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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	Docket No. 50-413
DUKE POWER COMPANY, et al.	)	50-414
	)	
(Catawba Nuclear Station,	)	
Units 1 and 2)	)	

DIRECT TESTIMONY OF WILLIAM RONALD MCAFEE

ON BEHALF OF PALMETTO ALLIANCE, INC.

September 23, 1983

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Please state your name and residence address for the record.

My name is William Ronald McAfee, I reside at Rt. 1, Box 68 York South Carolina 29745.

Are you a member of Palmetto Alliance ?

Yes.

Have you formerly been employed by Duke Power Company at the Catawba Nuclear Station?

Yes, I was employed by Duke Power from March 28 1977, to March 16 1979.

Describe the positions you held with Duke at the Catawba Station during the term of your employment their?

When I began work, I was concrete pourer on a utility crew, we also cleaned concrete forms. After that I became a prepour runner and helped coordinate the pouring of concrete through the paper work. After that I became secretary of the utility department office and from there I was promoted to Electrical Quality Control Inspector.

About when did you hold each of the jobs you just referred to?

Okay, I was, ah, I started the prepour runner job in December 1977 I believe and I had that job about three months and in March I began secretary and in either late May or June I went into the Inspector Department.

So about how long were you a QC inspector or working in the inspection area?

Nine months.

Mr. McAfee what is the purpose of your testimony in this proceeding?

During my work at Catawba I became very concerned about the integrity of the plant they were building and its ability to operate safely and without harm to public health. The purpose of my testimony is to support Palmetto Alliance contention number six in which we contend that systematic deficiencies in the Quality Assurance program at Catawba cast doubt on the construction of the plant and its ability to operate without

endangering the public health and safety. I want the Nuclear Regulatory Commission Licensing Board to know what I know about how Catawba is being built.

What was your first contact with Palmetto Alliance. How did you come to become a member of Palmetto Alliance and get involved in this case?

About ten days before the deadline for intervenors to file for intervention, I found that out and I contacted Robert Guild and talked to him and he explained to me what we had to do to be intervenors in the case.

How did you know about the deadline and that sort of thing?

I knew about the deadline from reading a newspaper article, which basically stated that until July 29, I think it was, that the intervenors were to file for intervention.

And did you join Palmetto Alliance then?

Yes, I requested Palmetto Alliance's help in fighting the opening of the plant and the licensing of the plant because of safety concerns I had after having worked at the plant.

Mr. McAfee, describe your duties as an electrical quality control inspector.

As electrical quality control inspector, I was primarily responsible for inspecting the cable tray hangers, cable tray supports and cable trays in certain areas of the plant, notably the reactor building one pipechase and in several areas of the auxiliary building.

Who was your immediate supervisor?

My immediate supervisor was Dick Hannay, who was supervisor of the electrical quality control inspectors.

Describe how you came to transfer to the quality control position.

I spent about 15 months in the utility department in various capacities and I had been trying to get into quality control for, well, ever since I started work there and finally Dick Hannay stopped me in the office one day and said that he was going to need another inspector and asked me to consider the position.

Why did you want to transfer to quality control?

Because it was a job that required brains, I felt like I could do it, its a challenge intellectually that I would be learning

something new, I'd be verifying that things were actually done right. In my previous experience I'd seen in many cases that things were not done right and were let go by.

How did you make the transfer? Did you apply for it?

Well, as I said, Dick Hannay, my boss, stopped me in the hall one day and said he was going to need another inspector and asked if I would come by and talk to him, so I didn't have to put in an application or anything, I just talked to him, he would put in for me to be transferred from utility to quality control.

What had been your contact with Mr. Hannay before that?

Well previously I saw him whenever I was prepour runner and I had to get the preour documents signed so we could pour the concrete, I had to go by the electrical QC office and get various inspectors to sign the documents.

Explain what that means. Why would they sign?

Well, if there was any electrical work in a concrete pour then an electrician did it and an electrical inspector had to inspect or verify that the work was done per print.

For example, electrical conduit that would be covered in the concrete?

Electrical conduit, electrical groundwires, that was basically what was in the concrete.

Did you have contact with Mr. Hannay in getting QC approval for those pours?

Yes I did.

You met with Mr. Hannay and he said he would put in for your transfer, what happened then?

Well, he put in for my transfer. In a matter of, perhaps a week, two weeks, I was transferred from Utility to Quality Control and I began working with the inspectors. In basically on the job training, I would go around with various inspectors and watch them do their job and learn what I was supposed to do.

We also had three or four half days of classroom training in which Jim Allgood went through our inspection procedures and the various things that we had to verify if we were looking at a anchor bolt or cable tray, there was a different set, a list of specific things we had to verify in order to approve the particular piece.

Who was Jim Allgood?

Jim Allgood was engineer for electrical quality control. He was assistance engineer, that was his rank.

What were the duties of the different electrical QC inspectors?

Most of the electrical QC people did the same thing I did. We had one inspector who primarily worked in the fabrication shop where they fabricated the electrical panels for the control room. And we had another electrical inspector who was primarily dealing with the electrical instrumentation, but other than that most of the other inspectors, if not all the other inspectors, had the same responsibilities that I had.

As far as the panels go, Terry Coleman was the inspector, he inspects the fabrication of the panels. That was basically all the actual wiring that was being done while I was there and then they started pulling cables into place and making connections three or four months before I left.

Who inspected those cable pulls and the connections?

I inspected some cable pulls. Various electrical inspectors inspected cable pulls and several of us also inspected terminations as they were being made.

So you did some of that as well, toward the end?

All I did was sit there and watch. I don't recall having any training in how to make terminations or if there was any training in the classroom training, it was not emphasized because that was not going to be our primary responsibility at that time.

My primary work was inspecting cable tray hanger supports and cable pulling, verifying that cables were placed in the correct cable trays. When I first came to QC they had me doing observation. At that time they were installing cable tray supports on structural steel bridges with uni-struts and one of the first things I did was I tested the torque on some of the electrician's connections, that they bolted the inner strut down with.

And this was before you were certified as a QC inspector?

Yes this was before I was certified, I had about 4 or 4 1/2 months of on the job training before I actually received my certification.

Did you actually do any inspection work or sign off on anything during your on the job training?



Well at that time we weren't signing off anything. We were just verifying it so that they could go ahead and paint it or proceed with the work. We had to verify things but nothing had to be signed off.

Why was that?

Well, its just the way the system was set up. We had to verify it but we did not have to sign any documents.

So what happens if you found it wasn't right?

Well, if we found it wasn't right, if it wasn't according to print, generally what we did was we went to the craft supervisor and told him the bolts weren't right or they were in the wrong place and told him to get them right and fix them. And generally they fixed them, sometimes we had to go back a second time and tell them.

To your knowledge was anybody inspecting the unistrut installation? Inspecting them in the sense that they perform a QC inspection where the inspection is documented, either on process control or someother QA documentation?

No, in the case of unistrut on the structural steel bridge, we didn't hang inspection tags or anything. Now on a single hanger, we would inspect it, hang a tag on it, the tag said that no work was to be done on the hanger because it is approved and the inspector signed it. In the event that work had to be done to move tha hanger in any way, they were to get in touch with the inspector to sign the inspection part.

What part of the plant were you working in when you were doing the on the job training?

Working on the unit one reactor building and auxiliary building.

What other inspection work was being done when you were observing and doing on the job training?

It was basically just verifying the position of cable tray hangers and cable tray support systems, I will add that it was my understanding that for rooms like cable rooms that had structural steel grid with unistruts that the entire area would be signed off and while I was inspector both before I was certified and after I was certified, we were going through the process of checking by the prints and marking them off on our blueprints themselves and initialing them if a certain area was found correct. If a section of the system was found to be correct, we would initial it and go on.

What quality assurance procedures did you employ in the electrical QC inspection you did perform? Do you recall?

I don't recall the exact initial number of procedures but we had procedures for inspecting cable tray, cable tray supports, inspecting cable pulling itself, we were inspecting fabrication of the control panels. We had a procedure which had a list of specifics that we had to verify. It said verify this, this and this, A, B, and C, and so on. There was a different procedure for every inspection that we did. And that's what we were told was to be our Bible as far as going by on inspections, we were performing the inspections by the procedures.

And did those procedures have a form for documenting the results of your inspection?

Not that I ever used. We were not using them at the time with one exception, that was the cable pulling. Each time we verified cable pulling then we did sign that on. There was also, a little tag we hung on cable tray supports, cable tray hangers when we verified that it was correct. Once we verified that it was correct and put a tag on it, no work was supposed to be done on it without contacting the inspector to sign the tag.

Let's take that example, you were talking about a hanger or a support. What if you found a construction deficiency in the process of your initial inspection. How did you document that?

Well there were a number of ways available to us. We could write R-2A's, variation notices, we could write M40C which was a minor deficiency report, or we could write a Q-1A nonconforming item report. Describe your understanding of the procedures for inspection of cable tray hangers.

We would verify that the hangers were in the correct location, that it was made out of correct materials, that everything about it was done according to the blueprint. In the event that we found a discrepancy, we could write it up on the M40C which was a small piece of paper in triplicate which we stated the problem and it went to our supervisor and then the craft supervisor and to technical support and technical support was supposed to give us a way to fix it. Or get the craft to fix it. But most often we just got the craft to fix it without documentation. Identify the typical deficiencies that you would note in the process of doing your inspection in your area.

The most typical deficiency I noted would be that the cable tray support, either on the floor, on the wall, on the ceiling, was not in the correct place or that it was not siesmically braced correctly. That was the most typically thing. Less typical than that would be improper placement of unistrut.

What were your inspection responsibilities in regard to anchor bolts?

With regard to anchor bolts, the correct size, as far as diameter, that it was the correct length and that it was torqued to proper torque. And this was all contained on the blueprint. But these anchor bolts were holding cable tray supports either on the floor, ceiling, or wall.

With regard to those typical deficiencies, outline the options that you understood were policy for you to follow, to identify deficiencies and see that they were corrected.

Well so far as I could tell there was no real policy. One week we would be told to write deficiencies up on M40C's, the next week we'd have a lecture on how to use Q-1A forms which is a Non Conforming Item report and we were told that all deficiencies were being documented on NCI forms. So on the basis of my experience, there was no clear policy as far as which form we were to use in any given instance. It seemed like they were always changing their minds as far as how they wanted to document deficiencies.

Who would provide you the instructions on how it was to be done and who told you of the changes and who explained the procedures?

Well, the procedures were explained by Larry Davison and Tommy Barron who was mechanical QC engineer and became my first line supervisor and Jim Allgood.

What was Larry Davison's position?

Larry Davison was head of QC at Catawba. On one occasion they called us down to inspect 27 ladders and we found seven of them to be faulty. The very day before we had received a lecture from Tommy Barron on how to use the non conforming item report. We went back up to the office to begin documenting them on the NCI's and we were told, in no uncertain terms, not to do so. When the day before we had received instructions to do that very thing.

Who told you not to do it the next day?

It was either Jim Allgood or Dick Hannay or both.

And who had given you the instruction the day before on how to properly use the Q1 procedure?

Tommy Barron. All the QC inspectors received the same lecture that day.



They herded us all in there while everything else was going on outside and gave us a lecture on how to use NCI's.

Basically Tommy Barron went over the procedure, read it to us, explained it to us and told us that, try to clarify it for us, what, in fact constituted a non conforming item. So after giving us this pep talk on how to do it, we all went out to do our job. But in fact, what we found the next day was that we were not supposed to do the job that way.

How do you recall him describing what a non conforming item was supposed to be used for?

It was supposed to be used to document any discrepancy. Once we were called down to inspect an item. If there was discrepancy, if the item was not built as the blueprint had called for, then we were to document it on a non conforming item form.

Was it your understanding from Mr. Hannay's lecture that the Q1 non conforming item procedure was intended to be employed when deficiencies were noted in the course of a preplanned inspection?

Yes. In fact, only then. In other words we couldn't just walk down into the field and see a hanger that looked complete, but was not built as the blueprint called for it to be built, we couldn't red tag it. We had to be called in to inspect something and we were supposed to write a non conforming item on it if it wasn't right.

So that craft supervision had to give you, in essence, permission to inspect before you had the right to non conform something?

That's the only time. In fact Craft got rather bent because some of us were going down before they told us to come down and were finding things wrong. And they got all bent out of shape about it, so they came down on us. Our supervisors came down on us and told us not to inspect anything until we were called for inspection.

Were you allowed to do surprise inspections?

No.

What happens if you found a deficiency, like you say, when you were walking through the plant?

Well that occurred on a couple of occasions. We found cable tray hangers which were not siesmatically braced right. They already had an inspection tag hanging on them from another

inspector who said it was per print, he put the tag on it. We happened to notice it was wrong.

How would you notice it was wrong?

It didn't look right. You know, it'd be running one way and then have another hanger coming into it like this, there was no way.

Explain what you said. Give an example.

As an example, there were two hangers for two separate runs of cable tray where there was no way you could run the cable trays through them without hitting each other. In other words, once you put the cable tray, you could put it in one run or the other. But if you try to put it in both then they would interfere with each other by actually physically coming into contact.

So that the hanger was physically in the way of where a cable tray was supposed to run?

Right.

And you noticed it was tagged?

It had already been inspected and approved by another electrical inspector.

What did you do?

We went out and told the other electrical inspector about it.

The one who signed off on it?

The one who signed off on it. He promptly went down there and removed the tag because the fact was it was not right.

And what happened with that particular piece of work?

To the best of my recollection he went and talked to the foreman and told the foreman he would have to put it in the right place.

Do you know if there was any documentation of the deficiency that you identified?

There was no documentation of it, no.

You didn't write it up?

I didn't write it up and I know the other inspector didn't write it up since it was his mistake in approving it in the first

place. He wasn't about to write it up.

Did Craft write it up?

I'm sure Craft didn't write it up. They went up there and changed it. Because they had made the original mistake and the inspector made the second mistake by saying that it was right.

Was it your understanding that you were allowed to have written an NCI for that, was that policy?

Well, as I said, the policy was never very clear. Based on what the procedure, the Q1 procedure itself said, I felt like I could have written an MCI on that. The policy was very unclear and the chances were if I had tried, I would have been stopped.

Where was this?

This was in auxiliary building in Unit 2. 560 elevation, I believe.

Who was the inspector involved in the hanger example that you accidentally discovered was misplaced?

Bill Hefner.

And you went and told Hefner about it?

Yes I told Hefner immediately.

And what did he say to you?

Well he got kind of bent because we had found his mistake but he got out his copy of prints down there and promptly took the tag off the hanger that he had formerly approved.

What happened after that?

I don't know, but I'm almost positive that there was no documentation.

Describe the alternatives that you understood were to be used according to policy when you identify construction deficiencies.

Well according to procedures, we had choice of basically three different types. There's the NCI, there was the R2 variation notice and the M40C which was strictly electrical systems write up and then there was also the fourth option which was the one I used primarily and that was when I found a deficiency, I found that it was much quicker and more efficient to get the work corrected you just go to the Craft supervisor and relate to him the problem and ask him to fix it. Having been written up a number of times for other inspectors, most of the supervisors were very cooperative and they would fix the problem rather than being written up because if they were written up it would make them look bad and if I wrote them up it would mean a lot of paperwork for me. And a less efficient job.

Under what circumstances did you understand Duke policy to authorize you to choose that alternative?

We were encouraged not to write a non conforming item, of course, and we were told to work with the Craft, although that was not the way the procedures were written. In other words the way the procedures were written and as we had been instructed and understood them, we were supposed to write non conforming item reports on deficiencies. However, we were encouraged not to do this and were encouraged to go talk to Craft supervisor and see if we could get him to fix it. Which I did.

When did you understand that you were supposed to use the Q1A procedure, the non conforming item?

Well, it was covered in our basic in class training. But what it was for, its purpose and the procedure itself, there was never much emphasis on it until Tommy Barron's lecture one day and they seemed to be tightening down and saying we've got to get all this stuff documented. If we have a problem we have to get it documented and as I said the next day I went and found seven problem which by their instructions should have been documented on NCI's but which we were told not to document.

It was supposed to be used if we were called down to inspect something, an item and by the Craft supervisor and we found the item not to be in conformance with the blueprints we have. If we found an item not in conformance, we were supposed to write a non conforming item report as the procedures was explained to us and we were instructed.

When were you supposed to use the variation notice for the M40 in those situations?

Well, there was never any clear policy on the use of variations

notices. It was almost a vague document that was rarely used to my knowledge at that time. The M40C was explained to us that that was to be used for minor deficiencies. For something very small. We were supposed to write it up on the M40Cs. And as I said the policy was constantly changing as far as what we were told to do and what documents we were told to use.

Did you have a clear understanding in the situation where you were performing a preplanned inspection, Craft supervisor had called for you and said the work could be inspected, called for you to come down and perform your inspection? You found a deficiency, say a hanger was not in the proper place for you to print. Did you have a clear understanding of what situation you were to use the non conforming item when the R2A or variation notice or when the M40C?

Well it depended. From time to time. After our lecture from Tommy Barron, I had a real clear understanding of when we were supposed to use the NCI form, I had a clear understanding when we were to use the M40C. I never had a clear understanding of when we were to use the variation notice but as I said my understanding changed as I was told from day to day what to do and what not to do, so whereas I may think I understood something, I came to find out that it wasn't done that way.

What did Tommy Barron say about when you used NCI or when you used M40C?

His lecture dealt only with the M40C. And he just basically went over it, clarified for us what we were supposed to do, that we only were supposed to use it when we were called down to inspect something and then if we found it not according to print, we were to write it up on a non conforming item report. It was very simple.

My understanding was that apparently there were a lot of problems which were getting by, they were not being documented and there were, it almost seemed like an attitude shift. They wanted to make sure that if there was a problem that at least they had it documented on paper and that attitude shift lasted a very short period of time in practice because as I've said, the next day they instructed us not to write them.

All the QC inspectors and foremen, I believe, were present for the lecture.

And when do you think that happened? ?

I would say January or February, 1979.

Let's talk about the next day. What work were you doing?



I was inspecting cable tray supports in the Reactor Building Number 1 pipe chase area. There were structural steel hangers, 27 of them that we were called down to inspect. They were supposed to be completely finished and correct according to print. We inspected all 27 of them and found 7 of them not to be built according to print. It was either the wrong place, seismic bracing was incorrect or it could be something minor.

Like a nut missing off an anchor bolt which would be a simple enough matter to fix. You just put the nut on the anchor bolt and torque it down. But we couldn't verify. We couldn't approve it for inspection with the nut missing. Even though it was in the right place, so in fact, some of these hangers were not completely ready or were built wrong. Some of them were mispositioned by a foot or so out of place.

Well the most common error in this case was seismic bracing. The seismic bracing ran in the wrong direction. Or it was missing seismic bracing. Because we had one set of prints we built the hangers by and then a whole nother set of prints, in fact two or three sets of prints, just for the seismic bracing, which you had to cross reference in order to know where and how to build the brace, what type of brace to use, whether it's diagonal brace, whether its to be braced toward to 0 degree mark, 180 degree mark, 90 degree mark, or 270 mark. Directional bracing.

So you were performing this inspection?

Myself and Johnny Byers.

He was your partner?

Right.

And you noted these deficiencies. What did you do?

We went up and told our supervisor, Dick Hannay, that we found seven hangers that were improperly built and that we intended to NCI them because we had been instructed that was what to do. He went down and told us just hold on, just don't do a thing until I get back. He went down, we went down with him and looked at the hangers. He said yes, they're definitely wrong. He talked to Cecil Cox and Cecil Cox said just let him fix them.

Who is Cecil Cox?

He was the steel rigging foreman. His crew was responsible for building them. So Cecil said he would get them right and he called us down the next day and in fact, he had made all the corrections, or his crew had.

What documentation exists of the deficiencies that were found?

As far as I know there is no documentation. I wrote no documentation, my partner wrote none and I feel sure that no one else did as that was our area of responsibility.

And did you ultimately sign off on the as built condition of those hangers?

I believe we did approve all those eventually, and tagged each individual hanger we had to tag.

And as far as you know, nothing on the documentation reflected that they were initially installed improperly?

I'm sure nothing - no documentation reflected that.

What did Dick Hannay say to you when you told him that you thought they should be non conformed.

He was very surprised at first that we had seven hangers and we would have to write, that we could have written NCIs on each and every one of them as we understood the procedure and understood the previous day's instructions. And so he was rather alarmed about it and he didn't want to see us write that many NCIs because it would neither look good for him nor the steel people. It wouldn't look good for him because Larry Davison was not real thrilled about writing a lot of NCIs. And all of us knew that was his attitude.

How did you know that?

Just by things that had happened. And Larry expressing his views about writing NCIs.

What did he say?

He just, he encouraged us to get it resolved without documentation. Without writing NCIs.

I overheard him say something to somebody else. He never instructed me. I didn't talk to Larry that much. It was more second hand you might say because he clearly conveyed his philosophy to Dick Hannay and Jim Allgood. And Dick Hanney did not fully share his philosophy, by any means. Dick was a person who believed in documentation, if there was a serious problem. Jim, on the otherhand, shared Larry's philosophy, so far as I could tell, 100%, in that he did not want us to write non conforming items.

Can you think of an instance where you overheard Larry Davison communicating his philosophy to someone about not documenting

things? As clear an example as you can?

Larry Davison and Dick Hannay got into a heated discussion on occasion because Dick Hannay felt like the item should be non conformed and Larry Davison felt like there was no reason to document it.

Did you have any background in electrician's craft or electrical engineering?

No.

Had you ever done any electrical work before your job at Catawba?

No.

How about the QC electrical people generally aside from the two who inspected wiring work?

Aside from them, I think two, two of the inspectors were supposedly, well one inspector, Bill Roberts, transferred from the Electrical Craft to become an inspector, so he was an electrician of some sorts. At least he worked at Duke Power as an electrician. The other inspector who supposedly knew electrical work was Richard Bunton.

Let's talk some more about this Dick Haney lecture about NCIs. Let's see if you can remember anything about circumstances. How did you come to understand that he was going to give you this lecture? How did you find out about it?

Tommy Barron?

Yes.

Well, we were just informed that we were all to meet, its like a conference room there on the project, at a certain time period and Tommy Barron was going to give us instructions on how to properly use Q1 procedure.

Was this unusual for all the QC to be gathered together for instruction like this?

There was only that one time that I can recall when we were all gathered together.

Did you have any understanding of why this was happening?

It was my perception at the time that the company attitude or the attitude of the QC department was that we were to do better documentation on the non conforming items. In other words, we

hadn't been documenting discrepancies deficiencies well enough in the past. Some of the documentation was not as good as it should be. That was my perception of why we got the lecture.

Was that based on something Tommy Barron said to you in that lecture?

Yes.

He stressed better documentation?

Well, he stressed better documentation, he said "Look, you know if we've got a problem we've got to get it documented. We've got to document that we've got a problem and put it on paper. And that hadn't been done just as I related the way I handled most deficiencies - I'd go to craft supervisor, tell him and he'd fix them. When in fact, according to QI procedure that's not what we're supposed to do.

Why did you understand that it was important to document the deficiency?

It was my understanding that it is important to document so that if there was a problem in the past or in the future they'd be able to trace it back to an earlier problem, possibly, or at least that they would have a record that there was a problem in a certain area, which may or may not lead to another problem later.

Did you have any understanding of the NRC's involvement in this question of documentation?

We rarely saw the NRC inspectors, we didn't have a resident inspector when I was there, and just very occasionally we'd see an inspector come through, and all he would do, basically, as far as we could tell, was look at the paperwork, and so perhaps the NRC inspectors weren't seeing enough paperwork on non-conforming items. We, you know - clearly, or it was made clearly to us that the main reason for the documentation was for the benefit of the NRC. That was the main reason, if not the only reason, for documenting problems, was for the benefit of the NRC.

How did you understand that?

Well, because that was just the prevailing attitude. It was that, you know, if it wasn't for the NRC we wouldn't have to document this stuff. It's only for them that we do it, because they were the regulatory - uh, supposed to be watchdogs over Duke Power and its nuclear construction program, and it was our feeling and it was Duke's attitude that if they could get away with it they'd just as soon not document the problem. Because they told us that every time we wrote an NCI, that meant at least

\$700.00 in expense for the company -- in paperwork shuffling and people's time.

Who told you that?

Jim Allgood or Dick Hanney, one of the two..

And did you continue to write NCIs for deficiencies that you identified in your inspections?

No, I continued to handle things the way I'd always handled them -- by not using the NCIs, because . . . whereas the Company says something one day and turn around and say something different the next day I figured the best thing for me to do was just to handle things the way they worked out best

Everybody was happy because it saved the company expense, and it got the job done. Although it was not following the stated procedures and the stated policies of the QC Department.

Are you aware of anybody else taking the Barron lecture seriously and beginning to write non-conforming items where they hadn't done it before?

I'm not aware of it.

When you noted these deficiencies did you write them up?

I can't be sure . . . I know I went back . . . we went back to the office with full intention of writing NCIs, because of our instructions the previous day. And whether I had written the thing out or not, I'm not sure. As I said, Dick Hanney worked the situation out differently, the way I'd been working it out all along.

If you wanted to write an NCI how would you have done it?

We would walk in, we'd go over and get a Q1A form, fill out the appropriate information, that is, what system it was in, what it's location was -- in the case of the hangers it would have been the hanger number and the serial number designating the hanger and then we would designate the problem with each of the hangers and we would submit that to the Senior QC engineer, Larry Davidson, and then he would sign it and it would be sent the the design engineer, supposedly, or to technical support.

And in this instance how far did it get if you wrote one?

If I wrote one it didn't get any further than me. Because we were just told not to do it.

We had everything already written down, and notes been taken as



far as hanger serial number and what was wrong with that hanger.

And we went to the office intending to complete an NCI on it.

I don't know if we gave them to him or shared them with him. As I said, he put on his hat and said "Let's go down and look at them." And he went down and looked at them and verified that we were right in that the hangers weren't right, and we talked to Cecilia and everything worked out.

What did you do with the notes you had taken?

Thrown away later I'm sure.

To your knowledge did the other electrical QC inspectors follow the same practice that you did in handling discrepancies?

To my knowledge they did the same. There were a couple of inspectors who did write non-conforming items, but that was by far the exception.

Would you likely have known if the practice was otherwise?

I'm sure I would know if it was otherwise. I saw the inspectors at least two or three times a day, either in passing or up in the QC shack. If they had been doing things differently I would have heard about it . . . I would know.

Would you have seen the NCI tags?

Right, well once an item was NCI'd then it either had a red tag attached to it or if it was a large area the whole area was taped off with red tape, and said 'NCI Area - Do Not Enter', or in the case of the tag, if it was a red tag nobody was supposed to work on it at all. In other words, if the hanger was wrong and the NCI tag on it was not supposed to be touched until a resolution on the NCI came back and then the inspector was to go down with craft. The inspector takes the red tag off and then the craft was supposed to carry the work out according to resolution.

Did you often see red tags on hangers for electrical work on cable trays?

I can't ever remember seeing a hanger red tagged.

You worked with a partner - who was that?

My partner was Johnny C. Byers.

he'd been an inspector for at least six months longer than I had.

And, what was his work like?

He was a very good worker. He had more experience than I did, and he helped me a great deal in learning how to do the job right.

And are you aware that he wrote some NCI's?

Yes I know he had did write some NCI's.

Why aren't you sure whether you did?

I'm not sure that I did because I know Johnny wrote some while he and I were working together as partners, and I don't know that I wrote any for sure because the problems tend to run together when there's two of you working together.

He might have signed his name to it?

He may have signed his name to a problem I originally discovered. Or possibly vice - versa.

And were there other instances where you inspected craft's work and found deficiencies but were discouraged from writing up NCIs and instead encouraged to work out the problem with the craft?

Yes. One of our main areas of responsibility was inspecting the grid and support system in the cable room directly below the control room Units 1 and 2. Bobby Land's crew was the crew doing work there. When we first started working with him he was not very cooperative in helping us with our inspections and letting us know when things were ready to inspect, but as he became more belligerent we became more steadfast in our belief that he had to do things our way, and he was very uncooperative until we threatened to Non-Conform some of his work, which he had told us was ready to inspect.

We were inspecting the grid system that supports the cable tray under the cable room.

We were finding a lot of deficient work. A lot of work that was not anywhere close to being right, and he had already called us down for the inspection, meaning that it should have been right. We threatened him with an NCI.

What did he say when you told him that it wasn't right?

First he would argue with us and say "Well I know it IS right." And we'd take out the blueprint and show him what the blueprint said it was supposed to be and show him in fact it was crudely done.

What kind of deficiencies are we talking about?

Basically unistrut and cable tray hangers put in the wrong places.

And then what did you do?

Well, then a little later on he called us - another day I should say - he called us down to inspect another section which he said was ready, and he said just to mark whatever you find that's not right. Well we took him quite seriously and we tied yellow tape on everything that we found wrong. And literally we found dozens of problems in this one section of cable trays so that the cable tray room looked like someone had tied a bunch of yellow ribbons around it. When he came in and when one of his over-superintendents, I believe, Max Davis came in and saw it he just . . . they both became rather irate, and wanted to know why we had done it. We explained we had done it because Bobby wanted us to mark the places we found deficiencies, or where there is a problem and so we marked them, and they got a little upset because each one of their errors there was a yellow ribbon hanging down where everybody could see how many mistakes they made, and so they both got upset and said ok we'll get it fixed and they promptly went to fixing it and removing the yellow tape which we tied on it.

Was any documentation made of the deficiencies that you identified.

No documentation was made.

So as far as the quality assurance documentation is concerned all the work appeared acceptable the first time.

Yes., as far as the documentation goes it would appear that most of the work was right the first time. In fact it was not

done right the first time quite often. It was called by the inspectors. It was not documented by the inspectors although it should have been. Instead the craft fixed it and on paper it appears that the craft fitted right the first time, but in fact what happened was that quite often the craft did not do it right the first time and some times they didn't do it right the second time, and still it wouldn't be documented as being an actual problem.

Did you have occasion to attempt to NCI an anchor bolt during an inspection?

Yes. We were called down to inspect a hanger or a cable tray support in the Reactor Building pipe chase on the floor, mounted on the floor it was maybe 18 inches high, mounted on the floor with concrete anchor bolts. We could not confirm one of the anchor bolts due to the fact that it had been ground off by a welding grinder. One of the points we had to verify on our hanger inspection was the length of the anchor bolt to insure that it will be enough for the bolt in the concrete to hold the hanger in place. We went back up with the intention of writing an NCI, because we didn't know what else to do, that was the correct procedure I should say. So we went up and Jim Allgood said he would go down and check it, he down and checked it said that he did see a marking on it. I told him if he did see a marking to go ahead and sign it off, put his name on it, he was certified. He objected to that. He said that he would have it x-rayed or radiographed to determine the length of it. Well he came in the next day, Jim told me they had x-rayed the night before and that they determined that the anchor bolt was indeed long enough. When I asked to see some evidence or verification of that he told me under no uncertain terms that I was a smart ass, and refused to give me any evidence or verification of length of the anchor bolt. I did not sign hanger off. Whether he did or not I don't know, but I refused to sign it all because I couldn't verify all the inspection steps.

Why you didn't handle this the way you would handle other deficiencies why didn't you just tell the craft that they had to fix it.

Well because in this case to tear up or to take concrete anchor bolt out of concrete for is very slow and tedious process because you literally have to tear the concrete around the anchor out and so there was no quick fix, you couldn't just move something. In other words, if the hanger was in the correct place, the anchor bolt was the problem so to move the hanger there would have to be a design change from Engineering even if you were just going to move it over say 6 inches and leave the old anchor bolt in and just reinstall a six inch segment you would still have to have a change from Design Engineering or Technical Support and we understood the correct way to do this and the most efficient way

to do this was to write an NCI to document the problem and let Design Engineering and Tech Support decide which way they wanted to handle it.

According to your practice and the practice you understood prevailed you would've had craft fix it without documentation if there would have been a way to have that done?

Correct. If there would've been a way to do it where the hanger could still be installed by the print -- according to the print -- then we could have done that. But we saw no way where we could fix the problem and verify the length of the anchor bolt and have it installed according to prints. Either the print or the hanger had to be changed.

And where is this anchor bolt?

This is in Reactor Building One Pipe Chase.

Were there any situations that you ever saw -- or that you know of -- where an NCI was recommended by a QA/QC Inspector and instead of writing an NCI a Design Change was written without the NCI -- instead of it?

Yes. Now, that happened pretty regularly, as a matter of fact. If there's a problem -- for instance, just take a hanger. Let's say there was another hanger or a pipe in the way of where the blueprint called for a hanger to be, they would go up and talk to Technical Support people who'd usually call Engineering in Charlotte and they'd say, "Well, we'll revise the print to reflect that the hanger has to be moved six inches.

But, in that instance was an NCI recommended by an Inspector?

I can't think of any specific instance. As I say, it's a very common practice to change prints in the manner I've said -- that we'd talk to Technical Support, they'd talk to Design Engineering and they'd revise the print and that was the way they'd handle it. Sometimes Variation Notices were written and the print would reflect that. The print would be revised to reflect Variation Notice 1293.

An R-2?

Right.

But sometimes not at all?

Sometimes not at all. The print was just revised -- and you know on the print under each provision it's got reasons supposedly and it would just say: revised to move hanger M13 A11



And if the need for such a revision were first identified in the course of an inspection, as far as you know unless the R-2 procedure was used there would be no documentation of the deficiency that the inspector identified? It wouldn't be NCI'd?

In some cases, NCI resolution would be reflected in the revised prints. But what I'm saying is not necessarily. In other words, some of these -- in some instances an NCI was written and a print was revised. In other instances the deficiency was noted but not documented and the print revised.

In your personal experience, did you identify situations where the prints ultimately were revised ....

Yes

...but where no NCI was written...

Right

...and no R-2A was written?

Right.

And yet you discovered the need for the revision in the course of your inspection?

Right.

If you can give us an example of that kind of situation...

Okay, we had a lot that happen in the cable room -- with Bobby Land's work and that is that they had -- uh -- either the computer or the engineers had designed it where two items occupied the same space -- which obviously does not work. And when we discovered that -- or you know, when Bobby discovered it he'd show it to us, he'd say, "Listen, you know, I've got a cable right here and one is supposed to go right through here." And he said, "we can't do that." And so proper procedure would be to write Variation Notices or NCIs but instead he would talk to Technical Support, we'd talk to Technical Support and Technical Support would talk to Design Engineering and they would revise the print. There were instances in which NCI's were written but as far as with Bobby Land's work that we were inspecting, we never wrote any NCI's of that nature. The most typical example of that sort of thing in my experience was in the Reactor Building Number One Pipe Chase. All hangers in this area were seismically braced and according to the prints, the prints would say the seismic bracing would be a certain configuration of a certain type and it would give you a direction to brace it -- torque zero degrees, ninety degrees, two hundred and seventy degrees, three hundred sixty degrees. So what happened in a lot of cases was,

apparently the electricians or the steelworkers installing the work misunderstood or misread the print and they would install the seismic bracing in the opposite direction or perhaps ninety degrees off from the direction it was supposed to be put in.

Is this incident that you're relating now, is that something that you inspected-- that you saw yourself?

Yes.

Was that the only incident that you came across personally where the prints were changed to reflect the plant?

No. It pretty much occurred here and there. It also occurred with hangers that I inspected in the Auxiliary Building. There were hangers erected by the steelworkers -- again, the seismic bracing was run in the wrong direction from what the print called for. So what was done was the print was revised to reflect the way the workers built it instead of the way Design Engineering designed it.

Did you ever have any discussions with any QA/QC inspectors about that situation -- where things weren't being built per print -- where prints were being changed to reflect how things were built?

Yes, in fact it was almost like a running joke among inspectors -- it was we'll let them build the plant and then we'll draw the blueprints to reflect how the plant actually looked. It was-- we joked about it -- it was a very serious matter but that's the way things often happened -- as I said the half dozen instances were just in my personal inspection experience. This happened to all the inspectors. They would find things that were built wrong and they'll turn around and just change the prints on them to reflect how they were actually built. So it was a very common thing.

If a mistake is found by you as an inspector, do you write up an NCI upon discovery of that mistake or do you call the craft construction or design people and they rewrite the print with no NCI ever written in most cases? In what percentage of cases would that have happened?

As far as rewriting the prints, I would say that probably happened in perhaps twenty-five percent of the cases where I found problems.

With no NCI's written?

With no NCI's written.

There were numerous instances in the Cable Room where we went down and something was not as it should have been by the print.

It was either Design Engineering 's fault or it was the electrician's fault. Either one of the two and they would go out and make some phone calls to revise the print even though there was a non-conforming item. A cable tray was not installed in the right place. A unistrut or cable tray support was not installed in the right place. Again, seismic bracing was installed in the wrong direction, anchor bolts -- they didn't change the prints for anchor bolts.

Can you give me a detailed chronology of the events leading up to your quitting your job there?

O.K., I had several run-ins as I've already spoken about. Jim Allgood primarily, and just a difference in attitude about how the Quality Control program should be run. And one thing led to another. The fact that I was discouraged from writing any NCIs one day and told to write them the next day and then the day after that I was told not to write them again. Their whole program was not well put together and not well managed. In addition to that I had done a lot of reading and studying on my own into the workings of a nuclear plant, and the dangers associated with them I came to realize the importance of building one of these things in a correct manner. In a manner that we can be sure will operate safely and will not come apart. We've got to assure the quality above all else or else we'll have a very unsafe nuke. And so one thing led to another between Jim Allgood and myself and finally came to the point where I couldn't take it any longer and I told Dick Hannay, my first line supervisor that Thursday, March 15th, that Friday, March 16th would be my last day.

All right, let's talk about pouring concrete in the rain. What job did you have at the time?

At the time I witnessed the concrete poured in the rain in Reactor Building Number One I was a prepour runner. That is, I helped coordinate the actual pouring of the concrete by getting the paper work circulated in early 1978. I had to go onto the floor itself which is at the reactor building wall to give a foreman a message from one of his general foremen.

The floor was part of the wall?

Yes, the floor was part of the wall.

In the containment?

In the containment. The outside wall of the Reactor One containment in the area of the interior dog house. I had to go up and talk to the foreman and give him a message from the general foreman. It was a total downpour of rain. I mean, it was just very very heavy rain and they were just pouring concrete

away. I got up there, there were several inches of water standing on top of the concrete they had already placed in the forms. There was no rain protection while I was there. I don't know that any was ever put in place. And there was no pump there to get the water off the top of the concrete.

Were they pouring more concrete on top there?

They were pouring more concrete on top of the concrete and water that was already in the form. As I said they had no rain protection, they had no pump to get the water out. So I was really troubled by that because I know concrete has to have a certain amount of water and you can go a little bit either way and still be all right but if you get too much water then the integrity of your concrete will not hold up.

Now I know you weren't a concrete inspector but were you aware of the general process for inspecting the adequacy of the concrete pours?

Yes, when I was on utility crew just after I started working there, one of my duties was loading the shovels for the concrete pours.

One of my responsibilities on one of my jobs was I loaded the concrete from the concrete truck into the bucket which the crane took to the concrete pour. And right there at that point was where the inspection was done on the concrete. A number of test cylinders were made. And the concrete was also checked for any entrained air by another procedure. I talked with the concrete inspectors and just kind of learned what they were doing, although again, I'm not an experienced concrete inspector. But the point that bothered me was these test cylinders would have been protected from the downpour of rain. Whereas the concrete that was poured on the reactor wall was not protected from the rain. I understood the procedure to be that the test cylinders were put under an extreme amount of pressure. If the test cylinders failed, then the concrete that had actually been put in place with that pour would then be tested. So far as I know there was no procedure for testing the concrete otherwise. The concrete that was poured in place. Otherwise unless the test cylinders showed a deficiency.

When you served as a prepour runner, did you have occasion to observe the waiver of QA requirements?

Yes due to some technical consideration which was not clarified to me or explained to me having to do with the pour, our Quality Assurance Department was refusing to go ahead and O. K. for construction to go ahead and pour.

Was this about a safety related pour?



This had to be on a safety related pour because generally QA was not concerned at all if the pour's not safety related.

It could have been in the auxiliary building or Reactor One. Reactor Number One building, those were the two safety related buildings where I had responsibility for prepouring.

Was the pour held up for a significant period of time?

He was held up for several hours before one of the QAs near said well we can waive the requirements and they received a waiver of requirements. They went ahead with the pour. They allowed construction to be on the floor, I should say.

Could it have been waiving the requirements for an electrical inspection in a situation where there were no electrical conduits in the pour?

No, it wouldn't be anything like that because that was normally done. If there were no electrical conduits in a pour, then we didn't have to get the electrical foreman or the electrical inspector to sign on the pour.

And it wouldn't have taken several hours to note that.

No, in fact, we knew right when we began carrying the prepour sheet around we knew which foreman and which inspectors we had to get to sign it. Because it had been checked off on the form itself. Whether we had electrical work in it, whether we had piping in it, whether we had to get a welding inspector which was almost always we had to get a welding inspector approval because there was almost always welding in the pours.

After you became an electrical QC inspector did you have occasion to observe water draining on to the control panels in the reactor control room?

Yes I did. One morning we went down and walked into the control room and couldn't help but notice that the roof was as if there were a large cloud and rain droplets were just falling from the ceiling all over the control boards. These were control boards that had been prefabricated in the fabrication shop in one of the warehouses. And moved into the control room. They already had dials and other equipment installed, wiring included. And they were just getting just soaking wet. Because like I said, the roof or ceiling was like it was raining. All over. This persisted for several hours that I know of and we went back up and informed the inspector, Terry Coleman whose responsibility the control boards were, basically, because he had watched them in the fabrication state. We informed him of the situation, he went down and looked at it and promptly wrote an



NCI on it and red tagged the whole area.

Do you have any information about the cause of the leak in the control room ceiling?

I understood that the cause of the leak was the fact that the concrete on top of the control room had not been sealed and as a result we had a lot of rain, water stood on top of the concrete roof and seeped through the concrete and right on down to the control room.

What was the resolution at the NCI?

The resolution was to place space heaters in the area of the control room boards and also to dry out some of the ends of the wires with hairdryer type instruments.

Did you observe any efforts being made to protect the control panels from water while the rain was pouring down on them?

No, I observed no effort to protect them, the rain kept pouring on them so far as I saw up until the time they pumped water off the roof.

Later in you work at the plant did you have responsibility for performing inspection of cable pulls?

Yes, once the cable pulling started, there were inspectors who basically took turns from week to week being cable pulling inspectors we would witness that the cable were pulled in the correct trays and went to the correct points.

Did you have occasion to witness the improper storage and placement of electrical cables?

Yes, both. Primarily storage. Once the cable is pulled to its destination, there was a certain extra amount of extra wire which would be coiled up and would be hung up out of the way where people wouldn't walk on it and where it would be out of the water in case there was an water on the floor. As inspector it was my duty to verify that the cable when it was pulled, was protected in this manner or I could not sign the cable off as being pulled correctly. The problem was that once we left the cable pull there was no telling what might happen to the cable. It may have a walk board placed on it, and have a great deal of stress put on it, it may be just cut down so somebody else can use that piece of rope and left to lay on the floor where it can be walked on, of course can get wet. Several scaffolds were built on this cable tray and the cables themselves were used as supports for pipes, pipe anchors.

When you discovered cables that after the inspection, you noted

cable ends that were not properly protected, what did you do?

I informed the cable pulling foreman of the problem and asked that he correct it which he usually did.

Did you ever document the unprotected cables that you discovered after your inspection?

No. We always worked with the craft people and told them about the problem and they were very cooperative.

Do any records reflect that these cable runs were not properly protected?

None that I'm aware of.

Why didn't you NCI the unprotected cable runs?

Because, again we were discouraged from writing NCIs and especially I knew Larry Davison and Jim Allgood consider this a minor thing and something we ought to take care of with craft and not go through the expense of having the NCI and all the paperwork.

Why not write it up as an R2A?

We were not instructed very thoroughly if at all, in the use of an R2A. We were instructed on the Q1A and the M40C.

Let's talk about the welding inspectors.

Well, most of my experience with welding inspectors was when I was prepour runner. Because for almost every pour I had to get a welding inspector to sign it off and they sometimes are hard to track down. And sometimes you never knew which inspector was the one that inspected the appropriate item. But in any case, they were under a great deal of stress and pressure because they had a very heavy work load. They had a lot of inspections to make and the concrete people were pushing them to make them. The carpenters were pushing them to make them. The piping people were pushing them to make them. The steel riggers were pushing them to make their inspections so that work could go on. And in the event that they would turn down a weld, I have been told that they were threatened.

By whom?

They told me they were threatened by the craft people although I never witnessed it.

Did you have personal knowledge in your area of pours being held up because of these disputes between welding inspectors and

the craft?

Yes. Work was held up because there was a great deal of discord between the inspectors and the craft people. Because the welders became very discontent when the inspectors would turn down their welds. They would get down right mad. And so would the welding supervisor. So it worked to make things less efficient.

The pressure you saw then was from the craft who were rushing to complete the concrete pours that you needed the signoffs for.

Yes, most pressure that I witnessed as prepour runner for welding inspectors was from, for instance, the general foreman. The higher ups in supervision who were trying to meet schedules and they didn't really care if the weld got inspected or not, their attitudes seemed to be that it's going to be covered up in concrete and nobody will ever see it, nobody will ever know the difference, just sign the paper whether its right or not. Just sign the paper so we can pour our concrete. And that seemed to be the prevalent attitude. Among some of the general foremen, in particular.

In your experience, both as a craft worker and as a Quality Control inspector, have you formed an opinion as to the existence of systematic deficiencies in plant construction at Catawba?

My experience was only two years as a worker and nine months as an inspector but I came to the conclusion that there was definitely a pattern of systematic deficiencies. Just take for instance the rain in the control room and concrete poured in the rain. Those were things that shouldn't have happened, that could have been prevented and simply were not due to the way the system was run. And the same follows the manner in which the non conforming items were documented. It was a systematic thing whereas the work was done and eventually, hopefully, it was correctly done. But, if so it would not be because of Quality Assurance and would only be by accident or good luck.

In your experience as a quality control inspector, was there systematic pressure from the QC and craft supervision not to disapprove faulty workmanship that you detected?

Yes it was. As far as the craft was concerned, they didn't want us to write an NCI because it made them look bad. It documented their work as not having been done right. As far as QC supervision, they didn't want the NCIs written because it made it look like there was a lot of problems involved. Which there were a lot of problems involved. But they just didn't want it documented because once they were documented on paper and in files then it was a permanent part of the record. And therefore they couldn't sweep it under the rug or they couldn't change it, they couldn't alter it to reflect something different once it had been written up. We had procedure to document deficiencies but we were encouraged not to use that procedure. To me that's very inefficient way of running any company and a very dangerous way of building a nuclear power plant.