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11/15/83

APPLICANTS' EXHIBIT ___

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
DUKE POWER COMPANY, et al.	)	Docket Nos. 50-413
	)	50-414
(Catawba Nuclear Station, Units 1 and 2)	)	

TESTIMONY OF SAMUEL W. DRESSLER, LARRY R. DAVISON AND RICHARD S. ALEXANDER REGARDING QUALITY ASSURANCE ALLEGATIONS RAISED BY MESSRS. MCAFEE AND HOOPINGARNER

Q. STATE YOUR NAMES, BUSINESS ADDRESSES, PRESENT JOB POSITIONS WITH DUKE POWER COMPANY AND THE NATURE OF YOUR JOBS AS THEY RELATE TO THIS TESTIMONY.

A. Mr. Dressler: My name is Samuel W. Dressler, and my business address is Catawba Nuclear Station, PO Box 223, Clover, South Carolina 29710. I am currently the Engineering Manager for the Catawba Nuclear Station Construction Department at Duke Power Company. In this position, one of my responsibilities is the resolution of all construction related technical engineering problems associated with civil engineering, mechanical engineering, electrical engineering, instrumentation, and welding. My professional qualifications are attached (Attachment A).

Mr. Davison: My name is Larry R. Davison, and my business address is Catawba Nuclear Station, PO Box 223, Clover, South Carolina 29710. I am currently the Project Quality Assurance Manager responsible for Quality Assurance (QA) during construction of the Catawba Nuclear Station for Duke Power. Quality Assurance activities during construction consist of inspection of actual work, review of materials used in construction of the plant, review and

approval of construction procedures and review and approval of documentation generated in the above activities. My professional qualifications are attached (Attachment B).

Mr. Alexander: My name is Richard S. Alexander, and my business address is Catawba Nuclear Station, PO Box 223, Clover, South Carolina 29710. I am currently Personnel Manager for the Construction Department, Catawba Nuclear Station, Duke Power Company. In this position, one of my responsibilities includes resolution of issues related to personnel safety. As such, I have been involved with resolution of concerns raised by Mr. Hoopingarner. My professional qualifications are attached (Attachment C).

Q. WHAT IS THE PURPOSE OF THIS TESTIMONY?

This testimony is designed to address all but two of the allegations of Messrs. McAfee and Hoopingarner regarding QA as admitted in this proceeding by Board Memorandum and Order dated August 26, 1983. The allegations addressed are those related to electrical cables (2a and 1f), quenching welds (2b), welding on scaffolds (2c), communication with the NRC (2d), flooding of the diesel generator rooms (2j), water on the control boards (2k and 1e), pipes and rebar on the floor (2n), pouring concrete in the rain (1a), waiver of concrete pouring requirements (1b), and instructions regarding non-conformance items (1i). While the three of us collectively sponsored this testimony, the initials of the individual principally responsible for preparing the response for each allegation is set forth in the margin.

(S.W.D.)

I. TESTIMONY REGARDING MESSRS. HOOPINGARNER'S AND MCAFEE'S ALLEGATIONS CONCERNING PROTECTION OF CABLES (2a and 1f)

Q. ARE YOU FAMILIAR WITH THE ALLEGATIONS RAISED BY MESSRS. MCAFEE AND HOOPINGARNER REGARDING PROTECTION OF ELECTRICAL CABLES DURING CONSTRUCTION AT CATAWBA?

A. Yes. I have reviewed the deposition testimony of Messrs. McAfee and Hoopingarner regarding this allegation. The deposition testimony reflects that both Messrs. McAfee and Hoopingarner allege that in many instances cables being pulled at Catawba were subjected to abusive treatment such as being placed on the floor in water with boards and pipes on them. MD Tr., pp. 18, 88-90; HD Vol. 1 Tr., pp. 20, 33-35 and Vol. 2 Tr., p. 67.

Q. PLEASE EXPLAIN THE ACTIONS NORMALLY FOLLOWED FOR PROTECTION OF CABLE.

A. Procedure M-41B, serial #9, in effect at the time of these allegations, states that cable is to be protected from damage due to construction activities and water. With regard to construction activities, cables are stored in areas free from construction equipment and heavy traffic which could result in damage. To protect from water, the ends of the cables are taped to keep excessive moisture out.

Q. DID YOU CONDUCT AN INVESTIGATION TO DETERMINE IF ALLEGATIONS MADE CONSTITUTED VIOLATIONS OF THESE PROTECTIVE ACTIONS?

A. Yes. I directed that a review of this allegation be made to determine if there was any indication that violation of cable storage requirements was widespread as alleged by Messrs. McAfee and

Hoopingarner. As a results of the review of Nonconforming Item Reports ("NCIs") and discussions with other inspectors, only a few instances of failure to properly store cables have been detected, and each of these were minor and corrected. Thus, I can only conclude that the allegations may illustrate isolated and minor instances of violations of procedure, but are not reflective of a major problem as implied in the allegation. This conclusion is supported by the fact that during this time, on two separate occasions Mr. Hoopingarner personally showed these alleged numerous deficiencies involving many cables to different NRC inspectors, and, out of all the alleged violations made by Mr. Hoopingarner, the inspectors found only one safety-related cable in violation of procedures. NRC Inspection Report 50-413/80-19, 50-414/80-19. Corrective action, taken immediately, consisted of simply moving the cable.

In this regard, when cable is being pulled, in virtually all instances there are large segments of cable at the ends of the runs which are not used and are ultimately discarded. This cable, ranging in segments from around 10 up to more than 30 feet, may remain on the floor while the job is in progress. Further, an additional 1½ - 10 feet of cable above that to be discarded is stripped of insulation to facilitate connections. In short, when cable is being pulled, there is a great deal of cable at the ends of the runs that will ultimately be discarded or stripped which is lying on the floor. This may give the appearance of cable which is unprotected contrary to applicable procedures, but in reality is only normal and correct work practices.

It should be noted that personnel at Catawba who handle electrical cable are well aware of actions necessary to assure the protection of this cable. These individuals are well motivated and, based on my experience, are diligent in doing their job. Further, QA inspectors monitor plant activities to provide further assurance that cable is properly protected.

Q. EVEN IF VIOLATIONS OF PROCEDURES DID OCCUR, WHAT ASSURANCE IS THERE THAT THIS WILL NOT EFFECT SAFE OPERATION OF THE PLANT?

A. It should be noted that the cable Duke uses at Catawba provides a great deal of assurance that damage will not occur. All safety-related cable pulled during the period of concern in the allegation is interlocked or braided armored cable, which is electrical cable wrapped in steel, or is protected in conduit. The cables in the conduit cannot contact the ground and, of course, are protected by the conduit. I should note that only six of the safety-related cables pulled during this time were not armored. These six were all in conduit. Therefore, absent major abuse, such as running over the cable with construction equipment, the potential for physical damage is minimal.

Further, the procurement specifications designate that cable with filler material must be non-wicking (i.e., it does not absorb and transmit moisture). Thus, the likelihood of water damage is remote even if the ends of the cables are left untaped. In this regard, it should be noted that neither Messrs. McAfee or Hoopingarner allege that the ends of the cables were unprotected so as to give rise to concerns regarding moisture in the cables.

In addition, it should be emphasized that when damage to electrical cable has occurred or is suspected, the cable will be inspected, and if necessary a megger or high potential test will be done. If either the inspection or test so indicates, the cable will be replaced or repaired, as necessary. The megger or high-potential test performed when physical damage is suspected will detect deteriorated insulation.

Further, other tests of cables and electrical systems, both before and after operation, provide further assurance of plant safety. For example, before fuel load, all medium voltage cables in the plant receive a high potential test to determine the integrity of the insulation. Further, at the time of system checkout, Construction Procedure CP-466 requires testing of all electrical systems to insure circuit continuity. This functional testing insures the integrity of the circuits and the cables. In addition, during start-up and operation, periodic testing provides assurance that electrical systems will continue to function as required.

In sum, the combination of protection afforded by inspectors and personnel handling the cable, the cable itself and the numerous tests and inspections conducted on the cable and electrical systems provides assurance that the cables in the plant will perform their intended function.

Q. WHAT IS YOUR CONCLUSION WITH RESPECT TO THIS ALLEGATION?

A. My conclusion is that for the following reasons the allegations does not raise a question of safe operation at Catawba. First, as I explained above, the alleged activity is not common practice. Second, any safety related cable in question concerning the

allegation is armored or protected in conduit with non-wicking filler material, which in itself provides inherent moisture protection. Third, the ends of the cables are taped to provide assurance that water damage does not occur. Fourth, the cables, if damage is suspected, are inspected and, as appropriate, tested. If damage is found, an evaluation is made and the cable is replaced or repaired. Finally, as I explained, each circuit in the plant is tested and verified numerous times before and after operation of the plant. For these reasons, I conclude that this allegation does not present a question of safe operation of the plant.

(S.W.D.) II. TESTIMONY REGARDING MR. HOOPINGARNER'S ALLEGATION CONCERNING QUENCHING WELDS (2b)

Q. ARE YOU FAMILIAR WITH THE ALLEGATION RAISED BY MR. HOOPINGARNER WITH RESPECT TO AN INCIDENT IN WHICH HE ALLEGES THAT HE OBSERVED A WELDER IMPROPERLY QUENCH A WELD WITH A DAMP CLOTH?

A. Yes. I have reviewed the deposition testimony of Mr. Hoopingarner. Mr. Hoopingarner alleges that he came out of the penetration room one day and saw a welder who he said was Henry Knox quench a "red hot spot" on a weld with a damp rag. Mr. Hoopingarner alleges that the welder told him that to do this was contrary to procedures, but that "he had to do [it] to get the pipe right." HD Vol. 1 Tr., p. 22; Vol. 2 Tr., p. 70. Mr. Hoopingarner further states that this was a weld on a stainless steel pipe. HD Vol. 2 Tr., p. 71.

Q. HAVE YOU INVESTIGATED THIS INCIDENT?

A. Yes, under my direction an investigation was conducted. Our investigation showed that Duke has never employed a welder named

Henry Knox. However, a welder named Henry Hodges worked in the area where Mr. Hoopingarner alleges the damp rag was applied. It was determined that while Mr. Hodges was apparently the person accused by Mr. Hoopingarner, Mr. Hodges states that in fact he did not apply wet rags to any stainless steel pipe while welding. It should be noted, however, that welding inspectors at Duke in performing liquid penetrant, non-destructive examinations use a red dye which, in use, may give the appearance of a "red hot-spot" on the weld. This material is wiped from the weld using a rag.

Q. IS USING A DAMP RAG TO QUENCH A WELD AGAINST PROCEDURES?

A. No, not if prior approval is obtained for such a welding procedure. If such quenching is needed, controls exist in the Welding Process Specifications to assure Technical Support provides detailed information to the craft before they employ this technique. However, absent prior approval, quenching a weld with a damp rag would be contrary to procedures. In this regard, welders at Catawba are required to perform welding in accordance with specific procedures on which they are well trained and certified. In addition, welding inspectors monitor the activities of these welders to provide additional assurance that these procedures are followed.

Q. IF THIS INCIDENT DID OCCUR, WOULD IT HAVE HAD AN ADVERSE EFFECT ON THE WELD?

A. No. To explain, the major concern regarding cooling of stainless steel welds in the temperatures of concern is the possible formation of compounds which would enhance corrosion. Heating or cooling stainless steel material in the range of 800°F to 1400°F causes carbon in the pipe to precipitate out (mainly at the grain

boundaries). This carbon unites with chromium to form chromium - rich carbides, which reduces the corrosion resistance at the grain boundaries. This is known as carbide precipitation. The amount of carbide precipitation may be decreased by promoting faster cooling through this range of temperatures (i.e., 800°F-1400°F), such as may be the case if a damp rag was used on the weld. In short, using a damp rag to more rapidly cool a stainless steel weld will not adversely affect the weld.

Q. WHAT IS YOUR OPINION WITH REGARD TO THIS ALLEGATION RAISED BY MR. HOOPINGARNER?

A. We are unable to confirm that the incident occurred. However, if it did occur, as I explained above, the quality of the stainless steel material would not have been compromised. Therefore, I have concluded that this allegation does not present a question with respect to public health and safety.

(L.R.D.) III. TESTIMONY REGARDING MR. HOOPINGARNER'S ALLEGATION CONCERNING WELDING ON SCAFFOLDS (2c)

Q. ARE YOU FAMILIAR WITH MR. HOOPINGARNER'S ALLEGATION REGARDING THE ABILITY OF WELDERS TO MAKE WELDS BECAUSE OF UNSAFE SCAFFOLDS?

A. Yes. I have reviewed the deposition testimony of Mr. Hoopingarner. He alleges that because scaffolds were poorly built, welders were unable to properly weld when they were standing on them. Mr. Hoopingarner alleges that he was told by welders that they just "filled a gap" while on these scaffolds, which Mr. Hoopingarner believes means that the welds are improper. HD Vol. 1, Tr. p. 13; Vol. 2 Tr., pp. 5,9,11-13. However,

Mr. Hoopingarner is not a welder, and was unable to state if the subject welds were improper. HD Vol. 2, Tr. pp. 13,61.

Q. WERE YOU ABLE TO INVESTIGATE THIS ALLEGATION?

A. Yes, but only to a limited extent for two reasons. First, Mr. Hoopingarner could not identify specific welders or locations involved with his concerns; and, second the term "filled the gap" is not a common welding term and is not defined.

Q. WHAT DO YOU THINK "FILL THE GAP" MEANS?

A. While the term lacks definition, "fill the gap" is most likely used by the welder as "slang" for completing the weld. The use of the terminology in this fashion could be misleading to a person not trained in welding and only associating with welders on an informal/casual basis. A statement such as this may have been a "boast" by the welder indicating that he welded the joint quickly. We believe this is probably the most likely interpretation to put on the statement by Mr. Hoopingarner, i.e., that the welder was welding quickly so he could get out of an undesirable situation.

Q. EVEN ASSUMING "FILLED THE GAP" COULD MEAN ANYTHING OTHER THAN COMPLETING THE WELD, WOULD THERE BE A DETRIMENTAL EFFECT ON THE SYSTEM?

A. No. All pipe welds are extensively inspected and tested. In order to place this in perspective, it must be understood that there are five classes of safety-related pipe, Classes A through F, with Class A being the highest class. Each piping weld, regardless of class, is inspected, with Classes A and B receiving the most inspections, consistent with their station as more important piping systems. All Class A and B welds receive a fit-up inspection, a final visual inspection, NDE-Penetrant Testing (PT) or Magnetic Particle

Testing (MT), and, in addition, circumferential butt welds are radiographed. All Class C welds receive a fit-up inspection and a final visual inspection. All Class E and F welds receive a final visual inspection.

It is also important to note that it is our practice to check welders' qualifications during inspections for Class A, B, C, E, and F pipe welds. Thus, qualifications of the welder to the appropriate Field Weld Data Sheets (FWDSs) are verified for the weld being made. The welding inspectors selectively monitor the welding process in their assigned areas to assure compliance with FWDSs also. As noted, the relative system importance is denoted by Class with Class A being the highest class. Thus, more inspections are performed for the more important and/or critical systems. It also should be noted that following completion and inspection of pipe welds, all such welds are extensively tested before being put into service. All Class A, B, and C welds are hydrostatically and/or pneumatically tested before being put into service. Virtually all Class E and F welds are also hydrostatically or pneumatically tested prior to being put into service.

If Mr. Hoopingarner was referring to structural steel welds, these welds are also inspected, with designated structural welds receiving NDE. Designated structural welds receive a fit-up inspection, final visual inspection, and nondestructive examination such as ultrasonic testing, radiograph testing, magnetic particle testing, or penetrant testing. All safety-related structural welds, as a minimum, receive a final visual inspection. Also, all structural steel welding is subject to random in-process inspections. Here again the welding process is selectively monitored to assure the

welder is qualified to make the weld and that he is welding in compliance with the FWDS required.

Q. DO YOU BELIEVE THAT MR. HOOPINGARNER'S ALLEGATION PRESENTS A PROBLEM RESPECTING THE SAFETY OF THE CATAWBA PLANT?

A. No. There are no grounds to substantiate the fact that the welders meant anything by "fill the gap" other than the situation outlined above. In any event, the allegation does not present a hazard with respect to public health and safety because all welders welding on safety-related systems are trained and qualified to weld in accordance with appropriate Welding Process Specifications (WPS) and Field Weld Data Sheets.

Moreover, as explained above, Duke's QA inspection program is designed to detect violations such as those alleged by Mr. Hoopingarner. Duke's surveillance program, both planned and random, also looks for WPS and FWDS violations.

Q. YOU HAVE REFERENCED WELDING PROCESS SPECIFICATIONS (WPS) AND FIELD WELD DATA SHEETS (FWDS) IN YOUR DISCUSSION. BRIEFLY TELL US WHAT YOU MEAN BY THESE TERMS?

A. The Welding Process Specification (WPS) is a written welding procedure prepared to give direction to a welder or welding operator using a particular welding process. The Field Weld Data Sheet is used in conjunctions with a WPS to specify the requirements to be met while making a specific weld, such as fit-up requirements.

Q. WHAT IS YOUR CONCLUSION WITH RESPECT TO THIS ALLEGATION BY MR. HOOPINGARNER?

A. I have concluded that this allegation does not raise a question of public health and safety.

(R.S.A.) IV. TESTIMONY REGARDING MR. HOOPINGARNER'S ALLEGATION CONCERNING PRESSURE NOT TO TALK TO NRC PERSONNEL (2d)

Q. ARE YOU FAMILIAR WITH MR. HOOPINGARNER'S ALLEGATION THAT HE WAS PRESSURED NOT TO TALK TO THE NRC?

A. Yes. I have reviewed Mr. Hoopingarner's deposition testimony. Mr. Hoopingarner alleges that he approached the NRC Inspector on the job site one day and asked if he could talk with him. After the NRC Inspector had left, Mr. Hoopingarner states that he was approached by his foreman and ordered not to approach or talk to the NCR Inspector. Mr. Hoopingarner states that, subsequent to this order, he approached an employee relations person, told him of the order, and a day later this order was withdrawn. HD Vol. 1 Tr., pp. 17-18; Vol. 2 Tr., pp. 6,8,70-71

Q. WHAT IS YOUR KNOWLEDGE OF THIS INCIDENT?

A. In 1980, I caused this incident to be investigated. I have reviewed our files on this incident and they reflect that on April 23, 1980 Mr. Hoopingarner came to Employee Relations Assistant John Turner and was concerned because his General Foreman had told him he could not talk to the NRC unless the NRC approached him. Apparently this was precipitated by Mr. Hoopingarner stopping George Maxwell, an NRC inspector, as he was walking though the plant. The General Foreman apparently saw this happen and told Mr. Hoopingarner that he could talk to the NRC inspector if he was approached, but he should not initiate the contact with the NRC

inspector. Mr. Hoopingarner took exception to this and questioned John Turner from Employee Relations about this issue.

John Turner then spoke with the General Foreman who stated that he had received the general instructions he gave to Mr. Hoopingarner from Mr. Scruggs, the Builder Superintendent. Turner then talked to Scruggs who said that the General Foreman had misunderstood him. Scruggs stated that he had told the General Foreman that an employee could talk to the NRC Inspector if approached and could approach the NRC in the work area. If an employee needed to talk at length, then an appointment should be made. Mr. Hoopingarner was informed of this misunderstanding, but was still concerned about the "order" that he was supposedly given. Turner told Hoopingarner that if he considered it an "order" then that "order" was rescinded. Turner again told him that it was a misunderstanding, and not a direct order.

Q. WHAT IS THE DUKE POLICY WITH RESPECT TO EMPLOYEES TALKING WITH NRC INSPECTORS, OR WITH ANY NRC PERSONNEL?

A. The Construction Department's policy on employees talking to the NRC was clearly stated in an April 25, 1977 letter from R. L. Dick, Vice President - Construction. This letter states that "any nuclear industry worker who has concerns or questions about the nuclear safety of any facility or activity licensed by the NRC may bring these matters to the attention of the NRC Inspector of the nearest NRC regional office, if they cannot be resolved directly with his or her employer". The regional NRC telephone number is also listed in this letter which was posted at the project from that date onward. In addition to this letter, NRC Form 3 has been posted on

from which it also dripped onto the floor and the control boards. Significantly, inspection revealed no condensation formed on the insides of the control boards. Therefore, none of the contact portions of switches or meters, or wiring underneath the control boards were exposed to condensation. This incident was reported as a Nonconforming Item Report, NCI 4395.

Q. PLEASE DESCRIBE THE STATUS OF COMPLETION OF THE CONTROL BOARDS AT THE TIME THIS INCIDENT OCCURRED.

A. At the time this incident occurred, the majority of the switches (all of which were of the sealed type) were installed in the control boards and wired to plugs inside the control boards. However, only a few meters were in place, and no chart recorders, CRTs, or printers were installed. To put the completion status of the control boards in proper perspective, the completed control boards will include many additional pieces of equipment such as all other switches, meters, chart recorders, annunciator alarms, lights, indicating lights, computer type typewriters, and CRT screens. The majority of these items have to be wired to plugs under the board itself.

Q. AS A RESULT OF THIS INCIDENT, WERE CORRECTIVE ACTIONS TAKEN?

A. Yes. First, a number of space heaters were installed in the control room to bring the relative humidity level down to preclude a similar occurrence.

Approximately 60 of the switches located on the boards were selected and given a megger test to assure that there was no adverse impact. The megger test consists of running a higher than normal voltage through the switch to determine insulation

resistance. Moisture would decrease the resistance of the insulation which would be detected by the meggar test. All 60 of the switches tested passed the test, which provided adequate assurance that none of the switches potentially exposed to the moisture were adversely affected by this incident.

Q. HAVE FURTHER TESTS BEEN RUN TO SEE IF THE CONTROL BOARDS ARE FUNCTIONING NORMALLY?

A. Yes. It should be understood that all the equipment on the control boards potentially affected by this incident are tested/operated many times for proper functioning during the installation process, construction system testing and start-up activities. Prior to operation of the facility, the control boards will have been exhaustively checked for functioning of each of the components. In addition the control boards are tested on numerous occasions through individual system functional testing and two major integrated tests (Hot Functional Test and Engineering Safety Feature Activation System Test). Operation of the integrated tests are through the control boards and indications are monitored in the control room. Additionally, there are maintenance and calibration procedures for the control board equipment. Further, during operation, periodic surveillance testing will assure proper functioning of the equipment.

Q. WHAT IS YOUR CONCLUSION WITH RESPECT TO THE DECEMBER 1978 INCIDENT WHICH RESULTED IN CONDENSATION FORMING ON THE EXTERIOR SURFACES OF THE CONTROL BOARDS?

A. It is my opinion, for the reasons that I explained above, that when this incident occurred appropriate evaluation and corrective action was taken to insure that the moisture on the control boards had no

adverse effect on the switches and other components that were then installed. Further, because of the extensive checks, tests and functional operation of the equipment that occurs during the installation and start-up of the plant, I am confident that if there were any defects from this incident, they would not go undetected. Therefore, I conclude that this incident has no effect on the public health and safety.

(S.W.D.) VII. TESTIMONY REGARDING MR. HOOPINGARNER'S ALLEGATION CONCERNING REBAR AND PIPING (2n)

Q. ARE YOU FAMILIAR WITH THE ALLEGATION MADE BY MR. HOOPINGARNER WITH RESPECT TO PIPING AND REBAR TOUCHING THE GROUND OR LYING ON THE FLOOR?

A. Yes I am. I have reviewed Mr. Hoopingarner's deposition testimony and have determined that this allegation is based on three specific events, i.e., (1) that rebar was touching the ground in the rebar storage area, (2) that three sections of stainless steel piping were touching the ground at the piping fabrication shop, and (3) that sections of the piping were lying on the concrete floor in the auxiliary building. HD Vol 2. Tr., pp. 76-78.

I also am familiar with NRC Inspection Report 50-413/80-19, 50-414/80-19 which, I believe, addresses these concerns after they were pointed out to our NRC inspector by Mr. Hoopingarner.

Q. WHAT ARE THE STANDARDS WHICH GOVERN STORAGE OF REBAR AND PIPING AT THE CATAWABA SITE?

A. The governing industry standard which Duke Power follows at Catawba in regards to handling and storage of materials is ANSI N45.2.2-1972, "Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plants". This document

establishes a standard for general industry use that defines requirements for the above activities. The extent to which the individual requirements of the standard apply depends upon the nature and scope of the work to be performed and the importance of the item or service involved. The requirements are intended to assure that the quality of items is not degraded as a result of packaging, shipping, receiving, storage, and handling practices and techniques. Rebar and piping fall into storage classification level D as defined by the standard. Level D items may be stored outdoors in an area which is well drained, preferably gravel covered or paved, and reasonably removed from the actual construction area and traffic so that the possibility of damage from construction equipment is minimized. Items are to be stored on cribbing or its equivalent to allow air circulation and to avoid trapping water.

The standard also sets forth requirements for periodic inspection to be performed to assure storage areas are being maintained in accordance with these requirements.

Q. HAVE YOU INVESTIGATED THESE ALLEGATIONS?

A. Yes. With regard to the item concerning rebar touching the ground, as stated in the NRC inspection report (at p. 3), this rebar was being stored at Catawba but designated for use at other sites. With regard to the two alleged incidents involving the piping, the NRC inspection report (at p. 4), noted above, addressed these two items and stated that the allegation that piping was stored in the auxiliary building in violation of procedures was without merit. However, the report (at p. 4) noted that the 3 sections of stainless steel piping which had been placed on the

ground outside the piping fabrication shop should have been elevated. As far as corrective action, the report stated that the normal flushing/cleaning required before any safety-system piping is placed in service would be adequate. An NCI was prepared on this deficiency. In short, from my investigation, incidents involving unacceptable storage of rebar and piping to be used at Catawba are isolated incidents involving minor deficiencies which were immediately corrected.

Q. WHAT IS THE SAFETY SIGNIFICANCE OF REBAR OR PIPING TOUCHING THE GROUND?

A. While procedures require such material to be elevated to assure cleanliness and minimize corrosion, prior to such items being placed in service they are thoroughly inspected and/or tested to assure acceptability. For example, with regard to rebar, prior to making a concrete pour a Prepour Form M-2A must be completed which, in pertinent part, requires a signature verifying that rebar has been inspected and is free from mud, dirt or other unacceptable contaminants. In a similar manner, piping is inspected and inspection sheets must be completed verifying its condition and cleanliness prior to use. In addition safety-related piping is internally cleaned or flushed before plant start-up and specific safety-related piping receives additional cleaning and tests. In short, there is reasonable assurance that the allegation of Mr. Hoopingarner does not present a potential impact on public health and safety.

Q. WHAT IS YOUR CONCLUSION THEN WITH RESPECT TO THE ALLEGATIONS MADE BY MR. HOOPINGARNER?

A. My conclusion is that this allegation presents no question of the public health and safety at Catawba.

(S.W.D.) VIII. TESTIMONY REGARDING MR. MCAFEE'S ALLEGATION CONCERNING POURING CONCRETE IN THE RAIN (1a)

Q. ARE YOU FAMILIAR WITH THE ALLEGATION RAISED BY MR. MCAFEE WITH RESPECT TO POURING CONCRETE IN THE RAIN?

A. Yes. I have reviewed the deposition testimony of Mr. McAfee. He alleges (MD Tr., P. 72) that during the period between January and March of 1978 in an area which he describes as one on the wall above the interior dog house on reactor building one containment, he

> witnessed concrete poured in downpours of rain with no rain protection. As I said, I was pre-pour runner. I went up to the pour, the concrete on the Reactor Building One Containment. The concrete had too much water in it by anyone's reasonable standards. It didn't look like concrete. It had water floating on top of the concrete, and I'll say here I am not a concrete inspector, but reason should prevail. [MD Tr., pp. 12-13]

From this review, I have concluded that Mr. McAfee is concerned because he witnessed rain falling on concrete which was being, or had been placed.

Q. PLEASE DESCRIBE THE STANDARDS FOR THE PLACEMENT AND PROTECTION OF CONCRETE AT CATAWBA AS THEY RELATE TO THIS ALLEGATION.

A. The standards followed for placement of concrete at Catawba are that safety-related concrete pours will not be started during times of rain, sleet or snow unless there is adequate protective actions taken commensurate with the level of precipitation (e.g., construction of a shelter). However, if precipitation begins after a

safety-related concrete pour is started, absent overriding technical concerns, the pour is continued until the section is completed to avoid problems associated with cold joints. Cold joints appear in a concrete placement when a layer of previous concrete hardens or sets to the extent that a newly placed layer does not bond to it. In effect, this would result in two or more masses of concrete separated by a joint where only one mass was designed. These standards are consistent with Chapter 8 of "Specification for Structural Concrete for Building", ACI 301-72, except where modified within the design concrete specifications.

Each safety-related concrete placement at Catawba involves a minimum of three concrete inspectors trained in the requirements of QA procedure M2, Design Engineering Specifications, and ACI 301. In large pours more inspectors are involved. Each of these inspectors has the authority to stop a concrete placement or to write a nonconforming item report if a requirement is not met.

Q. PLEASE EXPLAIN THE STANDARDS AND PROCEDURES FOR PLACING CONCRETE IN RAIN.

A. Unless adequate protective measures are taken, we do not plan to place concrete in the rain. Construction personnel associated with concrete placement monitor the local weather forecast and plan their daily concrete operations accordingly. A judgment on whether to pour or not is made using the facts on hand at the scheduled time of the pour. With a high probability of rain, the initiation of some pours may be delayed substantially while others may be started, keeping in mind that each pour is unique.

As to protection against precipitation, some pours may be covered or protected more easily than others. In some cases, a

complete cover such as a shed may be installed prior to starting a placement. However, a number of factors enter into this consideration, such as the size of the pour, its surface area (that is, whether the pour is a wall or foundation), the mode of transportation of concrete to the form, surface finish required, and the importance of the concrete; for example, there are thousands of yards of concrete at Catawba that are not structural concrete, or part of a safety-related structure.

If during the course of a safety-related pour it begins to rain, measures commensurate with the amount of precipitation and the nature of the pour are taken to protect the concrete. However, as I noted, absent other overriding technical concerns, once a safety-related pour is started it should be finished without any cold joints. Duke has guidelines which it follows in such a situation. These guidelines, consistent with sound industry practice and Chapter 8 of ACI 301-72, provide that in the event of sudden, unexpected precipitation during placement or finishing of concrete, the following actions should be taken, as appropriate:

1) Use lower slump concrete by withholding as much mixing water as possible while maintaining workability.
2) Dry up or drain any ponding. If possible, maintain the surface of the concrete being placed at a slight slope so water will runoff and provide for water drainage or consider removing the water such as by pumping.
3) Avoid working the surface of wet concrete.
4) If a cold joint can be tolerated, consider stopping the pour. Design Engineering may be able to provide advice if time permits, but should, in any event, be notified if a pour is

stopped long enough to form a cold joint before the pour is completed.

5) If precipitation is so heavy that ponding cannot be removed or drained (so as to affect the properties of the concrete), the pour should be stopped. Design Engineering should be notified and a determination must be made on how much of the concrete placed can be salvaged.

In short, in the event that precipitation begins after a concrete pour has started, there are specific guidelines which are followed to assure that structural integrity of the concrete will not be compromised should the pour continue.

It should be noted that even without rain, a certain amount of free water will form on the surface of fresh concrete due to sedimentation of aggregate particles or solids. This water is called bleed water and, while normal, gives the appearance of excessive water in the mixture.

Q. HAVE YOU BEEN ABLE TO IDENTIFY THE SPECIFIC POUR WHICH IS THE SUBJECT OF MR. MCAFEE'S ALLEGATION?

A. From the information provided by Mr. McAfee, the pour records were examined for each pour in the area described by Mr. McAfee during the time in which he was a prepour runner (January - March 1978). From this review of the concrete records (Form M-2D), for this period only two pours (in January 1978) could possibly fit the description of the allegation. These are reactor building No. 1 shell wall pours W82 (January 19, 1978) and W83 (January 25, 1978). In each case, the weather conditions of "rain and cold" are indicated on the pour Form M-2D. Thus, I have concluded that the particular pour was a reactor building shell wall

pour above the elevation of the roof of the interior dog house which ties into the side of the reactor building.

Q. DO THESE RECORDS SHOW THAT PROPER MEASURES WERE TAKEN TO AVOID THE PROBLEM OF RAIN EFFECTING THE CONCRETE?

A. Yes. In fact, it happens that a QA surveillance was performed on the January 25, 1978 pour. This QA surveillance report (No. C-3-1-78) indicated that adequate arrangements were being made (e.g., plastic covers and pumps) to keep rainwater out of the form area on wall pour W83. With respect to wall pour W82, nothing unusual or out of the ordinary was reported or recorded on Form W-2D. In sum, with respect to the two pours which I have identified as being the possible subject of Mr. McAfee's allegation, adequate procedures and protection were afforded so that the presence of rain during or after the pours did not effect the integrity of the particular area. Moreover, I have no reason to believe that any concrete pours which may have occurred during rainfall were done other than in accordance with procedures.

Q. EVEN IF CONCRETE WAS POURED IN CONDITIONS WHERE SOME RAIN WAS PRESENT (AS ALLEGED HERE), WOULD THIS HAVE A SUBSTANTIAL IMPACT ON THE STRUCTURAL INTEGRITY OF THE WALL?

A. The likelihood of such an impact is very remote. As concrete is poured, being much denser than water, it would displace the water causing the water to rise to the surface. On the surface, the water would have no adverse impact while the concrete cured. Indeed, during the curing process water is quite often continuously sprayed on concrete to assure proper curing.

Q. WHAT IS YOUR CONCLUSION WITH RESPECT TO THIS SPECIFIC ALLEGATION OF MR. MCAFEE?

A. I do not believe that this allegation raises a concern with respect to the health and safety of the public.

(L.R.D.) IX. TESTIMONY REGARDING MR. MCAFEE'S ALLEGATION CONCERNING QA WAIVER OF REQUIREMENTS ON CONCRETE FORMS (1b)

Q. ARE YOU FAMILIAR WITH THE ALLEGATION OF MR. MCAFEE WITH RESPECT TO QUALITY ASSURANCE WAIVING REQUIREMENTS ON CONCRETE POURS?

A. Yes. I have reviewed the deposition testimony of Mr. McAfee. Mr. McAfee contends that during the time he was a prepour runner, he believes that the Quality Assurance Department inappropriately waived requirements on concrete pour forms in order to let the Construction Department make the pours. As the basis for his allegation, Mr. McAfee relates an occurrence which he alleges occurred one day when he was trying to get a pour signed off. He states that the Construction Department was eager to make the pour, but that one of the QA engineers was holding up the pour because requirements had not been met. Mr. McAfee was not familiar with the requirements. Mr. McAfee states that a person who he believes to have been a junior QA engineer stated that the requirements could be waived. MD Tr., pp. 13, 73-74. Mr. McAfee did not know what requirements this individual referred to; he did not know whether it was appropriate for the requirements to be waived; and he was unable to recall either the area of the plant or the individuals involved. Id. at p. 74.

Q. PLEASE DESCRIBE THE REQUIREMENTS SET FORTH ON THE "CONCRETE POUR FORMS" WHICH MUST BE MET BEFORE A POUR IS MADE.

A. Form M-2A, entitled "Prepour Site Inspection" (the "Prepour Form"), is a checklist that sets forth requirements for concrete pours. (Attachment G) Among other things, it requires all involved crafts and inspectors to assure that items installed are in accordance with the design drawings prior to placing concrete. This form is used for both safety related and non-safety related concrete pours. It should be noted that while Form M-2A is used for all concrete pours, non-safety related concrete pours do not "require" QA attention.

On the Prepour Form, there are a number of blocks to be signed off by the appropriate disciplines before the pour can be made. Signing off on these blocks is necessary for several reasons. First, before concrete is placed, either as a wall or floor slab, it is necessary to assure that embedded systems, such as piping or electrical conduits, are installed in accordance with the design. If not, then the structure might later have to be modified to install the missing items. Second, the form assures that the necessary concrete forms and reinforcing steel are in place and signed off before the pour is made. Finally, the form requires that all necessary QA inspections be complete prior to making the pour.

Q. WHAT ARE THE QA REQUIREMENTS WHICH ARE APPLICABLE?

A. As required by Quality Assurance Procedure M-2, "Inspection of Design Concrete," prior to signing Form M-2A, QA verifies that the correct concrete mix has been entered on the form along with the approximate volume of the pour, and that all NCI reports that could

effect concrete placement have been cleared. Also, Quality Assurance Procedure M-2 requires verification that applicable foundation compaction records, rebar cadweld records, and records for installation, inspection and testing of embedded piping are complete. Furthermore, the Procedure requires that QA personnel review the entire Form M-2A for completeness to assure all inspections and signatures have been recorded and evaluate any notes made by inspectors or civil engineering personnel that would effect placement requirements.

Q. WHAT IS THE PROCEDURE SHOULD ANY OF THE ABOVE REQUIREMENTS NOT BE MET?

A. If any of the crafts or QA Inspectors identify a problem that needs correcting prior to concrete placement, QA will not sign Form M-2A and the concrete placement will be on "hold" until the problem is resolved. Form M-2A must be forwarded to the QA Inspectors at the prepour site prior to concrete placement. If that form is not signed by QA, then concrete placement is not authorized and concrete will not be placed. It should be noted that with the exception of the structural inspector who finally determines when the concrete forms are clean, QA is the last signature on Form M-2A.

Q. PLEASE EXPLAIN HOW THIS PROCESS WORKS IN ACTUAL PRACTICE.

A. Prepour Form M-2A is initiated for all design pours whether safety-related or non-safety related. The builder foreman, who is responsible for installing the rebar and structural embedments (such as structural plates) along with the formwork for the pour, initiates the Prepour Form during the installation process. That

foreman coordinates a schedule with other crafts and inspectors for installing embedded items such as electrical cable conduit and piping. After the responsible crafts finish their required work in the pour, a runner handcarries the Prepour Form M-2A to each craft to sign to signify that work is complete. The runner then carries the Prepour Form M-2A to each inspection discipline who inspects the items as required by QA Procedure M-2 and signs the Prepour Form M-2A when complete. If a QA Inspector finds that work is not in accordance with the drawings or specifications, then the pour is put "on hold" until the work is corrected or evaluated.

Q. ARE REQUIREMENTS ON THE PREPOUR FORM M-2A WAIVED? IF SO, UNDER WHAT CIRCUMSTANCES IS THIS DONE?

A. Yes, on occasions requirements on the Prepour Form are waived. For example, if items noted on the Prepour Form (e.g., electrical conduits or components) are not required by the design drawings, the structural inspector who inspects the work enters an "NA" in the appropriate area on the Prepour Form. This would occur when he determines that no work is required by the drawings for the applicable craft or inspector.

As another example, should an inspector find work that is not in accordance with the drawing, procedure, or specification, and is not readily correctable by either bringing the item into conformance or through a Variation Notice, he prepares an NCI. The resolution to the problem is documented on the NCI. Design Engineering will evaluate the problem and may accept the "as-built" condition or may require corrective action. This decision is documented in the resolution to the NCI.

In addition, circumstances exist under which the designated technical support personnel can waive certain requirements, assuming that the necessary procedures are followed and the waivers are recorded on the Prepour Form M-2A by the designated technical support individual. The individuals who have the authority to waive requirements are designated in writing by the Project Management and approved by QA. In this regard, there are basically two types of waivers or evaluations that can be made by technical support personnel. The first type involves the evaluation of dimensions and tolerances for clear distance to concrete form surface for rebar. When some rebar is relocated from specified dimensions to avoid interferences or embedments, the required tolerances of rebar location may be exceeded. As allowed by ACI code and concrete specification for Catawba, variance from specified dimensions and tolerances may be evaluated and accepted. Designated technical support individuals are authorized to make such evaluations and document them on the Prepour Form M-2A.

A second type evaluation involves non-safety related pours. In this area technical support personnel can evaluate discrepancies identified and handle them as they deem necessary. QA has no official or procedural authorization to evaluate the discrepancies identified in non-safety related pours.

Q. HAVE YOU TAKEN ACTION TO TRY TO DETERMINE WHICH POUR MR. MCAFEE MAY HAVE BEEN REFERRING TO IN HIS ALLEGATION?

A. Yes. To attempt to determine which pour Mr. McAfee was referring to, we reviewed all the pours which took place while Mr. McAfee was a prepour runner (January 1, 1978 to March 30, 1978). We

reviewed all pours whether they were safety related or non-safety related. This review included approximately 255 Construction Concrete Pour Numbers which are composed of 344 Prepour Form M-2As. Several Prepour Forms may be assigned the same construction concrete pour number when they are poured consecutively with the same concrete mix and at the same pour location. As a result of our review, we determined that all of these pours were in compliance with procedures and all waivers were properly granted. In this regard, there were nine waivers granted during this time. Six of the nine waivers related to non-safety related pours. The three waivers relating to safety-related pours involved spacing and location of rebar and were each properly documented and processed.

Because Mr. McAfee was unable to identify the requirements, the individuals involved, or the area of the plant, it is not possible to identify precisely which pour was the subject of his allegation. Nevertheless, as I stated, the records reviewed reflect that each pour was made in accordance with procedures, and that no waivers of requirements, where they existed, were improperly granted.

Q. WHAT IS YOUR CONCLUSION THEN WITH RESPECT TO MR. MCAFEE'S ALLEGATION REGARDING QA WAIVER OF REQUIREMENTS ON CONCRETE FORMS?

A. My conclusion is that the allegation is without foundation, and presents no question as to the health and safety of the public.

(L.R.D.) X. TESTIMONY REGARDING MR. MCAFEE'S ALLEGATION CONCERNING INSTRUCTIONS NOT TO WRITE NCIs (1i)

Q. ARE YOU FAMILIAR WITH MR. MCAFEE'S ALLEGATION REGARDING INSTRUCTIONS NOT TO WRITE NCIs?

A. Yes. I have reviewed the deposition testimony of Mr. McAfee in which he alleges that he "was told not to write NCI's although as an inspector I was required [to] by law, I believe." (MD Tr., p. 23) Mr. McAfee can only recite one instance in which he was specifically told not to write an NCI. This issue has already been resolved by this Board.

However, Mr. McAfee does discuss situations in which he alleges that his supervisor suggested that deficiencies he identified should be discussed with craft foreman, to have the craft correct them, rather than writing an NCI. Mr. McAfee states that on one occasion, he inspected 27 cable tray supports, and found that 7 appeared to require an NCI; but, he was instructed to try to resolve the matter with the craft. MD Tr., p. 26. Mr. McAfee states that on another occasion, involving cable tray support grids, he was encouraged to discuss and resolve the matter with the craft foreman, rather than to write an NCI. MD Tr., p. 29. Finally, Mr. McAfee references an instance in which he was encouraged to discuss cable tray hangers and supports with a craft foreman rather than to write an NCI. MD Tr., pp. 29-30.

Q. WOULD YOU EXPLAIN THE METHODS OF DOCUMENTING AND CORRECTING DISCREPANCIES IN CONSTRUCTION WHICH ARE AND HAVE BEEN FOLLOWED AT CATAWBA?

A. The Quality Assurance Program in use during construction at Catawba has had several means available to correct discrepancies

that are discovered by Inspectors. There are four basic methods available, three of which do not involve writing an NCI.

(1) The first, which is sometimes referred to in some of the procedures as the "hold point" method, consists of an Inspector making the craft aware of a deficiency, the deficiency being corrected to the satisfaction of the Inspector, and the Inspector signing off the item. In this method, the item is not signed off until all necessary action has been completed, and the Inspector is satisfied. In the inspections of cable tray supports, hangers, and grids that Mr. McAfee refers to, the work is inspected upon its completion. The Inspector then documents his inspection and, of course, if he finds no deficiency he tags the support as having been inspected and accepted.

However, should the Inspector note a discrepancy in which the necessary corrective action is clear from design drawing, and no Engineering evaluation of the discrepancy is required, it is standard practice for him to contact the craft to have them correct that discrepancy. Following such correction, the Inspector, if he is satisfied, signs off on the work. This "hold point" method (i.e., contacting the craft, making them aware of what is wrong, so they can take corrective action to fix that item, and then the Inspector verifying that it is correct, and completing his inspection after he has done that) is a common one that has been in use at Catawba throughout construction.

(2) The second is the "process control" method, whereby the inspection report itself provides the means to document a repair. This method is used primarily in welding where, for example, a final visual inspection might detect defects which would be recorded

on the inspection form. The procedure for the inspection and for making the weld would provide instructions for how to correct that item (or that defect) and then provide instructions for reinspection. All of this would be documented on the Process Control Form, which serves both as a documentation of the work and the inspection of that work.

(3) The third method is use of the Deficiency Report Form, commonly referred to as an R-2A. There have been several different procedures available to Inspectors under this method. By this method, the Inspector would document the problem he identified, and send the document to the Engineering Group for construction at the site to determine necessary corrective action. If such action involved the craft redoing work, it would go to the craft to be done. The form would then be routed back to the Inspector who would reinspect the work and, if satisfied, sign off on it.

(4) The final method that is available is the Nonconforming Item Procedure, Procedure Q-1 in the Quality Assurance Program Manual at Catawba. This method provides for the Inspector to identify the discrepancy, which is then reviewed by supervision and by Quality Assurance. The NCI is then sent to the appropriate party to resolve the discrepancy, e.g., Design Engineering, Construction Department, or Quality Assurance. Evaluations are reported and documented. The NCI is reviewed for reportability under 10 CFR Parts 21 and 50.55(e). Once the resolution documented, it is approved by the technical person in the group that is responsible for the resolution and is subject to QA review and approval. The actions to be taken as a result of the resolution would be identified

on the report and assigned to specific groups for implementation. Once those actions are completed and signed off, the form would then be sent to QA who would conduct a final review to be sure that all of the actions have been performed and properly verified.

Q. WHICH OF THESE METHODS APPLIES TO THE INSTANCES DESCRIBED BY MR. MCAFEE?

A. The three instances described by Mr. McAfee fit within the first, or "hold point" method. An examination of each of these instances confirms this. In each of the three instances, Mr. McAfee states that he was "discouraged to write NCI's . . .[and] encouraged to find other means to solve the problem." MD Tr., p. 23.

In the instance of the 27 cable tray supports, Mr. McAfee explains he spoke with the craft foreman, that the foreman agreed to, and did, correct the seven discrepancies identified by Mr. McAfee, that Mr. McAfee subsequently inspected these seven items, and that they were corrected to his satisfaction. MD Tr., p. 27. With respect to the cable tray grids, Mr. McAfee states that he identified discrepancies to the craft, the discrepancies were corrected, and Mr. McAfee was satisfied. MD Tr., p. 29. A similar situation existed with respect to cable tray hangers and supports in the auxiliary building. Mr. McAfee identified some discrepancies between the work and the print, discussed these discrepancies with the craft, the craft corrected them to conform with the print, which was Mr. McAfee's concern, and Mr. McAfee was satisfied. On reinspection, Mr. McAfee signed off on the work. MD Tr., pp. 29-31.

From Mr. McAfee's description, then, these incidents fit the "hold point" method.

Q. ARE THESE THE TYPE OF INSTANCES IN WHICH THE "HOLD POINT" METHOD IS PROPERLY USED? AND WAS IT PROPERLY USED IN THESE INSTANCES?

A. Yes. As Mr. McAfee himself stated:

> As it turned out, in some cases it was much more effective as far as getting the problem resolved to go talk to the craft foreman because in some instances he would go correct the problems without going through the paper work of the NCI. [MD Tr., p. 24]

Indeed, this is the purpose of the "hold point" method, to handle situations in which an Inspector finds a discrepancy where the work has been done incorrectly and the only action required is for the craft to redo the work to make it comply with the specifications or the drawing. In this situation the normal method in use is to notify the craftsman, let him make the necessary change, and reinspect the work to see that it has been corrected. Upon completion of the corrective action, assuming that it was acceptable, the work would be accepted by the Inspector. This process has been in effect since the beginning of construction at Catawba.

Q. WOULD THE FACT THAT MR. MCAFEE'S SUPERVISOR ENCOURAGED HIM TO FOLLOW THE "HOLD POINT" METHOD INDICATE THAT MR. MCAFEE WAS DISCOURAGED FROM CORRECTING DISCREPANCIES HE IDENTIFIED?

A. Absolutely not. As I have already explained, the "hold point" method is a common procedure which has been used at Catawba since the beginning of construction. Mr. McAfee admits that in each instance he cites he was satisfied. Mr. McAfee alludes to consultation with his supervisor to seek his opinion in some of these

instances. MD Tr., pp. 23, 30. There is certainly nothing improper with the supervisor giving directions in such an instance. I would note that Mr. McAfee was a certified QC Inspector for a period of only 4½ months. It certainly would not have been unusual for a supervisor to help a new or less-experienced inspector choose the appropriate method of documenting and resolving a discrepancy.

Q. WHAT IS YOUR CONCLUSION WITH RESPECT TO THIS ALLEGATION OF MR. MCAFEE?

A. It is my opinion in that procedures were followed and Mr. McAfee was satisfied with the results, this allegation does not raise a potential public health and safety concern.

6/9/83 Attachment A

SAMUEL WILLIS DRESSLER

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FORMAL EDUCATION

Virginia Polytechnic Institute - BSME, 1963

ADDITIONAL TRAINING:

System Safety - University of Southern California Air Command and Staff College - U.S. Air Force

Code Section III Class 1 and MC Nuclear Components - ASME

Advanced Management Development - Duke Power

Effective Management Program - Harbridge House

PROFESSIONAL INVOLVEMENT

Registered Professional Engineer - North Carolina
South Carolina

Member - American Society of Mechanical Engineers (ASME)

Systems Command, Major, U.S. Air Force Reserve

WORK EXPERIENCE

FROM	TO	TITLE	PROGRAM	COMPANY
8/82	Present	Engineering Manager	Catawba Nuclear Station	Duke Power

Responsible for civil, mechanical, system testing, piping support/restraints, electrical, instrumentation and welding engineering site activities, plus surveying, facilities, computer operations, document control, and office administration functions. There are 450 engineers, technicians, and clerks in the organization performing these activities with 145 of the personnel managed through a matrix organization structure. The primary functions include performing technical support for all site organizations, interfacing with design engineering and quality assurance to satisfactory meet technical requirements.

WORK
EXPERIENCE

FROM	TO	TITLE	PROGRAM	COMPANY
5/77	8/82	Senior Construction Engineer	Catawba Nuclear Station	Duke Power

Responsibilities included civil, mechanical, electrical, welding, system testing, and instrumentation engineering activities, plus surveying, facilities, computer operations, and document control functions. The organization was comprised of 275 engineers, technicians, and clerks. Functions included providing technical support for all site organizations, developing systems test logic, managing contractors, coordinating schedule activities, and interfacing with regulatory agencies, design engineering and quality assurance.

2/73	5/77	Field Engineer Mechanical	Catawba/Oconee Nuclear Stations	Duke Power

Responsible for mechanical technical support activities involving 45 engineers, technicians, and clerks. Developed construction procedures, resolved field pipe/equipment installation problems, performed field design, issued process control, and developed material control processes.

5/71	2/73	Associate Field Engineering-Mechanical	Oconee Nuclear Station	Duke Power

Provided technical direction to craftsmen, technicians, and inspectors for auxiliary building construction activities. Approved process control, prepared construction procedures, ordered materials, and initiated field design changes. Performed quality assurance functions in area of responsibility.

1/67	5/71	Air Force Officer	Cape Kennedy Florida	United States Air Force

Staff Development Engineer for Titan III missle launch operations. Performed as test conductor for prelaunch combined system testing and leader of post launch test data review teams. Responsibilities also included writing and reviewing test procedures for assembly, check out, and launch operations.

9/63	1/67	Supervisor-Car Inspection	Mechanical Department	Southern Railway System

After completing 12 month training program, initial responsibilities included inspection, scheduling, material take offs, and development of repair techniques for several production programs involving extensive modification of rail cars. Later, assigned responsibility for company-wide direction of inspection maintenance and modification of all rail automobile rack carriers.

RESUME

LARRY R. DAVISON

EDUCATION:

Graduate of Georgia Institute of Technology (Georgia Tech)
Bachelor of Science in Mechanical Engineering, 1967

Completion of U. S. Naval Nuclear Training Schools
Six months, nuclear theory
Six months, nuclear application (prototype)

Completion of U. S. Naval Submarine School
Six months, submarine systems and operations

Welding, Theory and Application, 40 hours, University of Tennessee

Radiographic Film Interpretation, 40 hours, Magnaflux Corporation

Duke Power Company Management Training
Lake Hickory Training Center
Effective Management

Registered Professional Engineer in North Carolina (8856) and South Carolina (7456)

EXPERIENCE:

U. S. Navy 1967-1971, Ensign - Lieutenant

1½ years schooling on nuclear systems and operation and submarines

2½ years assigned to an operating Ballistic Missile Nuclear Submarine, USS Nathaniel Greene.

Served as Auxiliary Division Officer, Damage Control Assistant and Communications Officer.

Qualified in Engineering Plant as Engineering Officer of the Watch (EOOW)

One year in the shipyard undergoing major overhaul, conversion and nuclear refueling.

Duke Power Company, 1971 - Present

1971 - 1973 Assistant Field Engineer, Oconee Nuclear Station

Worked in the Construction Department Technical Support welding area. Writing welding construction procedures and reviewing and solving welding problems.

1973 - 1974 Associate Field Engineer, Oconee Nuclear Station

Worked in the Construction Department Technical Support welding area. Responsible for welding visual and nondestructive testing (NDE).

1974 - 1981 Senior Quality Control (QC) Engineer, Catawba Nuclear Station

Worked in the Construction Department QA area. Responsible for all QA inspection in construction work at Catawba.

1981 - 1982 Quality Assurance (QA) Manager Projects, Charlotte General Office

Responsible for all QA activities at three nuclear sites under construction, McGuire, Catawba, and Cherokee.

1982 - Present Project Quality Assurance (QA) Manager, Catawba Nuclear Station

Responsible for all QA activities at Catawba Nuclear construction site. Includes inspection, documentation review and filing, review and approval of construction procedures and deficiency reports.

RICHARD S ALEXANDER

PERSONAL: Home Address: 114 Forest Drive
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Telephone: 704-825-9419 (Home)
803-831-1512 (Work)

FORMAL EDUCATION: Clemson University - BA 1966

ADDITIONAL TRAINING: Effective Management - Duke Power Company
Advanced Management - Duke Power Company
Various ASPA Seminars

WORK EXPERIENCE:

FROM	TO	TITLE	COMPANY
11/78	Present	Personnel Manager	Duke Power Company

Manage the human resource function at the Catawba Nuclear Construction site to provide effective employment, employee relations, training, safety, security, and payroll activities for a peak workforce of 4,200 employees. Administer all salary programs, including exempt, for the site. Provide expertise to project management in all aspects of human resource management, such as policies and procedures, organizational structure and increases/decreases in workforce.

5/76	10/78	Personnel/Safety Supervisor	Duke Power Company

Supervised the personnel and safety activities of a construction maintenance group which numbered 800 at peak. Handled all phases of personnel area including hiring, testing, training, and safety. Provided guidance for management in policies, procedures, and OSHA regulations to ensure all requirements were met.

7/70	5/76	Safety Supervisor	Duke Power Company

Developed, implemented, and coordinated all safety, fire protection, and first-aid programs for the construction site at the Belews Creek plant. Supervised three safety assistants and one RN. Conducted daily inspections of the jobsite to minimize hazards and maintain compliance with OSHA standards.

WORK EXPERIENCE: (continued)

FROM	TO	TITLE	COMPANY
6/66	6/70	Program Representative	State of South Carolina

Developed programs through local health departments and private physicians to encourage early childhood immunization. Scheduled and conducted mass immunization clinics throughout South Carolina.

ATTACHMENT D

April 25, 1977

We expect our employees to express any concerns they may have about the quality of work to their supervisor or any level of Company management. In addition, we have voluntarily agreed to post the following Nuclear Regulatory Commission communication.

R L Dick
Vice President, Construction

RLD:ejw

Any nuclear industry worker who has concerns or questions about the nuclear safety of any facility or activity licensed by the Nuclear Regulatory Commission may bring these matters to the attention of an NRC inspector or the nearest NRC Regional Office if they cannot be resolved directly with his or her employer. The NRC will treat the identity of a workers as a confidential source if the worker requests that his identity not be disclosed.

In order to improve channels of communication between NRC and Nuclear Industry workers, the NRC is making two procedural changes:

1. NRC Inspectors will soon be wearing identifiction badges and, in some cases, safety hats identifying them as NRC inspectors.

2. NRC Regional Offices will accept collect telephone calls from nuclear industry workers who wish to speak with an NRC representative concerning quality of work, radiological safety or safeguards problems. The telephone number of the appropriate NRC Regional Office for this project is 404-221-4503.

These changes will be reflected in a revised NRC Form 3 posted to meet requirements of 10 CFR Part 19 and a revision of proposed 10 CFR Part 21 (both of which are in preparation). Until these revisions are published, all workers at NRC-licensed facilities or activities should be aware of these improved channels of communication with Inspectors.

Required Posting

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

NOTICE TO EMPLOYEES

STANDARDS FOR PROTECTION AGAINST RADIATION (PART 20); NOTICES, INSTRUCTIONS AND REPORTS TO WORKERS; INSPECTIONS (PART 19); EMPLOYEE PROTECTION

The Nuclear Regulatory Commission (NRC) in its Rules and Regulations: Part 20 has established standards for your protection against radiation hazards from radioactive material under license issued by the NRC; Part 19 has established certain provisions for the options of workers engaged in NRC licensed activities; Parts 30, 40, 50, and other parts containing provisions related to employee protection.

POSTING REQUIREMENTS Copies of this notice must be posted in a sufficient number of places in every establishment where activities licensed by the NRC are conducted, to permit employees to observe a copy on the way to or from their place of employment.

IR EMPLOYER'S PONSIBILITY

employer is required to—

pply these NRC regulations and he conditions of his NRC license o all work under the license.

ost or otherwise make available o you a copy of the NRC regula-ions, licenses, and operating rocedures which apply to work ou are engaged in, and explain heir provisions to you.

ost Notices of Violation involving adiological working conditions, roposed imposition of civil enalties and orders.

efrain from discriminatory acts gainst employees who provide nformation to NRC.

IR RESPONSIBILITY \ WORKER

should familiarize yourself with s provisions of the NRC regula-, and the operating procedures h apply to the work you are en-d in. You should observe their ations for your own protection and ction of your co-workers.

WHAT IS COVERED BY THESE NRC REGULATIONS

1. Limits on exposure to radiation and radioactive material in restricted and unrestricted areas;
2. Measures to be taken after accidental exposure;
3. Personnel monitoring, surveys and equipment;
4. Caution signs, labels, and safety interlock equipment;
5. Exposure records and reports;
6. Options for workers regarding NRC inspections;
7. Identifies "protected activities" that employees may engage in;
8. Prohibits discrimination against employees who engage in these protected activities;
9. Identifies the Department of Labor as a source of relief in the event of discrimination; and
10. Related matters.

REPORTS ON YOUR RADIATION EXPOSURE HISTORY

1. The NRC regulations require that your employer give you a written report if you receive an exposure in excess of any applicable limit as set forth in the regulations or in the license. The basic limits for exposure to employees are set forth in Section 20.101, 20.103, and 20.104 of the Part 20 regulations. These Sections specify limits on exposure to radiation and exposure to concentrations of radioactive material in air.
2. If you work where personnel monitoring is required pursuant to Section 20.202;
   (a) your employer must give you a written report of your radiation exposures upon the termination of your employment, if you request it, and
   (b) your employer must advise you annually of your exposure to radiation, if you request it.

INSPECTIONS

All activities under the license are subject to inspection by representatives of the NRC. In addition, any worker or representative of workers who believes that there is a violation of the Atomic Energy Act of 1954, the regulations issued thereunder, or the terms of the employer's license with regard to radiological working conditions in which the worker is engaged, may request an inspection by sending a notice of the alleged violation to the appropriate United States Nuclear Regulatory Commission Regional Office (shown on map below). The request must set forth the specific grounds for the notice, and must be signed by the worker or the representative of the workers. During inspections, NRC inspectors may confer privately with workers, and any worker may bring to the attention of the inspectors any past or present condition which he believes contributed to or caused any violation as described above.

EMPLOYEE PROTECTION

If an employee believes that discrimination has occurred due to engaging in the "protected activities" said employees may, within 30 days of the discriminatory act, file a complaint with the Department of Labor, Employment Standards Administration, Wage and Hour Division. The Department of Labor shall conduct an investigation and shall, where discrimination has occurred, issue an order providing relief to the employee if relief is not provided by other means of settlement.

PROTECTION OF INSPECTORS

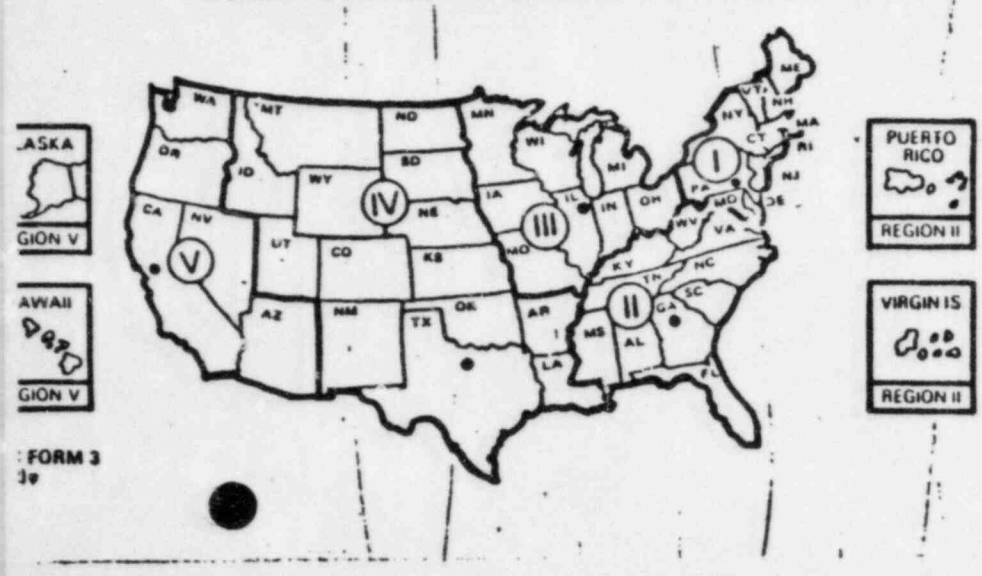
The amended Atomic Energy Act, section 23b, provides criminal penalties against any individual who kills, forcibly assaults, resists, opposes, impedes, intimidates or interferes with any person who performs any inspections which (1) are related to any activity or facility licensed by the Commission, and (2) are carried out to satisfy requirements under the Atomic Energy Act or under any other Federal law covering the safety of licensed facilities or the safety of radioactive materials. The acts described above are criminal not only if taken against inspection personnel who are engaged in the performance of such inspection duties, but also if taken against inspection personnel on account of such duties.

SABOTAGE OF NUCLEAR FACILITIES OR FUEL

The amended Atomic Energy Act, section 236, provides criminal penalties against any individual who intentionally and willfully destroys or causes physical damage, or attempts to do so, to any production, utilization, or waste storage facility licensed under the act, or any nuclear fuel or spent fuel regardless of location.

UNITED STATES NUCLEAR REGULATORY COMMISSION REGIONAL OFFICE LOCATIONS

A representative of the Nuclear Regulatory Commission can be contacted at the following addresses and telephone numbers. The Regional Office will accept collect telephone calls from employees who wish to register complaints or concerns about radiological working conditions or other matters regarding compliance with Commission rules and regulations.



Regional Offices

REGION	ADDRESS	TELEPHONE
I	U.S. Nuclear Regulatory Commission Region I 631 Park Avenue King of Prussia, PA 19406	215 337-5000
II	U.S. Nuclear Regulatory Commission Region II 101 Marietta St., N.W., Suite 3100 Atlanta, GA 30303	404 221-4503
III	U.S. Nuclear Regulatory Commission Region III 799 Roosevelt Road Glen Ellyn, IL 60137	312 932-2500
IV	U.S. Nuclear Regulatory Commission Region IV 611 Ryan Plaza Drive, Suite 1000 Arlington, TX 76012	817 465-8100
V	U.S. Nuclear Regulatory Commission Region V 1450 Maria Lane, Suite 210 Walnut Creek, CA 94596	415 943-3700

This federal statute, Section 210 of the Energy Reorganization Act (42 U.S.C.§5851) (1978), provides that no employer (including an NRC licensee, an applicant for an NRC license, or a contractor or subcontractor thereof) may discharge any employee or otherwise discriminate against an employee because of the employee's participation on behalf of any party in an NRC proceeding. More specifically, no employer may take any action against an employee because the employee

(1) has commenced, caused to be commenced, or is about to commence a proceeding under the Atomic Energy Act of 1954 (i.e., an NRC proceeding);

(2) testifies or is about to testify in an NRC proceeding; or

(3) assists or participates in any way in an NRC proceeding.

Any employee who believes that he has been discharged or otherwise discriminated against by his employer for one of the reasons listed above may file a complaint with the U. S. Department of Labor within 30 days of the occurrence of the event. The Labor Department will then investigate the charges and, if it determines that this type of unlawful discrimination has occurred, will order the employer to stop the unlawful discrimination and reinstate the employee to his former position along with back, pay, terms, conditions and privileges of employment. Compensatory damages and expenses related to bringing the complaint may also be awarded to the employee.

§ 5851. Employee protection

(a) Discrimination against employee

No employer, including a Commission licensee, an applicant for a Commission license, or a contractor or a subcontractor of a Commission licensee or applicant, may discharge any employee or otherwise discriminate against any employee with respect to his compensation, terms, conditions, or privileges of employment because the employee (or any person acting pursuant to a request of the employee)—

(1) commenced, caused to be commenced, or is about to commence or cause to be commenced a proceeding under this chapter or the Atomic Energy Act of 1954, as amended [42 U.S.C.A. § 2011 et seq.], or a proceeding for the administration or enforcement of any requirement imposed under this chapter or the Atomic Energy Act of 1954, as amended;

(2) testified or is about to testify in any such proceeding or;

(3) assisted or participated or is about to assist or participate in any manner in such a proceeding or in any other manner in such a proceeding or in any other action to carry out the purposes of this chapter or the Atomic Energy Act of 1954, as amended [42 U.S.C.A. § 2011 et seq.].

(b) Complaint, filing and notification

(1) Any employee who believes that he has been discharged or otherwise discriminated against by any person in violation of subsection (a) of this section may, within thirty days after such violation occurs, file (or have any person file on his behalf) a complaint with the Secretary of Labor (hereinafter in this subsection referred to as the "Secretary") alleging such discharge or discrimination. Upon receipt of such a complaint, the Secretary shall notify the person named in the complaint of the filing of the complaint and the Commission.

(2)(A) Upon receipt of a complaint filed under paragraph (1), the Secretary shall conduct an investigation of the violation alleged in the complaint. Within thirty days of the receipt of such complaint, the Secretary shall complete such investigation and shall notify in writing the complaint (and any person acting in his behalf) and the person alleged to have committed such violation of the results of the investigation conducted pursuant to this subparagraph. Within ninety days of the receipt of such complaint the Secretary shall, unless the proceeding on the complaint is terminated by the Secretary on the basis of a settlement entered into by the Secretary and the person alleged to have committed such violation, issue an order either providing the relief prescribed by subparagraph (B) or denying the complaint. An order of the Secretary shall be made on the record after notice and opportunity for public hearing. The Secretary may not enter into a settlement terminating a proceeding on a complaint without the participation and consent of the complainant.

(B) If, in response to a complaint filed under paragraph (1), the Secretary determines that a violation of subsection (a) of this section has occurred, the Secretary shall order the person who committed such violation to (i) take affirmative action to abate the violation, and (ii) reinstate the complainant to his former position together with the compensation (including back pay), terms, conditions, and privileges of his employment, and the Secretary may order such person to provide compensatory damages to the complainant. If an order is issued under this paragraph, the Secretary, at the request of the complainant shall assess against the person against whom the order is issued a sum equal to the aggregate amount of all costs and expenses (including attorneys' and expert witness fees) reasonably incurred, as determined by the Secretary, by the complainant for, or in connection with, the bringing of the complaint upon which the order was issued.

(c) Review

(1) Any person adversely affected or aggrieved by an order issued under subsection (b) of this section may obtain review of the order in the United States court of appeals for the circuit in which the violation, with respect to which the order was issued, allegedly occurred. The petition for review must be filed within sixty days from the issuance of the Secretary's order. Review shall conform to chapter 7 of Title 5. The commencement of proceedings under this subparagraph shall not, unless ordered by the court, operate as a stay of the Secretary's order.

(2) An order of the Secretary with respect to which review could have been obtained under paragraph (1) shall not be subject to judicial review in any criminal or other civil proceeding.

(d) Jurisdiction

Whenever a person has failed to comply with an order issued under subsection (b)(2) of this section, the Secretary may file a civil action in the United States district court for the district in which the violation was found to occur to enforce such order. In actions brought under this subsection, the district courts shall have jurisdiction to grant all appropriate relief including, but not limited to, injunctive relief, compensatory, and exemplary damages.

(e) Commencement of action

(1) Any person on whose behalf an order was issued under paragraph (2) of subsection (b) of this section may commence a civil action against the person to whom such order was issued to require compliance with such order. The appropriate United States district court shall have jurisdiction, without regard to the amount in controversy or the citizenship of the parties, to enforce such order.

(2) The court, in issuing any final order under this subsection, may award costs of litigation (including reasonable attorney and expert witness fees) to any party whenever the court determines such award is appropriate.

(f) Enforcement

Any nondiscretionary duty imposed by this section shall be enforceable in a mandamus proceeding brought under section 1361 of Title 28.

(g) Deliberate violations

Subsection (a) of this section shall not apply with respect to any employee who, acting without direction from his or her employer (or the employer's agent), deliberately causes a violation of any requirement of this chapter or of the Atomic Energy Act of 1954, as amended [42 U.S.C.A. § 2011 et seq.].

(Pub.L. 95-486, Title II, § 210, as added Pub.L. 96-601, § 10, Nov. 6, 1978, 92 Stat. 2951.)

28573 (R11-81)

FORM M-2A | REVISION 11

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
PROJECT _____

PREPOUR SITE INSPECTION

QA CONDITION _____

LOCATION _____ POUR NO _____

UNIT ____ DATE READY _____

MIX REQUIRED _____ FINISH REQUIRED _____ APPROXIMATE YARDAGE _____ DATE PLACED _____

	INSPECTION		INITIAL	REMARKS			
FORMS	ALIGNMENT	1		TRANSIT SERIAL NO.			1
	DIMENSIONS	1		LEVEL SERIAL NO.			
	SUPPORTS	2		VARIATION NOTICES AND NON CONFORMING ITEMS	10	DRAWING NO.	REV	DATE
	TIES	2			9			
REINFORCEING	LOCATION	3						
	SIZE							
	SHAPE							
	GRADE							
	FIRMNESS							
	SPLICES							
	WIRE TIES							
ELEC	ELEC GROUNDS	4						
	ELEC CONDUIT							
EMBEDDED ITEMS	PENETRATION	5						
	PIPE SLEEVES							
	WATER STOPS							
	EMBEDMENTS							
JOINTS	FOUNDATION TEST	6						
	JOINT PREPARATION	7						
	CADWELD RECORDS	8	DATE					
	ASSURANCE OF INCLEMENT WEATHER PROTECTION	11						

CERTIFICATION TO PLACE CONCRETE

LAYOUT PARTY _____ (12)
ELECTRICAL FOREMAN _____ (13)
FORM & REIN FOREMAN _____ (13)
CONCRETE FOREMAN _____ (13)
MECHANICAL FOREMAN _____ (13)
WELD INSPECTOR _____ (14)

MECH INSPECTOR _____ (15)
ELEC INSPECTOR _____ (16)
N D E INSPECTOR _____ (17)
CONST ENGR CIVIL _____ (18)
Q A STAFF _____ (19)

FORMS ARE CLEAN AND READY FOR PLACEMENT OF CONCRETE. STRUC INSPECTOR _____ (20)

Q A APPROVAL _____ DATE _____

I hereby certify that I have read and understand this document, and believe it to be my true, accurate and complete testimony.

Samuel W. Dressler

Larry R. Davison

Richard. S Alexander

Sworn to and subscribed before me
this 24th day of September, 1983.

Notary Public

Commission Expires Sept. 24, 1985

NUCLEAR REGULATORY COMMISSION

Docket No. 50-413 Official Exh. No. 37

In the matter of Catawba

Staff _____ IDENTIFIED ✓

Applicant ✓ RECEIVED ✓

Intervenor _____ REJECTED _____

Consortium _____

Contractor _____ DATE 11/15/83

Other _____ Witness _____

Reporter Ron Graham