENT

(5) AUDIT OF ENGINEERING CALCULATIONS PERFORMED TO ASSESS THE SIGNIFICANCE OF CUT BARS

(6) REVIEW OF EVALUATION OF EFFECT OF NICKED BARS

LASALLE - STAFF REVIEW OF ALLEGATION -
DRILLED HOLES

- o DRAWING REVIEW (APPROX. 100 DWGS)
- o SITE AUDIT OF DRAWING ACCURACY BASED ON INTENSITY OF DRILLING
- o ENGINEERING OFFICE AUDIT OF CALCULATIONS FOR DAMAGED REINFORCEMENT
  - (1) REVIEW OF SAFETY MARGIN CALCULATIONS
  - (2) REVIEW OF ENGINEERING REPORT ON IMPACT OF NICKING BARS

LASALLE - STAFF REVIEW OF ALLEGATION - MASONRY WALLS

- BULLETIN 80-11 RESPONSE
- SITE VISIT WITH FORMER BRICKLAYERS
- SAMPLE OF DESIGNATED WALL BY BLOCK REMOVAL
- CORING OF TWO ADDITIONAL WALLS

Commonwealth Edison
One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690

August 4, 1982

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUBJECT: LaSalle County Station Units 1 and 2
Resolution of HVAC Concerns
NRC Docket Nos. 50-373/374

Dear Mr. Denton:

Commonwealth Edison has taken steps to resolve the quality assurance documentation deficiences of the heating, ventilating and air conditioning (HVAC) system installed by the Zack Company at our LaSalle County Nuclear Power Plant throughout the course of the project. Nonconformance reports (NCR'S) issued by Zack have been reviewed and dispositioned by our engineering department and the architect-engineer, Sargent and Lundy. Also extensive field inspections have been conducted by an independent testing agency, Conam. Additionally, materials have been tested in the field and verified they met applicable material specifications. Based on these investigations, Commonwealth Edison is confident that the HVAC system as installed can perform its design safety function.

However, to add another level of assurance, Edison will have an independent review of the safety-related portion of the HVAC system performed by consultants with expertise in HVAC system design, installation and operation. The following general scope has been developed for the review:

1. Verify that the HVAC installation is in accordance with the design. This will include, but not be limited to a review of the materials installed, the field and shop welding on supports and ductwork, the operability of associated mechanical equipment, and significant design changes. The reviewer will be directed to independently verify the reliability and adequacy of existing material, structural and field testing already performed; and determine any additional testing or changes necessary to reach the conclusion that the HVAC system fulfills its safety function.

2. Notify Commonwealth Edison immediately if a safety concern is discovered.

A more detailed scope will be developed after discussions with the consultants and a report of their review will be submitted to the NRC by September 15, 1982. The consultants review will not be constrained by operational considerations.

In the event this verification program identifies any significant deficiencies which would prevent the effected portion(s) of the HVAC system from fulfilling its safety-function, remedial action will be taken immediately in satisfaction of applicable technical specification requirements to restore adequate margin and assure the system is operable. Operation beyond 50% power will not proceed until this assessment and any required remedial action has been completed.

To the extent deficiencies of lesser significance are identified, they will be documented and reviewed with the NRC Staff and remedial action, if necessary, completed on a schedule agreed upon with the NRC Staff.

If there are any questions in this matter, please contact this office.

Very truly yours,

C. Reed

Cordell Reed
Vice President

cc: Mr. James G. Keppler

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

OFFICE OF THE
COMMISSIONER

July 28, 1982

MEMORANDUM FOR WILLIAM J. DIRCKS, EXECUTIVE
DIRECTOR FOR OPERATIONS

SUBJECT: LASALLE

Please provide my office by August 3, 1982, a complete explanation of the Zack-LaSalle matter, including, but not limited to:

Commonwealth Edison

1. Why did Commonwealth Edison continue to employ the Zack Company after deciding, in 1979, to have all their weld work verified by another company?

2. Why did Commonwealth Edison not monitor the Zack Company's QA program more closely after they identified serious problems with the company?

3. What was the exact basis for closing out Zack-related items of non-compliance, including the 2,400 Nonconformance Reports written in 1979 and the 50.55(e) letter? Were these closed out on the basis of documents which are now known to be false or are otherwise thought to be invalid? Please describe what inspections were made by Commonwealth Edison of the Zack Company's actual material certifications and other required documentation.

REGION III

1. What was the basis for not investigating the Zack Company in 1979?

2. How closely did Region III examine the documents obtained during the May 3, 1982, meeting between a Zack employee and the 6 or 7 NRC Region III staff members? How many applied to LaSalle or could be applied to LaSalle?

3. What was the basis for the apparent decision that inadequate QA by Zack at Midland would have no relevance at La Salle?

4. Why did Region III not request information directly from the Zack Company in May, instead of waiting for Zack's former employee to send it to us?

Dupe of 8207250038

5. Why did Region III decide not to send any investigators to the Zack Company until July 22, 1982?

6. Did Region III express any concern about Commonwealth Edison's inattention to this QA problem? If so, please provide copies.

NRR

1. What proportion of the heating, venting and air conditioning work done at LaSalle is properly documented?

2. What proportion of the heating, venting and air conditioning work done at LaSalle required materials with specifications in excess of commercial grade?

3. What proportion of the equipment specified in item 2, if any, has been properly documented?

4. What is the safety significance of the heating, venting and air conditioning equipment which is not properly documented?

5. How much of the work done at LaSalle by the Zack Company has been physically inspected? Have any problems been discovered with the installation and assembly work done at LaSalle by Zack Company? If so, how have they been resolved? What proportion of such problems remain unresolved?

RG for VG

Victor Gilinsky

cc: Chairman Palladino
Commissioner Ahearne
Commissioner Roberts
Commissioner Asselstine
SECY
OPE
OGC

Commonwealth Edison
One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690

August 2, 1982

The Honorable Victor Gilinsky
Commissioner
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Commissioner Gilinsky:

The purpose of this submittal is to respond to an inquiry made by you through Mr. James G. Keppler, Regional Administrator (Region III) on July 29, 1982 to Mr. Cordell Reed of Commonwealth Edison. That inquiry solicited a response to four specific questions related to the LaSalle County Station Hearing, Ventilating and Air Conditioning (HVAC) contractor, Zack Company. The Commonwealth Edison responses to those questions are contained in the enclosures to this letter.

Should you have any further questions in this regard, we will respond to them expeditiously.

Very truly yours,

L. O. DelGeorge

L. O. DelGeorge
Director of Nuclear Licensing

Enclosures

4637N

SECY DIST: CHM,CMRS,PDR,DENTON,EDO,ELD,OPE,OGC,DOCKET

Dupl of 8208130309

RESPONSE TO QUESTION #1
REQUESTED BY
Commissioner Victor Gilinsky

QUESTION: Why did Commonwealth Edison continue to employ the Zack Company after deciding in 1979 to have all of their weld work verified by an outside company?

The primary reasons for continued employment of the Zack Company in 1979 after deciding to have all their weld work verified by an independent inspection company were (1) the necessary quality confidence in the Zack welding and welding inspection work could be gained at less cost by utilizing an independent inspection company to verify the acceptability of welding and welding inspection work under the Zack contract while the Zack Company program was being upgraded; and (2) the contractural and financial impacts of replacing Zack Company at that time.

A Commonwealth Edison Company (CECo.) Quality Assurance audit which started June 7, 1979, identified three (3) findings. Two (2) findings related to the welding and welding inspection area. These specific findings were:

Finding 2. Zack failed to properly inspect installed work which resulted in acceptance of deficient work.

Finding 3. Zack failed to maintain a qualified procedure in accordance with AWS Welding code.

At the same time an NRC Region III inspector during a routine I&E inspection, noted deficiencies in the Zack Company welding inspection program and requested additional inspection of Zack field work.

Specific corrective actions taken in response to the Quality Assurance audit and the I&E inspection were the following:

1) ConAm Inspection Agency was directed to perform a 100% welding inspection of all shop and field welds on all previously and newly installed HVAC hangers.

2) Five (5) Zack Company shop and field weld inspections were retrained and requalified in welding inspection activities. This retraining and requalification was completed by August 3, 1979.

3) Zack Company was directed to reinspect all hanger shop and field welding previously completed and all non-installed HVAC duct welding. This work would be done by the Zack QA Department.

4) The one (1) welding procedure not qualified was qualified in accordance with AWS Code. No work was completed with the procedure until qualification completion.

It was judged in 1979 that the above corrective actions would be sufficient to ensure quality welding and welding inspection performance. The intent was to force the contractor into establishing an acceptable QC inspection program while continuing productive work. It should be noted that most of the welding for HVAC work is the most basic structural welding (i.e. fillet welds). The welding defects found which necessitated corrective actions were not indicative of poor quality welding affecting the structural integrity of a connection but were minor defects related to lack of attention to detail (i.e. profile) and in many cases the cosmetic appearance of the welds. It was eventually found that many of the weld defect problems originated from the type of weld rod being utilized on galvanized steel. Utilization of a different rod prevented future problems. Compounding the problem and stating the real reason for overinspection was the discovery that welding inspectors were not finding the defects during their inspections. Consequently by retraining and requalification of welding inspectors and by providing an overview inspection activity, welding defects could be discovered and repaired. Additionally, during the reinspection program, when cases resulted where inspectors from Zack Company and ConAm Inspection disagreed on the weld quality, the more conservative approach was always taken and the weld repaired.

Regarding the contractural and financial impacts of replacing Zack Company, our reviews at that time showed that other HVAC contractors having a better QA program might not be available. Consideration of the cost exposure from claims and lawsuits from the then current contractor (Zack) as well as the cost of another contractor to perform remedial work; and the probability of ending up with a contractor no better than the one currently on-site, led to the judgment to continue to upgrade Zack while also employing an extensive over-inspection program.

Given the corrective actions and judgments made in 1979, plus the cost impact of replacing a contractor, the decision to retain and upgrade Zack Company was prudent.

4637N

August 1, 1982

RESPONSE TO QUESTION #2

Requested By
Commissioner Victor Gilinsky

QUESTION: Why didn't Commonwealth Edison monitor the Zack Company's program more closely after they identified serious problems with the Company?

Commonwealth Edison did monitor the Zack Company more closely after it identified serious problems with the Zack Company. Moreover, Zack site activities have been closely monitored since mid 1977 because of various indications of inadequate implementation of the Quality Assurance Program plus work performance problems. As a result many deficienies and problems were identified and, in turn, corrected. In addition, on four separate occasions Zack site work activities were stopped in the specific areas where deficiencies were detected.

Table 1 identifies those periods during which "Stop Work" orders were in effect for Zack. Table 2 details the total number of QA audits and surveillances of Zack work activities performed since 1976 by Commonwealth Edison. These audits and surveillances reviewed and/or observed field work and quality control activities for those specific activity areas addressed in the stop work orders, as well as activities controlled by other aspects of the Zack QA Program. The deficiencies identified by the CECo on-site audits of Zack totaled 124 while there were eleven deficiencies identified in the CECo audits of Zack Corporate activities.

In addition to Commonwealth Edison Company QA surveillance and audit involvement with Zack Company, specific surveillance and inspection tasks involving Zack construction were assigned to the Conam Inspection Agency at the direction of LaSalle Site Quality Assurance. Conam performs inspection and testing directly for CECo QA at LaSalle. The intent of these inspections or re-inspections of Zack, as well as other contractors, is to independently assure that contractor field activities are properly performed in accordance with applicable procedures, standards and design requirements. The basic approach is that each site contractor has a total entity in that each contract includes responsibility for installation, quality control inspection and quality assurance with quality control over - inspections and quality assurance checks, surveillances and audits

being done by Commonwealth Edison Company. For most cases, an over - inspection of from 5 to 10% of the various contractor activities requiring inspection is performed. Where problems are identified, corrective actions are required of the contractor and the re-inspection activities by Commonwealth Edison are increased to as much as a complete re-inspection where the circumstances warrant. After it is confirmed that the contractor has undertaken the necessary corrective steps such as developing and implementing procedures, training and qualifying involved personnel and verifying the Quality Control inspection functions are performed acceptably, then the re-inspections performed by the Independent Testing Agency is reduced in step fashion as the results of the re-inspection justify as was done with Conam involving the 100% re-inspection of Zack. In the case of Zack, the quality control inspections for accepting Zack welding at the site between June 1979 and June 1981 were performed by Conam no matter whether Zack was or was not released to perform its own Quality Control inspections under its contract. Also, duct work was required to be inspected by Conam prior to being released for installation in the building between April 1980 and May 1982. Deficiencies identified through inspections were covered by non-conformance reports (NCR) for each affected hanger and otherwise for each other deficient case. All seismic and safety-related hangers were treated as suspect and were inspected. Zack Quality Control (QC) inspected each hanger and after Zack QC's acceptance, Conam repeated the complete inspection for acceptability which included inspection of all welds of the hangers. Any deficient welds identified by Conam were reported to Zack, corrected by Zack, inspected by Zack QC and then inspected by Conam. Conam's 100% re-inspection included inspection of welds for placement and quality and for location of the hanger. Also, configuration checks on a random basis were made. In this period, most of the control room HVAC system was inspected by Conam after being inspected by Zack.

Finally, system walkdown inspections were initiated by Zack in early 1982 to check final acceptability.

As for other HVAC equipment supplied by Commonwealth Edison, it was receipt inspected by Commonwealth Edison and again receipt inspected by Zack when issued to them.

Table 3 is included to detail, in a summary fashion, Conam coverage of the Zack on-site installation activities.

Upon notification by the Zack Company on September 25, 1981 of the possible 50.55(e) report issue with respect to supplier material certification, surveillance and monitoring activities by Quality Assurance (CECo) were intensified and directed toward this

specific concern at the Zack corporate headquarters. Between 9/25/81 and 4/15/82 three surveillances and two audits were performed by CECo Quality Assurance to assess the nature and scope of the problem. In February 1982, at the direction of the Commonwealth Edison Quality Assurance Manager, a Special Audit was performed to investigate the conditions verbally reported to him by phone by Ron Perry, a Zack employee, as well as other aspects of the Zack Program.

In summary, the record shows that Commonwealth Edison Company has had continuous and comprehensive involvement with the Zack work activities and the implementation of its Quality Assurance Program to ensure the work was being done correctly for the LaSalle Site. This is further demonstrated by the use of Conam Quality Control Inspectors to augment on-site Edison Quality Assurance activities. Also, after identification of problems at the Zack corporate headquarters in late 1981, additional monitoring of Zack was performed to search for any other possible problems and to ensure corrective actions were completed.

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Table 1

"Stop Work" Actions Imposed on Zack Company
LaSalle County Station

Date Initiated	Date Removed	Program Deficiency
7/22/77	9/27/77 (all activities except Welding)	Welder Qualification, Q.C. training
	10/11/77 (Welding)	Program design control, Q.C. inspection & inspection documentation, and misc. program deficiencies.
6/25/79	7/25/79 (Partial) 8/06/79	Unacceptable Q.C. inspection at LaSalle
4/02/80	6/21/80	Unqualified Q.C. inspectors a Fab Shop in Chicago. On-site hold point established for receipt inspection of HVAC assemblies.
8/06/80	10/20/80	Design Control, Q.C. Inspections, and "Safety-Related Welding

Table 2

Commonwealth Edison Company Q.A. Audits and Surveillances of the Zack Company

Year	Audits Performed	Surveillances Performed
1976	1	1
1977	4	17
1978	5	35
1979	8	35
1980	9	82
1981	6	83
1982 (6months)	4	57

TABLE 3

CONAM INSPECTION AGENCY COVERAGE OF ZACK COMPANY INSTALLATION ACTIVITIES AT THE LASALLE SITE

ACTIVITY	DURATION
General Inspection of Zack Field Activities (17 reports on file)	2/24/78 - 6/24/79
100% Re-inspection of future and past Zack "Safety-Related welding on-site. (Hangers)	6/25/79 - 6/07/81
50% re-inspection of Zack on-site welding.	6/08/81 - 6/21/81
25% re-inspection of Zack on-site welding	6/22/81 - 7/05/81
10% re-inspection of Zack on-site welding	7/06/81 - Present
100% inspection of Zack ductwork entering the building and being erected at LaSalle	4/02/80 - 5/10/82

RESPONSE TO QUESTION #3
Requested By
Commissioner Victor Gilinsky

QUESTION: What was the exact basis for closing out Zack-related items of nonconformance including the 2400 nonconformance reports in 1979 and the 50.55e letter?

The exact basis for closing out Zack-related items of nonconformance (NCRs) and the reportable construction deficiency (50.55(e)) is the same basis utilized for all nuclear work vendors, contractors and utilities. Appendix B, 10 CFR 50, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants, Criterion XV and XVI establish the basic programatic requirements for resolving items of nonconformance. In the case of Zack Company, NCRs were dispositioned by either review and acceptance rejection, repair or rework of the nonconforming condition.

Zack Company has generated approximately 2400 field NCRs related to the two LaSalle County units since the start of HVAC work in 1976. The majority of these NCRs have been generated since 1979 as the method of recording the Zack reinspection effort (described in response to Question (2)) for all previously installed safety related HVAC work. This reinspection effort was undertaken as a response to inadequate quality control inspection by Zack. The reinspection effort encompassed weld accepability and adherence to design details per applicable Sargent & Lundy Engineers drawings. In the case of newly installed work after 1979, Zack NCRs were utilized to document and disposition certain quality control inspections. The above reasons would account for what may seem to be a large number of NCRs.

Once an NCR was written describing the nonconforming condition, it required dispositioning. Many of the Zack NCRs were dispositioned by repairing and/or reworking the HVAC work to its specification and drawing requirements. Repairs and rework were done on welding, configuration of members and orientation of members. Thus, the basis for closing the NCR was completion of work in compliance with specifications and drawings. The balance of the NCRs were dispositioned by CECo./Sargent & Lundy Engineers acceptance of the work as built. For these NCRs, Sargent & Lundy Engineers established a special procedure to review the as-built HVAC work and accept the as-built HVAC work after doing engineering calculations and/or exercising engineering judgment. Thus, the bases for closing the NCR was an engineering review against the Final Safety Analysis Report requirements.

Commonwealth Edison Company reported a 50.55(e) reportable construction deficiency on September 30, 1981. The chronology of events can be found in the responses to Question #1.

The dispositioning of material documentation deficiencies reported on 50.55(e) was the primary responsibility of Zack Company. In most cases the identified material documentation deficiencies were dispositioned by one or more of the following methods.

A. Obtaining corrected documentation from the supplier vendor.

B. Tensile and chemical testing of material samples to establish material properties.

C. Establishment that material documentation is acceptable by other known information. (i.e. Material documentation does not specifically state that material is type required, but listed tensile and physical test results show that material is within required ranges for material type.)

D. Utilization of other types of documentation (i.e. purchase orders, confirmation orders, shipping tickets, receiving tickets and invoices) to establish type of material.

E. Material actually used in application was better grade or type than required.

F. Upon re-review of all documentation, it was determined material discrepancy did not exist as orginally reported.

G. Establishment that material documentation deficiency was a clerical error.

All the above are valid basis for dispositioning material documentation discrepancies. They establish a validity of the material documentation.

In those cases where Zack couldn't disposition the material documentation discrepancy themselves, Zack NCRs were sent to CECo. and these Zack NCRs were dispositioned via CECo. NCRs with input from Sargent & Lundy Engineers. CECo./Sargent & Lundy dispositioned the CECo. NCRs by one or more of the following methods.

A. Establishment that actual meterial used was a better grade than listed in specification and therefore acceptable.

B. Establishment that materials were not used in safety related areas or applications.

C. Establishment that a certificate of conformance for the material is acceptable in lieu of a certified material test report for the specific material application. Most of the materials required for this HVAC work are commercial grade.

D. Review of intent of specification requirements to ascertain whether Zack was being overly conservative in interpreting specification material documentation requirements.

Where necessary engineering calculations were performed to establish the engineering judgements utilized in dispositioning the CECo. NCRs.

In summary, correct procedures were followed to disposition all Zack-related items of nonconformance. The basis utilized is in compliance with the necessary regulatory standards.

4639N

RESPONSE TO QUESTIONS #4, PART 1

Requested By

Commissioner Victor Gilinsky

QUESTION: Were these closed out on the basis of documents which are now known to be falsified or otherwise thought to be invalid?

The 2400 field generated NCRs were not related to material (documentation) deficiencies, and as such potentially falsified or invalid records related to those NRCs are not in question. With regard to the 50.55(e) report, the September 25, 1981 Zack letter which initially notified CECo of material documentation inconsistencies categorized the inconsistencies into four areas.

1. Material certifications with incomplete information.

2. Material certifications with technical inaccuracies.

3. Material certifications with possible unauthorized and improper modifications.

4. Possible person/persons improperly modifying material certifications.

Categories 3 and 4 deal with possible falsification of records. Zack Company committed as part of the corrective action for test reports suspected of being modified to verify them with the respective suppliers and to investigate those individual(s) implicated or suspected of imporperly modifying supplier's test reports with any evidence obtained to be forwarded to the Zack Company President for appropriate disciplinary action.

The Zack Company interim report of October 9, 1981 stated that 374 of 445 LaSalle County purchase orders had been reviewed. In this October 9, 1981 report, the number of purchase orders involving possible falsification was reported as follows:

Possible Falsification Category	Description	No. Packages
Alteration	Apparent alteration of certification by typed or handwritten additions.	11
Stickers	Gummed labels applied to certification cover sheets. These typed and signed to indicate compliance with ASTM standards authenticity of the signatures is questionable.	6

Attachment 1 details the specific possible falsification purchase orders. On October 23, 1981, in an updated interim report Zack Company transmitted a tabulation of purchase orders reviewed and categorization of discrepancies found. (Attachment 2) The number of possible falsification purchase orders had been reduced to 11 alterations and 3 stickers.

Zack Company stated the problem of the purchase orders with stickers on them was given an extensive investigation. This investigation determined that person(s) within the Zack Company orgianization were responsible for the addition of gummed labels to the material certifications. Zack took into consideration in their evaluation of this item that individual(s) involved did not believe that the addition of information (i.e., ASTM designated number and year) misrepresented the actual condition of the material. The action, while misguided, was done to expedite the release of material that had acceptable chemical and physical properties while the corrected material certifications were being obtained. The Zack Company also assumed part of the responsibility for allowing the responsible person(s) to be put in a situation that may have appeared to encourage this type of action or at least did not have the necessary checks and balances which would have prevented the occurrence. The responsible individual(s) were identified and given demotions in position and documented letters to their personnel files. They were also advised that any further action of this type would result in immediate dismissal.

Of the six (6) certifications originally identified to have had stickers added, a follow-up by the same individual(s) involved had resulted in corrected certifications for all but three (3) of the purchase orders. A continued effort was being made to obtain corrected certifications for the remaining purchase orders.

Zack Company also stated that material certifications observed with more than one type-face used, white out, or handwritten modifications had been categorized as altered. Their investigation had not determined yet where or when all of these alterations occurred, though enough information was obtained to indicate that person(s) from the Zack Company were involved. The responsible individual(s) were subsequently identified and dealt with as stated above for stickers.

The actual alterations while serious from a programatic view, did not effect the structural integrity of the materials and corrected copies would be obtained from the respective suppliers.

On February 12, 1982, Mr. Albert T. Howard, a principal in the GAP letter to Chairman Palladino, provided an updated report to CECo. Attachment #3 is the cover letter to this report. Included in this report is a revised Purchase Order Review and Categorization Summary

(Attachment #4) and a Definitions of Summary Listing (Attachment #5). The information included in the February 12, 1982, submittal indicated that all the possible falsification purchase orders were not in the packages were correct and acceptable. Attachments #6 and #7 are listings of the open discrepant packages as of January 15, 1982. Only 4 purchase orders of the original possible falsification purchase orders remained on the open discrepant listing. Thus, 13 of the original questionable purchase orders were deemed acceptable by obtaining corrected suppliers certifications. Additional detailed information included in the February 12, 1982 submittal on the 4 remaining possible purchase orders makes no mention of possible falsification. It would appear the shadow of falsification had been removed from the original questionable purchase orders, as attested by Mr. Howard himself.

Thus, the evidence estabilishes that Zack NCRs and CECo NCRs were not closed out on the basis of documents which were known to be falsified or otherwise thought to be invalid. Zack Company investigated the possible falsification and took disciplinary actions. They obtained corrected documents from their suppliers prior to closing out a NCR.

4636N

QUESTION #4 - ATTACHMENT 1

Possible Falsification Purchase Orders

Alterations

P.O. No.	Description of Discrepancy
641	ASTM year has different type
855	North Star Steel - handwritten in information
743	Cert altered to indicate ASTM to year
914	ASTM year had different type
643	ASTM year had different type
1274	Jones & Laughlin Steel - ASTM year altered
604	Youngstown Steel - handwritten in information
679	Reliable Galvanizing - P.O. # altered
947	U.S. Steel - handwritten in information
1029	Alterations on galvanizing cert
1241	ASTM year added to cert initialed RSW

Stickers

P.O. No.	Description of Discrepancy
739	Sticker added to cert
795	Additional cert in package has sticker
742	Sticker added to cert
796	Additional cert in package has sticker
738	Sticker added to cert
740	Additional cert in package has sticker

Only three (3) C-739, 742 and 738 require resolution

4636N

QUESTION #4 - ATTACHMENT 2

PURCHASE ORDER REVIEW AND CATEGORIZATION SUMMARY

CATEGORY	No. P.O.
PURCHASE ORDER/CMTR PKGS REVIEWED	405
PACKAGES CORRECT & ACCEPTABLE	109
CLERICAL ERRORS	152
SIGNATURE MISSING	9
SIGNATURE ERRORS	3
CHEM/MECH TEST DATA	10
U.S. STEEL LETTER	6
C OF C ONLY	14
NOT GOOD FOR LASALLE	10
WRONG STANDARD REFERENCED	5
CERTS MISSING	20
LISTED BY SITE BUT NOT LOCATED (Not Part of Total)	40
ALTERATIONS	11
STICKERS	3
MISCELLANEOUS	7

4638N

4600 W. 12TH PLACE • CHICAGO, CERO) ILL 60650 • 312/242-3434
4401 WESTERN • FLINT MICHIGAN 48506 • 313/736-2040

the ZACK co.

QUESTION #4 - Attachment #3

Albert T. Howard Letter to CECo

CUSTOM METAL FABRICATION

February 12, 1982
HVAC Contract #J-2590

Commonwealth Edison Co.
LaSalle County Nuclear Station
Rural Route #1, Box 240
Marseilles, IL 61341

Attn: Mr. Richard Cosaro
Project Manager

Ref: The Zack Company letter dated October 23, 1981

Subject: Potential 10CFR50.55(e)
Material Deficiency Report

Gentlemen;

Attached is an updated (January 15, 1982) report on the status of the material certifications identified in the above referenced letter. As indicated by the report, a significant increase in the number of corrected purchase order packages has been accomplished and a number of the remaining purchase orders indicated as still discrepant have only one or two items to be corrected. Therefore, the number of actual material certifications acceptable is in excess of the percent indicated in the report.

It is The Zack Company's opinion at this time that all problems still existing could be corrected with further vendor/subcontractor persuance and those items not resolved through this same endeavor might be resolved with engineering disposition.

With this interim report The Zack Company would like to assure you of its continued efforts in the above direction.

Should you have any questions or problems, please contact me.

Most Sincerely,

Albert T. Howard

Albert T. Howard
Quality Assurance Documentation Supervisor

ATH/dm

cc: Mrs. C. DeZutel
Mssrs. J.C. DeZutel
L.J. Burke, Site Project Mgr.
T. Quaka, QA CECO
B. Wood, QA CECO
J. Dearbeck, CECO
C.L. Eichstaedt, Jr.
D.E. Calkins
D. Malzahn
M.L. Skates
C. Baumgardner
Q.A. Chicago
Q.A. LaSalle

QUESTION #4 - ATTACHMENT 4

Albert T. Howard Revised
Purchase Order Review and
Categorization Summary

1. Packages reviewed.....405
2. Packages correct and acceptable.....237
3. Discrepant packages.....168
4. No material certs..... 33
5. No phys/chem test data..... 27
6. Wrong standard referenced..... 19
7. No standard referenced..... 10
8. Material does not meet spec..... 3
9. Clerical errors..... 67
10. Listed by site - not located..... 9

QUESTION #4 - ATTACHMENT #5

Albert T. Howard
DEFINITIONS OF SUMMARY LISTING

1. Packages Reviewed - This item lists the total number of packages that were reviewed for this report only. It includes the number of purchase orders that the site have. It does not however, include those purchase orders generated after November 10, 1981.

2. Packages correct and acceptable - This includes the total number of P.O./CMTRs that the Document Team deem correct/acceptable through January 15, 1982.

3. Discrepant Packages - Includes the total number of P.O./CMTRs not acceptable for the reasons listed in numbers four (4) through nine (9).

4. No Material Certs - This includes those packages that have no certification data, i.e., certified test material/certificate of conformance (compliance).

5. No phys/chem test data - This number indicates the total of packages that are missing part or all of CMTR data.

6. Wrong standard referenced - This includes the number of packages where the standard referenced in the certification is contrary to the contract specification/procurement document.

7. No standard referenced - This includes the number of packages in which there was no standard referenced in the procurement and document/material certification.

8. Material does not meet Spec. - This includes those P.O. packages that material does not meet the standard specified.

9. Clerical errors - This group includes a variety of discrepancies (minor) that are clerical in nature; i.e., no ASTM, no ASTM/yr., No ASTM/yr. designation, typographical errors, etc.

QUESTION #4 - ATTACHMENT #6

LASALLE CO TY DISCREPANT PURCHASE ORDERS
(Open)

P.O. No. C-

451	669	4205	9417	17103
452	683	4216	9419	
454	696	4268	9420	
455	704	4270	9421	Total: 103
465	714	4285	9422	
472	722	4286	9427	
508	736	4289	9429	
519	764	4294	9442	
520	798	4312	9444	
522	804	4348	9450	
542	852	5759	9455	
549	893	5776	9501	
566	909	6813	9505	
567	954	9242	9506	
572	956	9244	9762	
597	1329	9251	9636	
599	G3111	9401	10784	
602	4004	9402	11237	
603	4023	9403	11271	
616	4048	9411	11544	
617	4052	9412	12206	
627	4080	9413	12285	
630	4081	9414	13246	
639	4105	9415	13912	
651	4137	9416	16429	
652	4157			

QUESTION #4 - Attachment #7

ALL SITES - DISCREPANT PURCHASE ORDERS
(Open)

P.O. No. C-

456	762	1255
	770	G3114
464	797	4055
468	802	9247
586	803	11503
601	806	12281
604	820	12303
606	821	12304
609	822	12434
611	823	13238
632	827	13255
633	830	13268
642	839	13293
644	851	
662	855	
663	888	
665	912	
684	917	
701	955	
711	987	
717	1048	
724	1070	
738	1076	
742	1089	
746	1133	
752	1195	
	1238	

Total: 65

August 1, 1982

RESPONSE TO QUESTION #4, PART 2
Requested By
Commissioner Victor Gilinsky

QUESTION: Please describe what inspections were made by Commonwealth Edison of the Zack Company's actual material certification.

Commonwealth Edison inspected actual material certification of HVAC equipment and materials in two ways. First, documentation associated with the certification of materials supplied by Zack and used in the fabrication and installation of HVAC systems was inspected by CECo site Q.A. during audits and surveillances of the Zack site and corporate office activities. Second, major components and equipment installed in the HVAC system were purchased by Edison directly from equipment manufacturers other than Zack. Documentation supporting the equipment certification is sent directly to the A/E, Sargent & Lundy, for a review. After review and acceptance by Sargent and Lundy, the documentation is forwarded to CECo site Q.A. for further review and final acceptance.

1) Audits and Surveillances of Zack Documentation

During the period January, 1980 thru July 1982, Commonwealth Edison Q.A. conducted eleven audits and four surveillances which included questions which were directed specifically at inspecting material certifications to ensure acceptability. The following tables show the audits and surveillances which were conducted and the number of material certification documents which were reviewed.

C.E.Co. Audits

Audit No.	No. of Questions asked concerning Material Certs.	Number of Certifications Reviewed	Closure dates of all items found deficient
1980-6 (on-site)	1	5	6-17-80
1980-19 "	1	10	10-08-80
1980-62 "	4	18	4-04-81
1980-85 "	1	6	1-06-81
1980-101 "	3	11	2-05-81
	Total:	50	
1981-18 (off-site)	4	80	4-29-81
1981-32 (on-site)	1	13	7-02-81
1981-53 "	1	9	11-28-81
1981-64	1	9	3-11-82
	Total:	111	
1982-45 (off-site)	1	28	6-10-82
1982-49 "	3	17	7-16-82
	Total:	45	

C.E.Co. Surveillances

The following tabulation is of the various certifications that were documented as part of the objective evidence taken during these surveillances:

Surveillance Report Number	Number of Certifications Reviewed (Documented in Surveillances)	Date of Closure for Deficient Items
1-81-661	15	10-19-81
1-82-50	8	3-15-82
1-82-69	1	2-09-82
1-82-225	Certificates associated with 45NCR's.	4-27-82

2) Architect Engineer Review of HVAC Documentation

The following table lists the major equipment and components which CECo purchased directly from manufacturers. Sargent and Lundy conducted a 100% review of material certification documentation for these specifications as to being acceptable.

HVAC Equipment

Specification	Type of Equipment Equipment Supplied
J-2581	Unit Heaters
J-2582	Heat Exchanger Coils & Cabinets
J-2483	Atmospheric Clean-up Filters
J-2584	Isolation Dampers
J-2585	Ventilation Fans
J-2586	Air Handling Units
J-2587	Evaporative Coolers
J-2588	Refrigeration Units
*J-2590 (Zack)	Ductwork (Misc. Hardware)
*J-2591 (MCC Powers)	Hvac Controls
J-2960	Electrical Heaters
J-2975	Vent Stack Air Flow Monitors

* Receiving inspection and document review responsibility by contractor on-site

0419Q

Commonwealth Edison Company

QUALITY ASSURANCE MANUAL

AUDIT CLOSED

R A Braun

QA SUPERVISOR

DATE 7/16/82

AUDIT REPORT

1-82-49

Type Audit: [X] Program Audit [ ] Product Inspection Point

[ ] Records [ ] Special

To: Mr. Martin Skates, Quality Assurance Manager

Project LaSalle Visit Date 3/22-23/82 Report Date 3-29-82

System HVAC Component Identification N/A

Material Description N/A

Vendor Zack Co. Location Cicero, IL

Subcontractor N/A Location N/A

Contacts Martin Skates, Ray Basiaga

P.O. No. Spec. No. J-2590

Recommended Inspections: 6 mos 3 mos 1 mo

Other: As scheduled

Notes: Please respond to the deficiencies identified in Exhibit A by May 5, 1982. Exhibit B has a list of the personnel in attendance for the entrance and exit meeting. The response must include action taken to correct the deficiencies, action taken to prevent reoccurrence, and date corrective action will be implemented. Please direct response to George Marcus, Director of Quality Assurance and a copy to Robert E. Waninski.

Auditor Robert E Waninski Date 3-29-82

Reviewed G. F. Marcus Date 4-8-82

cc: Manager of QA

[redacted]

Manager of Projects

[redacted]

Director of QA (Engr-Constr)

Site Constr. Supt.

[redacted]

Site Quality Assurance

Project Manager

Project Engineering Mgr.

[redacted]

AUDIT OF ZACK CO. CORPORATE

BY COMMONWEALTH EDISON QUALITY ASSURANCE

AUDIT # 1-82-49

The Commonwealth Edison Quality Assurance Department conducted it's scheduled off-site audit of Zack Company - Corporate Office - on March 22nd and 23rd, 1982. The purpose of the audit was to determine if Zack Company had been implementing the requirements of their approved Quality Assurance Program, latest revision dated 3-31-80.

The audit checklist consisted of 17 questions, of which it was determined that two deficiencies existed. The first deficiency, Finding #1, involves control of revised documentation. The second deficiency, Observation #1, address protection of quality assurance records.

It should be noted that of the other areas audited, material traceability and material control activities appear to be managed quite well. Another area worthy of being mentioned, is the preparati of documentation such that the Certificate of Conformance may be issued. Although two deficiencies have been noted, Zack Company's overall Quality Assurance Program appears to be adequately implemente

Zack Company is requested to respond to the deficiency by May 5, 1982. In the response, please indicate the actions taken to prevent reocurrence and the date these steps will be implemented, in addition to the actions taken to correct the deficiencies.

AUDIT #1-82-49

EXHIBIT A

CLOSED PER SURVEILLANCE QAL #5809 No. 6/8/82 memo to file R.A. Bruno 7/16/82

FINDING #1

Contrary to Zack's Quality Assurance Manual, Section 4, the distrib control system does not reclaim and destroy obsolete documents, drawings, and specifications.

Discussion

It was determined that superceded drawings are not reclaimed from the field group when revised drawings are issued. The field representative signs a Transmittal Notice for Engineering Documents thereby assuring receipt, and supposedly files the superceded docum at the site. This activity is also contrary to procedure QCP-12 para. 4.2, which supports the Quality Assurance Manual's commitment to reclaim and destroy void documents.

OBSERVATION #1

Zack Company record storage facilities do not protect contents from possible destruction by causes such as fire, etc.

Discussion

It was noted that only a portion of Quality Assurance records are maintained in fire-proof cabinets rated at 350°F for 1 hour. These records include items such as CMTR's, Certificates of Conformance, and welder qualifications. Drawings and shop travellers are kept in non-fireproof cabinets. No sprinkler systems were noted in any of the storage areas.

CLOSED PER SURVEILLANCE QAL #5809 No. 6/8/82 memo to file R.A. Bruno 7/16/82

AUDIT # 1-82-49

EXHIBIT B

Zack Audit 3-22,23

Entrance Meeting

R. E. Waninski	CECo	Lead Auditor
Martin Skates	Zack	QA Manager
Ray Basiaga	Zack	QA Eng.
Carl L. Eichstaedt Jr.	Zack	VP/Proj. Manager

Exit Meeting

Christine DeZutel	Zack	President/Owner
R. E. Waninski	CECo	Lead Auditor
Martin Skates	Zack	QA Manager
Ray Basiaga	Zack	QA Eng.
Carl. L. Eichstaedt Jr.	Zack	VP/Proj. Mgr.

LaSalle Cou
Rural Route #1 Box 220
2601 N. 21st Rd.
Marseilles, Illinois 61341
815-357-6761

May 13, 1982
QAL # 5809

Mr. M. L. Skates
The Zack Company
4600 W. 12th Place
Chicago, IL 60650

SUBJECT: CECo Audit # 1-82-49

Dear Sir:

Upon review of your response to the above indicated audit (Zack Transmittal #345), we find your corrective action acceptable to the indicated deficiencies. Your cooperation throughout the course of the audit has been very appreciated.

R. E. Waninski
Lead Auditor
LaSalle County Station

G. F. Marcus
Director of Eng./Const.

REW/pjb

cc: T. E. Quaka/Q.A. File

Memo to File

Action taken to correct deficiencies and prevent recurrence is deemed sufficient such that this audit may be considered closed. This statement is based on the following:

OBSERVATION #1

The duplicity of the records, and the additional fire-proof cabinets are sufficient record protection until the proposed sprinkler system is installed.

FINDING # 1 REW

The QA General Office has reviewed and accepted the manual change. The audit of this area noted that the activity was in conformance except for the requirement to reclaim & destroy obsolete documents. This requirement has ben eliminated in the manual revision.

R. E. Waninski 6/8/82
R. E. Waninski
Lead Auditor

R. A. Braun 6/5/82
R. A. Braun
Q. A. Supervisor
LaSalle County Station

REW/ccc

cc: T. E. Quaka/Q A. File

Audit # 1-82-49

Commonwealth Edison Company

QUALITY ASSURANCE MANUAL

AUDIT REPORT

#1-82-45

AUDIT CLOSED
L. Quaker
QA SUPERVISOR
Inspection Point
DATE 6/10/82

Type Audit: ☐ Program Audit ☐ Product ☐ Records ☒ Special

To:

Project LaSalle Visit Date 2/18-19/82 Report Date 2-26-82

System HVAC Component Identification N/A

Material Description N/A

Vendor Zack Company Location Cicero, Illinois

Subcontractor N/A Location N/A

Contacts M. L. Skates - Q.A. Manager

P.O. No. 186466 Spec. No. J-2590

Recommended Inspections: 6 mos 3 mos 1 mo

Other: As Scheduled

Notes: Please respond to the deficiencies noted in Exhibit A by 3/19/82. Response must include corrective action taken and action taken to prevent recurrence.

Lead Auditor Z A Braun Date 2/26/82

Auditor Bruce Talbot Date 2-26-82

Reviewed Tom Quaker Date 2/26/82

cc: Manager of QA
[redacted]
Engineering
[redacted]
Manager of Sta. Constr.
Manager of Projects
[redacted]
QAD Manager

Director of QA (Engr-Constr)
Site Constr. Supt. ~~or Proj.~~ Engr.
Site Quality Assurance
Project Manager
Project Engineering Mgr.
~~(List others as required)~~
Auditee

(1)

AUDIT # 1-82-45

ZACK COMPANY

CONDUCTED BY COMMONWEALTH EDISON QUALITY ASSURANCE

On February 18th thru 19th, 1982, the Commonwealth Edison Quality Assurance Department conducted a Special Audit of the Zack Company located in Cicero Illinois.

The intent and purpose of this Special Audit was to investigate quality related concerns that were brought to CECo Q.A.'s attention during the second week of February 1982. These concerns were in the areas of:

(1) Lead Auditor Qualifications
(2) Material Traceability
(3) Zack Procurement
(4) NCR Issuance
(5) Records Storage & Filing
(6) Documentation Alteration By Zack Company

The audit checklist consisted of 7 questions with the checklist scope covering the above six areas.

The audit resulted in 2 findings. The first finding is in the area of Q.A. Manager annual auditor evaluation and Auditor/Lead Auditor records keeping. The second deficiency involves material traceability for a section of HVAC duct. Details concerning these findings are contained in Exhibit A of this report.

Exhibit B identifies those individuals who were in attendance at the entrance and exit meetings.

Prior to the exit meeting, the individual who initially raised the quality concerns was contacted and interviewed by the Lead Auditor. He was provided with the opportunity to review the checklist and the audit results. Additionally he was asked if he had any concern to add to those covered by this audit. He indicated that he had no additional concerns. He was invited to attend the exit by both Zack and CECo but chose not to attend.

Based on the results of the audit and the interview conducted during the course of the audit, it is the opinion of the audit team

that no new serious concerns exist with respect to the implementation o the Zack Company Quality Assurance Program within the scope of the audit checklist. The serious deficiencies that do exist have been adequately identified and are the subject of the 50.55E (#81-08) condition reported to the NRC on September 28, 1981. Zack is actively engaged in resolving this matter by appropriate corrective action.

With respect to the 2 deficiencies noted in Exhibit A, Zack Company is requested to respond on or before March 19, 1982 indicating the corrective actions taken and actions taken to prevent recurrence. Please direct your response to Mr. T. E. Quaka, Quality Assurance Superintendent, LaSalle County Station.

EXHIBIT A

ZACK COMPANY

AUDIT #1-82-45

CLOSED PER ~~SURVEILLANCE~~ QAC No. 5889 Pabram 6/10/82

FINDING #1 (Question 1) (QAM - Section 19)

Contrary to Zack procedure PQCP-17, Rev. 0 (7-25-80), Auditor/Lead Auditor Qualification and certification records are not adequately maintained at their Cicero facility. This deficiency manifests itself in several ways as indicated below:

Discussion:

Item A - Zack procedure requires annual evaluation of Auditor and Lead Auditor Certification (para. 6.5.1). Review of the current status of Zack auditors/lead auditors indicates that M. Geyer was certified as Lead Auditor on 8-4-80. Paragraph 6.4.4 states that certification is valid for a period of one year. Evaluation of Mr. Geyer's Lead Auditor status by the Zack Q.A. Manager should have occurred on or before 8-4-81 and PQCP-17 requires documentation of this evaluation on form ZQF-37. No evidence of this evaluation was available for review.

Item B - Zack procedure requires auditor candidates to perform a minimum of one audit as an acting auditor under the supervisic of a certified lead auditor per paragraph 6.3.1.2 and this participation is to be documented on form ZQF-37. Additionall auditors candidates are required to demonstrate a minimum of six points based on education, experience, professional competance, and the rights of Management (para. 6.2.2). Additionally the auditors training record is required to be documented on form ZQF-22.

Review of Zack's Auditor/Lead Auditor records indicates that E. J. Bodley performed an audit on 2-15-82. No documented evidence was available at the time of the audit to indicate that Mr. Bodley received his required training and that he will score the six point minimum.

It is fully realized that only several days had passed between the 2-15-82 audit and audit #1-82-45 but Mr. Bodley's auditor qualification record folder is empty. Zack is therefore requested to submit copies of form ZQF-22, ZQF-37 and ZQF-36 for E. J. Bodley after auditor certificatio occurs.

Item C - The audit team's overall impression of the Zack Auditor/Lead Auditor Qualification records is that of confusion. Presentl there are but 6 individuals certified as Auditor or Lead Auditor. There is a lack of consistancy in maintenance of these documents and the documents themselves are in some ways redundant in their content. Some information unnecessarily appears several times on different forms while

Item C - Con't:

other information must be inferred by review of all auditor/lead auditor activities. It would be in Zack Company's best interest that their procedure for Auditor/Lead Auditor qualification be reviewed in an attempt to streamline the documentation requirements.

FINDING #2 - Question #2

Contrary to Zack's Quality Assurance Manual Section 9, Zack's material control program failed to provide sufficient traceability to the material used in the fabrication of HVAC components in all cases.

CLOSED PER ~~SURVEILLANCE~~ QAL No. 5889 PA Brown 6/10/82

Discussion:

It was found that in one particular case, Traveler #F-515 identified th fact that fitting No. 4 was voided and replaced by fitting No. 4A on Traveler #F-1904 per Zack's Minor Modification form M/M #104. A review of this traveler #F-1904 showed the section of ductwork but failed to provide any indication of the material used. Upon investigat this matter further in the field, it was determined that the fitting wa not fabricated. Field verification showed another piece next to it had been changed instead.

Most of the problems which resulted in this case, were the results of some confusion which existed due to numbering errors. The M/M #104 identified the required change to involve piece No. 4 on drawing M-1361-2 by requested a new piece 4A. In reality, the M/M should have addressed fitting No. 22 which was eventually changed. Zack's drafting department changed piece No. 4 to 4A but should have revised piece No. 22 to 22A. To further confuse the issue, piece 22A was field fabricated without an apparent traveler to identify the material used. Per Zack's site Project Manager, the fitting in question was made from all stock material. Fitting No. 4 on traveler #F-515 was verified to be in the field and found acceptable as is.

Zack's practice of field fabricating components without the required documentation is unacceptable. Zack should investigate the matter further to determine if this was an isolated instance. For all cases found, nonconformances should be written to properly disposition the matter. Finally, Zack's segmented drawings should be revised to show the following:

Drawing #	Fitting Involved
1361-2	4A should be changed back to 4
1361-2	22 should be changed to 22A with the proper notation concerning M/M 104 placed on the correct traveler.

Zack's site QC and Project Managers were informed of this finding and were in agreement with its results.

Commonwealth Edison
LaSalle County Nuclear Station
Rural Route #1 Box 220
2601 N. 21st Rd.
Marseilles, Illinois 61341
815-357-6761

April 12, 1982
QAL #5742

Mr. Martin L. Skates
The Zack Company
4600 W. 12th Place
Cicero, IL 60650

SUBJECT: CECo Audit 1-82-45 Response Dated 3-25-82

Mr. Skates:

Response to our Audit 1-82-45 was received 3-30-82 and based on review of the information submitted, the following items must be clarified prior to closure of this audit:

FINDING #1 The documents submitted adequately address those items particular to Messrs. Geyer and Bodley but no indication of action taken to prevent recurrence was included in the Zack response.

FINDING #2 Review of the information included in the response is sufficient to explain the specific case discovered during the course of the audit, but the question of whether this was an isolated case was not addressed. In addition, no actions taken to prevent recurrence are indicated in your response.

Please submit the above information and/or clarifications on or before 4/26/82. If you have any questions concerning this matter please contact me (815) 357-6761, extension 573.

R A. Braun 4/12/82
R. A. Braun
Q. A. Supervisor
LaSalle County Station

RAB/ccc

cc: F. Marcus
T. E. Quaka/Q. A. File

Response to Marcus CZC 345 dated 5/5/82 not received on-site as of 5/11/82 RAB 5/11/82

(6)

LaSalle County Nuclear Station
Rural Route #1 Box 220
2601 N. 21st Rd.
Marseilles, Illinois 61341
815-357-6761

June 9, 1982
QAL # 5889

Mr. Martin L. Skates
The Zack Company
4600 W. 12th Place
Cicero, IL 60650

SUBJECT: CECo Audit 1-82-45

Mr. Skates:

A review of your proposed "action to prevent recurrence" in regard to Findings #1 and #2 resulting from the above referenced audit was performed on June 9, 1982. Our analysis is indicated below:

FINDING #1

Contrary to Zack procedure PQCP-17, Rev. 0 (7-25-80), Auditor/Lead Auditor Qualification and certification records are not adequately maintained at their Cicero facility.

FINDING #2

Contrary to Zack's Quality Assurance Manual Section 9, Zack's material control program failed to provide sufficient traceability to the material used in the fabrication of HVAC components in all cases.

Contractor Response: Finding #1

Zack's Lead Auditor and Auditor Personnel Files has been reviewed and up-dated as required to meet the requirement of PQCP-17 para. 6..4.4. Attached you will find forms ZQF-36, ZQF-37 for Mr. Harry Geyer and ZQF-22, ZQF-36 and ZQF-37 for Mr. Edwin Bodley.

Contractor Response: Finding #2.

1. For commerical reasons traveler F-1904 was prepared by the Chicago Drafting Department on 3-8-79 to satisfy the requirements of MM-104. (Note: All MM's are reviewed by Chicago Drafting Department). 2. Pc. # 4A was never fabricated. 3. Traveler F-515 was modified as shown on traveler F-1564. (Note: There was no piece number assigned at time of fabrication. A piece number has now been assigned.) The fitting was made from Coil #322 and Angle Iron #772 and welded in Chicago by welder #34. 4. M-1361 drawing shall be changed to reflect PC #22A instead of PC #22. 5. M-1361-2 drawing shall be changed to reflect PC #4 instead of PC #4A. 6. Traveler F515 (PC #22) will be reinstated and traveler F1904 will be voided. 7. Traveler 1564 will be modified to add PC #22A. 8. Traveler F515, PC #22 shall be voided. 9. FCR shall be devcloped to replace MM104 and to reflect above changes.

(7)

QA Review: Finding # 1

The documents submitted adequately address those items particular to Messrs. Geyer and Bodley but no indication of action taken to prevent recurrence was included in the Zack response.

Finding #2

Review of the information included in the response is sufficient to explain the specific case discovered during the course of the audit, but the question of whether this was an isolated case was not addressed. In addition, no actions taken to prevent recurrence are indicated in your response.

Contractor Response (Second): Finding #1

In order to prevent recurrence of the deficiency noted during the above referenced audit, the Q.A. department is developing a personnel matrix. This matrix will include all pertinent information needed to maintain personnel qualifications and also provide an easy reference of an individual's current qualifications and necessary additional requirements to upgrade qualifications.

Contractor Response (Second): Finding #2

A review of Travelers was conducted in conjunction with preparation of Travelers for turnover documentation. No other evidence of this type of deficiency was found. The likelihood of recurrence of this type of problem is minimized by the small amount of work remaining at LaSalle. The Zack Company site Q.C. Manager has been instructed to review all Travelers used by field fabrication to verify completeness. We feel that under the circumstances this is sufficient to prevent recurrence.

QA Review (Second): Finding #1

Mr. Skates was contacted by phone and requested to send a copy of referenced personnel matrix.

Contractor Response (Third): Finding #1

Please find attached a copy of Auditor and Q.C.I. Matrix per your request in response to CECo Audit 1-82-45.

Final QA Review (Third): Finding #1

Based on the above action to prevent recurrence, the Auditor and QCI Matrix, and the monthly review committed to in said matrix, CECo feels that Zack has adequately addressed this Finding and that recurrences will be eliminated if this system is adequately implemented. This finding is closed.

Final QA Review (Third): Finding #2

The above corrective action and action to prevent recurrence is adequate. We feel that Zack's commitment to review all Travelers used by the field fabrication unit is proper. This Finding may be closed.

This audit is closed.

x Stephen J Reutzke
S. J. Reutzke
Q.A. Engineer

R A Braun
R. A. Braun
Q.A. Supervisor
LaSalle County Station

SJR/pjb

cc: T. E. Quaka/Q.A. File
G. F. Marcus

0039A

2401 WESTERN • FLINT MICHIGAN 48506 • 313/736-2040

the ZACK co.

CUSTOM METAL FABRICATION

June 2, 1982

Mr. R.A. Braun,
Q.A. Supervisor,
LaSalle County Nuclear Station
RR #1, Box 220
2601 North 21st Rd.,
Marseilles, Illinois 61341

Dear Mr. Braun:

Please find attached a copy of Auditor and Q.C.I. Matrix per your request in response to CECo Audit 1-82-45.

If I can be of further assistance, please do not hesitate to call me.

Yours truly,

Martin R. Skates

Martin Skates
Q.A. Manager

MS/lf

RECEIVED
JUN 9 1982
CECo La SALLE
SITE Q A

(10)

AUDITOR AND Q.C.I. MATRIX

COPY

	Auditor Trainee	Auditor	Lead Auditor	Q.C. Inspector I	Q.C. Inspector II	EYE EXAMINATION: Date last eye examination performed	EYE EXAMINATION: Date next eye examination due	EYE EXAMINATION: Date eye examination done	PERFORMANCE: Date of last performance review	PERFORMANCE: Date next performance review due	PERFORMANCE: Date performance review done	CERTIFICATION: Date Certified	CERTIFICATION: Date next Certification due	CERTIFICATION: Date Certification done
D.M. Allbritten														
R. Basiaga			X						3/12/82	3/11/83		3/12/82	3/11/85	
E. Bodley			X						2/15/82	2/14/83		3/12/82	3/11/85	
H. Geyer			X						3/2/82	3/1/83		9/17/80	9/16/83	
C. Richards					X	5/20/82	5/19/83		9/22/81	9/21/82		5/7/82	5/6/85	
M. Skates			X											

SHOW MONTHLY REVIEW BY INITIALING AND DATING BELOW

M.L. Shotter 6/1/82			

Surveillance Date: October 9, 1981 File No. J-2590.26

LASALLE Q.A. SURVEILLANCE REPORT NO. 81-661

Contractor/Organization Observed: Zack Company
Category: (1,2,3,5)

Item Observed:

On October 9, 1981, a surveillance was performed at Zack's Corporate Office to evaluate the steps taken to date concerning Zack's notificat of a possible 10CFR 50.55 (e) relating to documentation discrepancies. Upon arrival, Mr. D. E. Calkins, Zack's Manager of Quality Assurance presented an interim report dated October 9, 1981 (See Attached), on Zack's review so far. This surveillance is based on a review of Zack's activities in progress and the above report dated 10-9-81.

Zack is currently re-reviewing all purchase orders and associated documentation. This documentation is being reviewed in detail, specifically for missing certs, missing signatures, any alterations, proper physicals and chemicals and compliance with purchase order and specification requirements. A log is being maintained on each purchase order, showing results of this review and any corrective action required. For certs that are missing, found deficient or appea to have been altered, Zack is notifying the Supplier and requesting ne certifications. These conversations are followed up by letters, to hopefully assure a response. To date, numerous revised certs have bee received, but many more are required.

The personnel Zack has acquired to perform this indepth review were found to be adequately qualified and properly trained. The group leader was found to be a Consumer Power employee with 15 years of documentation experience. Three Quan-tech personnel were also hired to assist the Group Leader. Finally, two additional Zack personnel were brought in to be trained and to eventually take over the documentation review once this initial evaluation is complete.

During this initial re-review, all necessary standards and specificat were found being used. Some questions did exist concerning LaSalle's Specification due to vagueness in actual documentation requirements. These questions will be addressed in Zack's Final Report scheduled fo completion on October 26, 1981.

The following information was checked during this surveillance to assure the quality of Zack's review. All comments and questions raised by Zack were being entered in their Master Log as required. Some of the comments found by Zack may not be concerns for LaSalle Start-Up of Unit #1 based on my understanding of Specification J-2590 requirements. The following Certifications were reviewed:

A) Certs containing clerical errors and missing signatures:

P.O. #624 - Inland Steel Co. (Coils) P.O. required certifications, however, certs failed to identify which year of ASTM - A527 was used.

P.O. #831 - U.S. Steel Supply (HR Bars) P.O. required certifications, but the Northwestern Steel Cert failed to identify "ASTM" A-36. The C. of C. from U.S. Steel Supply did however show heat # and ASTM-A36.

P.O. #947 - National Metal Fabricators (Angle rings) P.O. required Certs. Some of the heats received did not state "ASTM" only A36-77. Other heats failed to identify either ASTM or A36 designation.

P.O. #1094 Edge-comb metals (Plate) P.O. required certs. The actual CMTR was missing a legible signature. The cover sheet was however signed and acceptable.

B) Missing Certifications

P.O. #508 - P.O. was written for A-325 bolts. Certifications were required, however, only a Cert of Compliance was received which failed to reference "ASTM".

P.O. #572 - No certs were available, could not be located.

P.O. #586 - P.O. was for duct sealant and required a Product Spec. sheet which was received. Zack is now requesti certs for the shipment. LaSalle spec is not clear on if certs are required.

P.O. #565 - Brock Tool Co. (Phillips Redhead Wedge anchor) letter certification only, no actual CMTR's received. P.O. required certs.

P.O. #4105 Key Crest Inc. (Nuts & Bolts) P.O. required certs, however, only C of Compliance received.

C) Altered reports

P.O. #914 - P.O. required certs, however, the CMTR's received contained an ASTM date which had a different type setting.

P.O. #947 - P.O. required certs. One CMTR was of poor quality. As a result, the heat # was highlighted by someone. It should be noted that there was another acceptable heat # shown on the CMTR.

D) Chemical and physical results not per specification

P.O. #826 - Calumet Steel (HR Angle) P.O. required ASTM -A36 steel, which was received. Although, LaSalle's Spec. for this type of steel required ASTM A575 Grade M-1020.

P.O. #630 - Reliable Galvanizing (HR Angle) P.O. required A36 whi was received, however, LaSalle required ASTM A575 Gra M-1020.

D) Con't:

P.O. #1094 - Edge-comb Metals (Plate Steel) P.O. required ASTM- A36, however, LaSalle Spec. required ASTM-A284 Grade A.

P.O. #1102 - Edge-comb Metals (Plate) Same as P.O. #1094.

Based on these results, Zack's review appears sufficient to identify any inconsistencies within Zack's procurement documentation. Various Spec. deviations have been identified which should have been accepted by Commonwealth Edison Engineering prior to use. These will still need to be resolved. Sargent & Lundy will also be contacted to clarify actual record requirements for certain materials. Pending Zack's submittal of their Final Report on 10-26-81, disposition from Project Engineering and Zack's success in obtaining revised certs, no additional problems can be foreseen. Site QA will review the records to substantiate acceptable disposition of identifie concerns at a later date.

Corrective Action Taken:

N/A

Follow Up Action:

N/A

Reported by: Bruce Gilbert Date: 10/19/

Approved by: R A Braun Date: 10/19/

FU Action Verified: N/A B Ward Date: —
QA Eng./Insp.

FU Action Approved: N/A R A B Date: 10/19/81
QA Supervisor

cc: J. J. Shewski/G. F. Marcus
L. J. Burke/H. H. Donaldson
T. E. Quaka/Q. A. File
Contractor

LaSalle County Nuclear Station
Rural Route #1 Box 220
2601 N. 21st Rd.
Marseilles, Illinois 61341
815-357-6761

January 29, 1982
QAL #5361

Zack Company
4600 W. 12th Place
Cicero, IL 60650

ATTENTION: Mr. M. Skates
Quality Assurance Manager

REFERENCE: LaSalle QA Surveillance Report No. 81-661

SUBJECT: Follow-Up Review

Dear Mr. Skates:

As provided for in the attached copy of LaSalle QA's Surveillance Report No. 81-661, a follow-up surveillance was performed on 1-21-82. This surveillance showed that a majority of the identified CMTR's have been corrected. These corrections involved clarifications received from vendors, receipt of revised certs and subsequent re-evaluation performed by Zack. As a whole, these corrections appear to resolve many of the problems identified.

The subsequent re-evaluations which were performed, however, failed to adequately disposition the certifications which were originally nonconforming. That is, no objective evidence was being provided to justify the corrective action, "accept as is." It appears the Zack Company has been accepting these certifications without properly recording the results of subsequent reviews, therefore not allowing closure of the NCR's. Commonwealth Edison requires a disposition for every item originally identified, along with those which are added in the future.

Presently, the status of those purchase orders identified within CECo. Surveillance No. 81-661 is as follows:

A. 1) P.O. #624 - Clarification letter from Inland Steel Company adequately dispositions the certification. In the letter, it was stated that supplying the ASTM year was not a company policy before 1979, therefore, the cert was accepted as is.

2) P.O. #831 - "Accepted as is " based on the acceptable cert. received from U.S. Steel with whom the P.O. was written.

3) P.O. #947 - Letter received from vendor correcting errors. - Acceptable

4) P.O. #1094 - A revised certification was received. Acceptable

B. 1) P.O. #508 - Open.
2) P.O. #572 - Open
3) P.O. #586 - Open
4) P.O. #565 - Based on J-2590 Specification requirements only a C. of C. is acceptable. As a result, the letter of certification from the vendor was acceptable as is.
5) P.O. #4105 - Open

C. 1) P.O. #914 - Was identified as acceptable, but the cert. package failed to provide any indication of its corrective action or of any subsequent reviews which were performed that accepted the certification as is. Open
2) P.O. #947 - Same as #914 - Open

D. 1) P.O. #826, 630, 1094 and 1102 - S&L's Specification J-2590 Amendment #1, accepted A-36 as a substitute for the material identified. As a result, each of the above P.O.'s were accepted as is.

Pending Zack's final response which is expected in early February, and Zack's corrective action concerning subsequent evaluations and the proper disposition of all items identified, no additional surveillances will be required at this time.

If you have any further questions, please contact Bruce L. Wood at (815) 357-6761 on extension 565. (LaSalle)

Yours truly,

Tom Quaka 2/1/82

T. E. Quaka
Q. A. Superintendent
LaSalleCounty Station

BLW/ccc

cc: W. J. Shewski/G. F. Marcus
T. E. Watts
T. E. Quaka/Q. A. File

Surveillance Date: January 26, 1982 File No. J-2590.26

LASALLE Q.A. SURVEILLANCE REPORT NO. 82-50

Contractor/Organization Observed: Zack Construction Company (2)

Item Observed:

Based on this record review, the status of the following Deficiency Reports is as noted below:

PT-VC-101-109	- Closed
PT-VC-101-411	- Closed
PT-VC-101-128	- Closed
PT-VC-101-129	- Closed
PT-VC-101-309	- Closed
PT-VP-103-12	- Closed
PT-VC-101-87	- Closed
PT-VC-101-89	- Closed
PT-VC-101-161	- Closed

On 1-21-82, it was verified that for the items shown in the above deficiencies, sufficient records exist to satisfy the procurement requirements at Zack's Corporate Office. It was further shown that these records had been reviewed and accepted by Zack's QA for use at LaSalle.

S&L's PCN 3 634, deleted the requirements for submitting on-site contractor documentation (such as Zack's) to S&L for review. This review is now the responsibility of Zack Company and is being verified by the Owner, through the audit and surveillance Program. Based on this change, S&L's letter accepting Zack's documentation is no longer required.

This surveillance assured that the following documentation was availe for turnover:

Meeting notes dated 6-10-76 between S&L and Zack Company clarified the Spec.'s documentation requirements and supplied the following determinations:

1) Safety related items (such as sheet steel, stiffener and support steel) actual CMTR's are required.
2) All other safety related hardware only a Certificate of Conformance is necessary.
3) All non-safety related items only a Certificate of Conformance is required.

4) Zack's P.O. 80-9505 to American Warming and Ventilating Co. was to furnish and deliver all dampers in accordance with Spec. J-2590.

For each item shown on the deficiencies as dampers (such as 1VC30Y or 0VC04YB), a C. of C. was verified to be on file.

B) Zack's P.O. #C-9503 to American Air Filter Systems was to furnish and deliver all filters in accordance with Spec. J-2590.

For each item shown on the deficiencies as filters (such as 1VX01F), a C. of C. was verified to be on file.

C) Zack's P.O. #C-9501 to Titus Manufacturing Company was to furnish and deliver all grilles, registers, diffusers and terminal mixing boxes in accordance with Spec. J-2590. A C. of C. for all supplied material was verified as being on file.

D) Zack's P.O. #C-9504 to Air Filter & Equipment Corp. was to furnish and deliver all air silencers in accordance with Spec. J-2590.

For each item shown on the deficiencies as silencers (such as 0VE03X or 1VX01X) a C. of C. could not be located, there the deficiencies remain open. (FT-VE-101-~~1046~~ 706 and FT-VE-101-308)

E) Zack's P.O. #C-9506 & C-12345 to Air Filter and Equipment Corp. was to furnish and deliver all air monitors in accordance with Spec. J-2590.

For each item shown on the deficiencies as air monitors (such as 0FE-V7003), a C. of C. was verified to be on file.

F) Zack's P.O. #C-9511 to Armstrong Company was to furnish and deliver all humidifiers in accordance with Spec. J-2590.

For each item shown on the deficiencies as humidifiers (such as 0VE01HA) a C. of C. was verified to be on file.

G) Zack's P.O. #C-9509 to RMC was to furnish deliver all air conditioning accessories in accordance with Spec. J-2590.

For each item shown on the deficiencies as AC accessories (such as 0RG051 or 0RG56B), a C. of C. could not be located and therefore, the deficiency remains open (FT-VE-101-~~1046~~ 706)

H) Many of the C. of C.'s identified above were found to be generic for all the items supplied against a particular P.O.. These C. of C.'s are acceptable, however, at turnover Zack must state all applicable equipment piece numbers which apply, to assure traceability. This item remains open until Zack's written acceptance is received.

Corrective Action Taken:

Zack's Mr. C. Wichtaedt was informed of these items requiring corrective action, in particular items D, G & H.

Follow Up Action:

The written response and all corrective action will be reviewed and accepted by CECo Q.A..

Due to the multiple listing of items on some deficiencies, the origina deficiency has been closed and a new deficiency written to track only the open items.

PT-VE-101-128, 129 and 308 were combined and a new deficiency PT-VE-1C was written to identify the open items only.

PT-VX-101-87 was closed and a new deficiency PT-VX-101-388 was writter to identify the open items only.

On March 1, 1982, Zack responded to this surveillance by submitting th final summary report of all open purchase orders. Within the report, Zack attached 99 nonconformances for which 30 had been dispositioned b Zack internally. The remaining NCR's were subsequently returned to Za for further evaluation on Zack's part.

(Continued at bottom of page)

Reported by: Bruce R Wolf Date: 2-1-8

Approved by: Tom Quaka Date: 2/1/8

FU Action Verified: Bruce R Wolf Date: 3/
QA Eng./Insp.

FU Action Approved: R A Braun Date: 3/
QA Supervisor

3-18-82

cc: J. Janowski/G. F. Marcus 3/24/82
R. Cosaro
T. R. Quaka/Q. A. File
L. H. Lauterbach/D. M. Berry
M. Jasurda/Start-Up

In reviewing the results submitted to date, both Zack P.O.'s C-9504 a 9506 have been satisfactory resolved from Commonwealth Edison's point view by obtaining the necessary Certificate of Conformances. Based o action, deficiencies PT-VE-101-706 and PT-VX-101-388 can now be considered closed.

Finally, Zack's Project Manager, C. Eichstaedt, was contacted concern traceability for Zack's final turnover records. He indicated that th necessary equipment piece numbers would be provided, as required by S ECN-624, therefore, this surveillance is considered closed.

LaSalle County Nuclear Station
Rural Route #1 Box 220
2601 N. 21st Rd.
Marseilles, Illinois 61341
815-357-6761

February 3, 1982
QAL #5376

Zack Company
4600 W. 12th
Cicero, IL 60650

ATTENTION: Mr. C. Eichstaedt

REFERENCE: LaSalle QA Surveillance Report No. 82-50

Dear Mr. Eichstaedt:

Attached, please find the above referenced surveillance for which a response is requested by 2-17-82.

It appears that the following three (3) items require resolution:

1) Item D identified Zack's P.O. #C-9504 for which a required Certificate of Conformance could not be produced as required.

2) Item G identified Zack's P.O. #C-9509 for which a required Certificate of Conformance could not be produced as required.

3) Item H identified the fact that traceability to specific equipment piece numbers could not be verified. Zack should supply a traceability system acceptable to CECo. upon submittal of final turnover records.

It should be noted that Zack's QC was in the process of reviewing all purchase orders generated for use at LaSalle. The particular P.O.'s identified in 1 & 2 above had not been reviewed to date. A serious effort should be made to complete this review so that all problem areas are known.

Any questions regarding the information contained within this surveillance should be directed to Bruce L. Wood on (815) 357-6761 extension 565.

Yours truly,

2/3/82

T. E. Quaka
Q. A. Superintendent
LaSalle County Station

BLW/ccc

cc: W. J. Shewski/G. F. Marcus*
T. E. Quaka/Q. A. File*

*Letter Only

82-225

Contractor: (2)

Item Observed:

A follow-up surveillance was performed at Zack's Corporate office on April 15, 1982 to assure adequate disposition of nonconformance reports resulting from Zack's efforts to close the open 50.55E. This 50.55E identified to the NRC concerns relating to Zack's missing and insufficient receiving inspections records and many other cases of deficient purchase orders and associated records.

Several Zack nonconformances reports were submitted to Commonwealth Edison for Engineering disposition. Those reports were not part of this review. The last such submittal became part of CECo. NCR #594. The subject of this surveillance was those Zack nonconformances which were finally dispositioned by Zack internally and, therefore, never reviewed by CECo.

The results of the actual NCR's reviewed are detailed below. It became apparent that the nonconformances dispositiuns by Zack were actually not safety related in nature and in many cases involved non-safety related material. It should be noted that no cases of inadequacy or improper review was found. The NCR's reviewed can be considered closed, as a result of this surveillance.

Reviewed the following Zack NCR's in detail:

NCR's #205, 206, 207, 208, 209, 212, 213, 216, 217, 218, 219, 220, 221, 222, 223, 224, 226, 227, 2228, 229, 230, 231, 232, 235, 236, 237, 238, 239, 244, 245, 246, 247, 248, 249, 250, 251, 252, 255, 256, 257, 258, 259, 260, 261, 262.

Reviewed the following Zack NCR's for proper signatures only.

NCR's #263 thru 305.

Corrective Action Taken: N/A

Follow Up Action: N/A

Reported by: Bruce Wirth Date: 4-26-

Approved by: R A Braun Date: 4/27/8

FU Action Verified: BLW N/A Date: 4-26
QA Eng./Insp.

FU Action Approved: N/A REB Date: 4/27/8
QA Supervisor

cc: W. J. Shewski/
G. F. Marcus
R. Cosaro
M. Skates (Zack)
T. E. Quaka/
Q. A. File

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

AUG 0 4 1982

MEMORANDUM FOR: Commissioner Victor Gilinsky

FROM: William J. Dircks, Executive Director of Operations

SUBJECT: LA SALLE

This is in response to your memorandum of July 28, 1982, requesting a complete explanation of the Zack-LaSalle matter.

At the Commission meeting on July 27, 1982, Mr. Keppler provided a fairly comprehensive account of the Zack problems at LaSalle as of that date. In view of that, we are limiting our response to the questions addressed in your memorandum. The questions directed to Commonwealth Edison were provided to the Company and they will respond directly to you. Answers to the questions directed at the staff, as of August 3, are provided as an enclosure.

The staff's investigation into the Zack-LaSalle matter is continuing and an update will be provided at the August 5 Commission meeting.

/ for

William J. Dircks
Executive Director
for Operations

Enclosure: As stated

cc w/enclosure:
Chairman Palladino
Commissioner Ahearne
Commissioner Roberts
Commissioner Asselstine
SECY
OPE
OGC

Responses to Zack - LaSalle Questions

1. Question - What was the basis for not investigating the Zack Company in 1979?

   Response - As a result of problems found by NRC inspectors with the installation of hanger welds, Commonwealth Edison (CE) issued a Stop Work Order on the work being performed by Zack at LaSalle. Conam Corporation was retained by LaSalle to do an overview of the hanger welding work performed by Zack. (See Attachment) In addition, CE required Zack to take steps to upgrade its quality assurance program for the installation of the HVAC work. The Stop Work Order remained in effect for better than two months. It that CE is responsible for the work of its contractors and CE took what was believed to be responsible action with respect to the identified problems, it was concluded that no further action on our part was necessary. In hindsight we should have had a vendor inspection performed at the Zack corporate office.

2. Question - How closely did Region III examine the documents obtained during the May 3, 1982, meeting between a Zack employee and the six or seven NRC Region III staff members. How many applied to LaSalle or could be applied to LaSalle?

Response - It appears that the documents provided by the former Zack employee were not examined closely by the NRC staff members during and immediately following the May 3, 1982 meeting. The investigator and four inspectors who interviewed the former Zack employee understood that, although the allegations made dealt with concerns at the Zack offices, his primary concerns related to Midland and that he did not have serious concerns regarding LaSalle. The inspectors were aware that Consumers Power Company, based on an earlier contact with the ex-Zack employee, was conducting an investigation of his allegations and it was concluded that the matter would be pursued by Region III following a review of Consumers Power Company's investigation.

When Mr. Keppler learned from GAP on July 15, 1982 that the documents provided by the ex-Zack employee included information related to LaSalle as well as Midland he immediately convened a Task Force to review the documents and determine which applied or may apply to LaSalle. From this review it was determined that there were documentation and workmanship problems related to LaSalle. The documentation problems were omissions and alterations of records and missing records, mostly related to demonstrating whether or not purchased materials met requirements. Workmanship problems were related to welding.

3. Question - What was the basis for the apparent decision that inadequate QA by Zack at Midland would have no relevance at LaSalle?

Response - The decision was not made that there was no relevance to LaSalle. In retrospect, we should have been more sensitive to the potential generic concerns with Zack following the ex-Zack employee's May 3 visit to Region III. However, although the concerns raised by the ex-Zack employee and the documents he provided relate to all three sites, the inspectors who talked with him were persuaded that he was primarily concerned with Midland and that he really did not have serious concerns with LaSalle. On this basis it was determined that any generic findings from the Midland investigation would be pursued later.

4. Question - Why did Region III not request information directly from the Zack Company in May, instead of waiting for Zack's former employee to send it to us?

Response - Since Region III did not plan to begin an immediate investigation of Zack, requesting information from Zack could have prematurely alerted them to a future investigation. The ex-Zack employee visited the Region III office on May 3 and May 19, 1982. It should be noted that on May 5, 1982 the Region III staff began to follow the investigation being performed by Consumers Power Company on the ex-Zack employee's allegations related to Midland. It was always Region III's intent to pursue any findings generic to LaSalle and Clinton.

5. Question - Why did Region III decide not to send any investigators to the Zack Company until July 22, 1982?

Response - Mr. Keppler first became aware that the potential problem regarding the certifications of materials in the HVAC system applied to LaSalle on July 16, 1982, as a result of the Task Force review. Because of other high priority on-going investigations we did not free up an investigator until July 22 to begin the LaSalle portion of the investigation. Also, we had determined that the investigation did not need to be completed prior to authorizing the licensee to go to five percent power because the welding had been independently verified by Conam, and the HVAC system had been successfully pre-op tested.

6. Question - Did Region III express any concern about Commonwealth Edison's inattention to this QA problem? If so, please provide copies.

Response - To the contrary, it was the inspector's view that Commonwealth Edison reacted in a timely and responsible manner to problems identified with Zack work. This view was based on the Stop Work action and retainment of a subcontractor (Conam) to review the hanger work following the NRC inspection finding in 1979, and the actions taken by Commonwealth Edison in reviewing and dispositioning records following Zack's report to Commonwealth Edison on September 25, 1981, concerning Zack's finding of improper records.

7. Question - What proportion of the heating, venting and air conditioning work done at LaSalle is properly documented?

Response - At this point, I don't think we can say. This will be determined by the on-going inspection and by a third party QA review of the Zack program, which has been agreed to by Commonwealth.

8. Question - What proportion of the heating, venting, and air conditioning work done at LaSalle required materials with specifications in excess of commercial grade?

Response - The required materials furnished by Zack Company with specifications in excess of commercial grade were structural bolts (ASTM A 325) and weld rod material. The required materials purchased by Commonwealth Edison and installed by Zack Company with specifications in excess of commercial grade, are as follows:

Heat Exchange Coils and Cabinets
Atmospheric Clean-Up Filter Units
Vaneaxial Fans
Centrifugal Fans
Air Cooled Condensing Units
Isolation Dampers
Check Dampers

9. Question - What proportion of the equipment specified in the previous item, if any, has been properly documented?

Response - According to Commonwealth Edison, the materials purchased by them have proper documentation. We have not verified this and do not intend to since this equipment is not in question and we have no outstanding problems with Commonwealth Edison's receipt inspection program. The documents associated with the special materials furnished by Zack Company are currently under review by NRC.

10. Question - What is the safety significance of the heating, venting, and air conditioning equipment which is not properly documented?

Response - The key objectives of the safety related portions of the HVAC system are to:

a. Provide suitable environment for plant personnel so they may perform required nuclear safety-related functions.

b. Provide a suitable environment for nuclear safety-related plant equipment so it may perform required nuclear safety functions.

c. Control, limit, or prevent the release or transfer of airborne radiological contaminants and intake of hazardous chemicals that could affect nuclear safety functions.

The licensee's review indicates there is no safety significance associated with the questionable documentation based on oversight inspections and design and materials considerations. The staff's review to date confirms this view. In spite of this Commonwealth Edison has conducted a preliminary assessment of the safety consequences associated with failure of materials with questionable records and has concluded the major concern is with personnel accessibility due to high temperatures. The staff's review of this assessment is not yet complete.

11. Question - How much of the work done at LaSalle by the Zack Company has been physically inspected? Have any problems been discovered with the installation and assembly work done at LaSalle by Zack Company? If so, how have they been resolved? What proportion of such problems remain unresolved?

Response - The following is an excerpt of information provided to the NRC by Commonwealth Edison concerning their inspections of Zack:

"As a result of the various discrepancies identified through inspections, surveillances and audits in connection with the HVAC system, a complete independent recheck of the quality of the installation was performed. In addition to Commonwealth Edison Company Quality Assurance surveillance and audit involvement with Zack Company, specific surveillance and inspection tasks involving Zack construction were assigned to the Conam Independent Testing Agency by LaSalle Site Quality Assurance. Conam performs inspection and testing under the direction of CECo QA at LaSalle. The intent of these inspections or re-inspections of the Zack work, as well as other contractors, is to independently assure that contractor field activities are properly performed in accordance with applicable procedures, standards and design requirements and that the final installation is acceptable. The basic approach is that each site contractor has a total entity in that each contract includes responsibility for installation, quality control inspection and quality assurance with quality control over-inspections and quality assurance checks, surveillances and audits being done by, or for,

Commonwealth Edison Company. For most cases, an over-inspection of from 5 to 10% of the various contractor's activities requiring inspection is performed. Where problems are identified, corrective actions are required of a contractor and the re-inspection activities by Commonwealth Edison are increased to as much as a complete re-inspection where the circumstances warrant. After it is confirmed that the contractor has undertaken the necessary corrective steps such as developing and implementing procedures, training and qualifying involved personnel and verifying the Quality Control inspection functions are performed acceptably to the satisfaction of CECo Site Quality Assurance, then the re-inspection performed by the Independent Testing Agency is reduced in step fashion as the results of the re-inspection justify as was done with Conam following the two year period of 100% re-inspection of Zack. In the case of Zack, the quality control inspections for accepting Zack welding at the site between June 1979 and June 1981 were performed by Conam no matter whether Zack was or was not released from our "stop work" order to perform its own Quality Control inspections under its contract. i.e., the installed hangers were inspected, and repaired as required and then reinspected by Conam. Also, duct work was required to be inspected by Conam prior to being released for installation in the building between April 1980 and May 1982. Deficiencies identified through inspections were covered by contractor non-conformance reports (NCR) for each affected hanger and otherwise for each other deficient case. All seismic and safety-related hangers were treated as suspect and were inspected. Zack Quality Control (QC) inspected each hanger and after Zack QC's acceptance, Conam repeated

the complete inspection for acceptability which included inspection of all welds of the hangers. Any deficient welds identified by Conam were reported to Zack, corrected by Zack, inspected by Zack QC and then inspected by Conam. Conam's 100% re-inspection included inspection of welds for placement and quality and for location of the hanger. Also, configuration checks on a random basis were made. In this period, most of the control room HVAC system was fully inspected by Conam after being inspected by Zack. Finally, system walkdown inspections were initiated by Zack in early 1982 to check final acceptability."

In addition there were NRC inspections of the HVAC work including the 1979 inspection which led to the Commonwealth Edison audit resulting in a "stop work" order.

Furthermore, 30 samples of duct work, stiffeners, and hangers were cut out of the system at NRC's request and examined by Argonne National Laboratory for chemical composition. All materials, with the exception of one, contained the specified quantities of the appropriate elements indicating that they were the proper materials. One had a sulfer value of .052 vice an upper limit of .05; this is not considered significant.

In addition to the material certification concerns, Zack issued a Part 21 report indicating discrepancies in welder qualification records --- the welder of record may not always have been the individual who performed the welds. This matter is presently under review by Region III.