

742

RELATED CORRESPONDENCE



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

DOCKETED  
USNRC

February 22, 1985

75 FEB 26 P3:22

OFFICE OF SECRETARY  
DOCKETING SERVICE

Alan S. Rosenthal, Chairman  
Atomic Safety and Licensing Appeal Board  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Thomas S. Moore  
Atomic Safety and Licensing Appeal Board  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Howard A. Wilber  
Atomic Safety and Licensing Appeal Board  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

In the Matter of  
DUKE POWER COMPANY, ET AL.  
(Catawba Nuclear Station, Units 1 and 2)  
Docket Nos. 50-413 and 50-414-06

Dear Members of the Appeal Board:

In accordance with my letter to you of August 30, 1984, I am forwarding with this letter a copy of Inspection Report Nos. 50-413/84-89 and 50-414/84-40, recently released by the Staff, which is relevant to the quality assurance issues decided by the Licensing Board in this case. This special inspection report documents the NPC Region II Staff inspection follow-up of the concerns expressed by the four former Catawba workers who testified during the in camera phase of the hearings. In the opinion of the Staff, this report does not contain information materially different from the information considered by the Licensing Board in reaching its decision on the quality assurance contention.

In order to honor the confidentiality of the two witnesses who have not waived their in camera status, certain information which may serve to identify these individuals has been deleted. I have consulted with Judge James L. Kelley, chairman of the Licensing Board which presided over these matters at hearing, and he has indicated that disclosure of the substance of the matters raised, while deleting identifying information, is an acceptable approach in releasing this document.

Copies are being provided to individuals on the service list.

Sincerely,  
*George B. Johnson*  
George B. Johnson  
Counsel for NRC Staff

8502270416 850222  
PDR ADOCK 05000413  
G PDR

Enclosure: As stated  
cc w/ enclosure: Service list

DS07



UNITED STATES  
 NUCLEAR REGULATORY COMMISSION  
 REGION II  
 101 MARIETTA STREET, N.W.  
 ATLANTA, GEORGIA 30303

SPECIAL INSPECTION NOS. 50-413/84-89 and 50-414/84-40

SUBJECT: Duke Power Company  
 Catawba Nuclear Plant  
 Clover, South Carolina

Concerns Expressed During In Camera ASLB Hearings

DATES OF SPECIAL INSPECTION: October 14, 1983 - August 2, 1984

INVESTIGATIVE  
 COORDINATOR:

*[Signature]*  
 B. Uryc, Investigative Coordinator  
 Enforcement and Investigation Coordination  
 Staff

*9/5/84*  
 Date Signed

INSPECTOR:

*[Signature]*  
 N. Economos, Inspector

*9/5/84*  
 Date Signed

REVIEWED BY:

*[Signature]*

*10/18/84*  
 Date Signed

SUMMARY OF SPECIAL INSPECTION

DUKE POWER COMPANY

CATAWBA NUCLEAR PLANT

OCTOBER 14, 1983 - August 2, 1984

## A. INTRODUCTION

This report documents a special inspection conducted by the Region II staff (hereinafter referred to as the Staff) to examine concerns expressed by four former employees of Duke Power Company (DPC) who worked at the Catawba Nuclear Power Plant construction site. All four individuals eventually testified during the Atomic Safety Licensing Board (ASLB) hearings with three of the individuals testifying at in camera proceedings arranged by the ASLB. Two of the individuals still remain under the protection of the ASLB. One of the in camera witnesses has gone public with his concerns. The fourth individual did not request his testimony be taken in camera as he was not protected by the ASLB; however, he was generally regarded as being an ASLB witness, and treated similarly by the ASLB as the original in camera witnesses.

All four individuals were also represented by the Government Accountability Project (GAP), an organization which was assisting the intervenors during the ASLB hearings. One of the ASLB witnesses initially approached the NRC on his own on October 14, 1983, but later contacted GAP and accepted their offer of representation. GAP assisted all the individuals to prepare affidavits and also acted as their representative in contacts with the NRC. The Staff interviewed all four individuals and a GAP representative was present at three of the interviews. GAP was unable to attend an interview with the fourth individual and consequently advised that individual to attend the interview without GAP representation.



## B. SCOPE OF INVESTIGATION

The investigative effort by the Staff took several parallel directions to meet the several needs which initiated this effort. One of the two primary considerations of the Staff was to deal with concerns which came to the Staff's attention as a result of the testimony given by the four ASLB in camera witnesses. The second primary consideration were requirements levied on the Staff by the ASLB to examine certain specific issues raised by the in camera witnesses. The Staff responded to the ASLB requirements by conducting technical inspections of those issues as directed by the ASLB and subsequently issuing technical inspection reports. The remaining concerns were addressed primarily through investigative interviews conducted both on and off the Catawba site.

Each of the in camera ASLB witnesses were interviewed by the Staff with the specific intent to determine their technical concerns. Technical inspections were conducted for those concerns which warranted that particular effort. Some of these concerns were issues which involved, for example, laminations and honeycombing. Other concerns were examined by the more traditional technique of individual interviews in an attempt to verify and substantiate the concern. The Staff relied on two basic sources of information during this special inspection, that being the Staff interviews with the in camera witnesses and the affidavits these individuals presented to the ASLB. The Staff also pursued leads developed during the followup interviews with other individuals.

During the course of this special inspection, the Staff conducted interviews with numerous current and former licensee employees who were considered by the Staff to have direct or indirect knowledge of the stated concerns. Various licensee records and documents were reviewed and these documents are identified in the details of this report. In addition, various NRC records and documents were reviewed and these are also identified and or referred to in the details of this report.

Due to the unusual circumstances of how these concerns came to light there is a certain amount of duplicative effort between the Staff and the ASLB. The ASLB examined several of the concerns in detail during the hearing process; however, the Staff's effort resulted in an enhancement and amplification which serves to compliment the ASLB proceedings. There are also several concerns that the Staff elected not to pursue in detail because of the thorough examination conducted by the ASLB and their resultant findings. These issues are documented in the ASLB hearing record.

#### C. CONCLUSION

The concerns expressed by the four in camera witnesses could not be substantiated, although several concerns had been previously identified and followed up by the staff. Individual A expressed seven concerns during his interview with the Staff in addition to numerous other concerns which he expressed in his affidavit. Each concern was examined and they were all

found to be without merit. The Staff also found several inconsistencies related to these concerns and these inconsistencies are documented in the details section of this report. The Staff also noted several instances wherein the concerns related by Individual A were not completely accurate and, in some cases, were found to be highly exaggerated. Individual A's concern regarding laminations was unfounded and his concern was based in part on his lack of understanding of the technical aspects of laminations. Individual A offered several examples of the "foreman override" concern and the Staff found these examples to be inaccurate based on interviews with employees who were involved in the specific incidents cited by Individual A.

Individual B expressed six concerns, one of which was referred to the Office of Investigation for action. This concern involved cheating on weld inspector examinations and the concern was not substantiated. The remaining five concerns also could not be substantiated. One of these five concerns involved prenotification of NRC inspections. A review of this concern indicates there was no basis for Individual B's concern.

Individual C expressed several concerns related to piping and none of his concerns that related to safety could be substantiated. Individual C expressed his opinion that general construction work not related to safety was done in a shoddy manner and this was indicative of all the workmanship done at the site. The Staff does not subscribe to this notion and concludes it to be an unfounded concern.

Individual D expressed five technical concerns involving construction which were not substantiated. Some of these concerns have been addressed previously in inspection reports. Other concerns expressed by Individual D were discussed at the ASLB hearing and the Staff did not see the need to further examine these particular concerns.

Throughout the Staff's efforts in dealing with the concerns of the above individuals, the Staff determined that the concerns related to generalizations and examples, at times found to be inaccurate, in an attempt to demonstrate what they (the allegers) considered to be fundamental problems affecting the basis from which the entire construction effort emanated. The Staff concludes that these generalizations do not constitute a basis for condemning the entire construction program.

Throughout this special inspection effort, the Staff maintained the premise that the above individuals were relating their concerns with a high degree of honesty, sincerity and well intentioned conviction. The Staff never pursued or attempted to pursue any information which served to question the individuals' motives, integrity or personal character, even though this was occasionally referred to by interviewees during interviews. In some cases information of this nature was reported as the Staff felt it served a valid purpose in this inspection as it related to the qualification of some comments made by several interviewees.

DETAILS OF SPECIAL INSPECTION

DUKE POWER COMPANY

CATAWBA NUCLEAR PLANT

OCTOBER 14, 1983 - AUGUST 2, 1984

## Introduction:

This report documents a special inspection that was conducted to review the concerns expressed by four former employees of the Duke Power Company. Three of the four individuals presented their concerns during testimony at in camera proceedings under a protective order of the Atomic Safety and Licensing Board (ASLB) in safety hearings conducted in the latter part of 1983 and early 1984. One of the three in camera witnesses has since gone public with his concerns and two individuals remain protected by the ASLB. The fourth individual did not request his testimony be taken in camera; however, he was generally regarded as being an in camera ASLB witness, but not under the protective order. All four individuals were permitted to testify before the ASLB and several submitted affidavits to support their testimony. All four were also interviewed by representatives of U. S. Nuclear Regulatory Commission (NRC) Region II so that their concerns could be technically evaluated and acted upon as required. It should also be noted that these individuals were represented by the Government Accountability Project (GAP) of the Institute for Policy Studies. GAP representatives also assisted several of these individuals in the preparation of their affidavits and also acted as their legal counsel during their interviews with representatives of Region II.

In order to protect the two remaining individuals who are still under the protection of the ASLB, none of the four individuals will be addressed by name in this report. Also, in order to protect the privacy of those individuals who requested confidentiality from the NRC during interviews in connection with the

evaluation of the concerns, no other identities are revealed herein. The four individuals who are ASLB witnesses are identified as Individuals A, B, C and D respectively in order to maintain clarity and separation in the report.



INDIVIDUAL A (RII-83-A-0091)

Individual A was initially interviewed by a member of Region II staff on October 14, 1983, at the Catawba Nuclear Plant site. During this interview he stated he was an "x-ray welder" and because of medical problems he was assigned to ground level work which did not involve safety related welding. He stated he felt he should have been assigned to the Fabrication Shop where he could work on safety related piping rather than on the type of welding he was doing. He stated his being assigned non-safety work was a result of speaking out against personnel policies at the Catawba plant and voicing concerns over weld quality. Individual A cited several examples of poor weld quality and policies in support of his concerns as follows: 1) he said that in order to clean up weld defects in the containment wall stiffeners, excessive base metal was removed by grinding, 2) he said vendor welds that attached bellow assemblies to the containment wall contained craters, cold overlap and lack of fusion, all of which he brought to the attention of his foreman without appropriate action being taken to repair the defects, 3) he said that x-ray overlays showed lamination in the containment liner base metal and these laminations were not properly repaired. He cited a 24 inch safety injection pipe sleeve, weld number 2NI-16-2 or 22, or the next weld down the line on the second course of the containment liner as an example of the laminations, and 4) he said that intimidation of welders was a problem and he cited an example. In addition, Individual A stated that the quality of "x-ray type" welds at the Catawba Nuclear Plant were average.

On October 19, 1983, Individual A was telephonically contacted by a member of the Region II staff to obtain additional information and clarification regarding those issues discussed above. During this telephone conversation, Individual A provided some background which described events that led to his then current situation of pending termination. He also discussed his dissatisfaction with the Duke Power Company (DPC) Employee Guidance Program and the circumstances that led to his being dissatisfied with the program. In addition to the above background information he stated there were many occasions when he would see something during construction that did not appear to be correct and he would point out these discrepancies to his supervisors. He said these matters usually involved welding problems which he was often called upon to repair. He said he considered himself to be a "first class welder" and he had been specifically involved in correcting "bad x-ray welds" done by other welders. He said he eventually stopped calling attention to the construction problems because he was not getting any response from his supervisors. He related one example of a problem where he had to weld a bellows assembly to a 24 inch diameter pipe. He said that as he was preparing the edge of the pipe for the weld he noticed that several attempts had already been made to weld the bellows assembly to the pipe. He said he had the pipe edge tested with a liquid penetrant test (PT) which revealed that there were over 32 laminations in the edge of the pipe. He said that he had heard there were hundreds of laminations in the containment liner and that DPC Construction Procedure (CP)88 allowed for laminations to be ground to a depth of 3/8 inch and the resulting hole filled with weld metal. He said that many of these laminations were deeper than 3/8 inch and therefore not really corrected, but only covered with weld metal. He also stated there were welds

which were found to be unacceptable after they were signed off by Quality Control as acceptable, and he provided examples of this. He also said he was being harassed and that DPC supervisors were keeping "extra surveillance" on him. He stated he was receiving this treatment because of all the construction problems he brought to DPC management's attention.

On October 20, 1983, a representative of GAP telephonically contacted a Region II staff member and advised that GAP was assisting Individual A in the preparation of a lengthy affidavit which would detail all of his concerns. The GAP representative requested that Region II delay a pending personal interview with Individual A until after the affidavit was completed in approximately two weeks and that a copy of the affidavit would be provided to the Region II staff. This request was discussed with Region II management and the GAP representative was subsequently advised that Region II expected to initiate followup on the matter in seven to ten days. The GAP representative stated the time frame was acceptable and further requested that prior to contacting Individual A that GAP be notified inasmuch as GAP was acting as legal counsel for Individual A.

On November 16 and 17, 1983, Individual A was interviewed by two Region II staff members in the presence of a GAP representative at Rock Hill, South Carolina. During this interview there were seven technical issues which were discussed by Individual A as constituting his concerns. These issues were as follows:

- 1) Construction Procedure 88 which involved the laminations in the pipe stub on weld number 2NI-16-2. Individual A provided a description as to the location of the weld and his concerns about the laminations in the pipe stub. He

explained how he had requested that the pipe stub be tested with the liquid penetrant test and that this test had revealed numerous laminations on the surface of the pipe edge that was to be welded. He said he was eventually given the job to repair the pipe after several welders had not been able to do it. He said that he was able to properly repair the pipe stub and he welded the bellows assembly on the pipe. He said that his repair was good. He said his concern involved the laminations in the pipe and the impact of laminations on safety.

2) He related that during the early part of 1981, there was a period when the TIG (tungsten inert gas) welding wire used by welders was defective and resulted in bad welds. In addition, this affected the morale of welders who were forced to use the defective TIG welding wire. He provided the names of 15 welders who were told by supervisors to use the defective TIG welding wire and who had complained to him about the problem. He also said that there was a batch of 7018 stick rods (welding rods) which were also defective and caused welding problems.

3) He said he was concerned about conflicting weld symbols and inconsistencies in the interpretation of welding specifications citing an example of how some welders were having problems installing material because they could not understand the weld symbols.

4) He stated he was concerned about construction foremen overriding craft workers and the fact that some welders had to retest on welding when defective welds were discovered after the welds had already been accepted by Quality Control (he cited several specific examples).

5) He stated that he was concerned that he had been recertified in the TIG welding process as of April 1983 when he, in fact, had done no TIG welding since November 1982. He said he was concerned that someone may have falsified his welding certification and that other welders' certifications could also have been falsified.

6) He said he was

concerned about the effectiveness and accuracy of the radiography used at the site and he explained why he held this concern. 7) He said he was concerned with the welding done on the stiffeners on the containment wall and that excessive base metal was removed during the repairs done on those welds. He said the stiffeners on the fifth and sixth course of containment were particularly bad.

In addition to the above, Individual A stated several other concerns involving harassment and intimidation related to the DPC Employee Guidance Program and he provided a copy of his 46 page affidavit which he stated contained all of his concerns and additional examples and amplifications of those concerns. A review of the 46 page affidavit revealed that it contained sufficient detail to be used as a source document in reviewing the concerns expressed by Individual A. This document contained all of the basic information developed during previous interviews and Individual A made frequent referrals to it during his interviews of November 16 and 17, 1983, citing paragraph and page frequently during the interview. This document has been made public by Individual A, and all parties to the ASLB hearing have been provided copies by Individual A and/or his GAP representatives.

A detailed review of the concerns expressed by Individual A and the findings of the Region II staff associated with those concerns are set forth as follows:

:: Individual A stated that prior to going to work at the Catawba Nuclear Plant Construction Site, he was promised by a Catawba General Foreman that he would be working in

the Pipe Fabrication Shop when he was assigned to Catawba from the McGuire plant as a welder.

The Catawba General Foreman who allegedly made this promise was interviewed by members of the Region II staff and he stated that he never made such a promise to Individual A. He stated that such a promise to one welder would be highly inappropriate in view of the large number of welders that were transferring over to the Catawba job. Another General Foreman was interviewed and he stated that he was not aware of any supervisory personnel at Catawba who would place themselves in such a position (making a promise for a specific work assignment) prior to the welder actually being on the job. At the time the workers from McGuire were coming over to the Catawba site, no one at Catawba knew where these individuals would eventually be assigned. This second General Foreman also stated that it would highly inappropriate to make such a promise to a welder, especially when no one at the site knew how well these individual welders worked.

:: Individual A stated that after he was on the job at Catawba for approximately two weeks, he asked for a meeting with his foreman and General Foreman to discuss why he was not put to work in the Pipe Fabrication Shop as had been promised.

The Catawba General Foreman who was named by Individual A as attending this meeting was interviewed by the Staff and he stated that he could not recall such a meeting with Individual A. He also added that such a meeting would have been



unusual in light of the fact that Individual A stated (in his affidavit) that he requested the meeting to "clear the air" and find out why he was being placed where he was assigned. The General Foreman said that such matters would have normally been handled by the foreman of the crew.

:: Individual A stated that as soon as he became a repairman on the welding crew, he identified a serious problem with laminated metal used for penetration pipe sleeves on the containment wall in the Unit 2 Reactor.

The Region II staff examined the lamination issues raised by Individual A extensively and the results of that review are reported in Inspection Report Number 50-413/83-53. In addition, this matter was discussed extensively during the Atomic Safety and Licensing Board hearing by both the licensee and the Region II staff. It was also discussed in the Partial Initial Decision rendered by the ASLB.

:: Individual A, in discussing the lamination issue, gave one specific example of the pipe stub lamination problem. He stated that the weld in question was either 2NI-16-2 or 2NI-16-22.

A Region II staff inspector visually examined weld number 2NI-16-1 which was the weld that Individual A actually worked on. The inspector examined the paperwork associated with this weld and found the documentation to be in order.



Individual A, in his affidavit, also stated that he had successfully repaired the weld and it was radiographed without any defects being found. The Region II staff concludes that Individual A does not fully comprehend all of the technical issues involved with laminations and nor does he understand the Staff's position - that the lamination issue is not significant in this case. Considerable time was spent explaining laminations to Individual A during the November 1983 interviews. The Region II staff feels that further discussions with Individual A concerning laminations would be of no benefit because of Individual A's adamant position on this issue.

:: Individual A stated that he knew how bad the lamination problem was because he had asked the PT (Liquid Penetrant Test) man (a person Individual A could only identify by his first name) how the testing on the pipe stub was going. Individual A said that the PT man told him that he had never seen anything like it in his life, referring to the numerous indications resulting from the PT test. Individual A said that the PT testing was being done on the edge of the pipe stub in the containment wall.

The Region II staff located and interviewed an individual who was assigned to do Nondestructive Examination (NDE) at the Catawba site and this is the only NDE Technician with the same first name as that identified by Individual A. The NDE Technician stated that he has seen laminations in plate steel and pipe and that it was not an unusual occurrence. He said that he could not recall if he had

ever talked to Individual A about laminations, although he was employed as an NDE Technician during the time that Individual A was employed at the Catawba site. The NDE Technician also stated that he had conducted numerous PT tests on the stiffeners on the containment wall and he did not encounter any unusual problems with the welding on those stiffeners. The NDE Technician stated that he was the only NDE Technician with the first name identified by Individual A.

:: Individual A stated that although he did not actually work on getting the laminations out of the pipe stub, he knew that Construction Procedure 88 was used and he talked with several welders who worked on the removal of the laminations. He specifically identified one welder who he asked about the repair and who made comment that he had started out with 28 laminations and had it down to 25 laminations.

The welder identified by Individual A was interviewed and he stated that he was acquainted with Individual A. He said that he worked on a bellows assembly and that there was some problem with laminations which kept showing up during radiography of the weld between the pipe stub and the bellows assembly. He said that the repairs were made in accordance with procedures and that there was nothing especially unusual about the lamination problem. He said that the lamination problem was dealt with in a normal fashion and "no one made a big deal about the problem."

:: Individual A stated that the laminations were finally repaired and the bellows assembly was welded back on the pipe stub. He said that the weld showed defects during radiography and he was called to repair the weld. He said he cut out the weld metal and cleaned the joints to where they looked like new joints to be welded. The area was PTd and the laminations showed up again. He said he was instructed by his foreman to take the M4-A form (for repair) "up the hill" for resolution, and that they were going to use CP 88 again for the repair. He said that one of the people who had to sign off the resolution for repair was the ANI (Authorized Nuclear Inspector) whose word, according to Individual A, was law and whatever the ANI said was final. He said he went to the ANI office and contacted a particular ANI. Individual A said that he had heard that this individual was the top ANI, or the most knowledgeable person on the site. He said that he explained the problem to the ANI and that CP 88 was going to be used to do the repair. Individual A then described a scene during which the ANI became very agitated because the safety of the plant was being affected and he allegedly said that he may "have to shut the place down."

The Region II staff interviewed two ANIs who work for the Hartford Steam Boiler Inspection and Insurance Company. One of the ANIs has a name that is phonetically similar to that individual identified by Individual A. The ANI was

provided a copy of Individual A's affidavit for review of the section described above. He stated that he never talked to Individual A about such a problem and that he would not have been involved in the lamination issue as the NI system was handled by another inspector. The ANI who is responsible for the NI system was interviewed and he reviewed the section of Individual A's affidavit as described above. He stated that he did not know Individual A by name, but he did recall looking at some bellow assemblies welding which had some lamination problems. He said that the description of the incident by Individual A was greatly exaggerated and he would have never reacted to the situation in the manner described in the affidavit. He said that he considered the laminations to be a routine problem and he handled it as he would any routine occurrence. He said that the description of the incident and Individual A's concern over the laminations in the pipe is completely out of line. He further stated that there is no such thing as "rotten steel" (a term used by Individual A in his affidavit). He further stated that the lamination issue was referred to DPC construction engineering for resolution. He said that inasmuch as he did not hear anything further from construction engineering about the laminations, he considered the matter closed.

:: Individual A stated that he successfully repaired the welds on the bellows and they were radiographed and found to be free of defects. He stated that he was really concerned because the repairs still did not solve the problem of multiple laminations.

The Staff examined the issue of multiple laminations and reported its findings in Inspection Report Number 50-413/83-53. The concern of Individual A with regards to multiple laminations in the pipe stub is not warranted as it poses no issue with regards to safety.

:: Individual A stated that he noticed problems with the stiffeners on the containment wall. He said that he asked some of the people working on the stiffeners why some places had been ground so deeply beside the weld as if they were removing some sort of defect.

Several welders and inspectors who worked on the stiffeners on the steel containment wall were interviewed by the Staff and they stated generally that although there were some repairs made on the containment wall because of laminations, these repairs were made in accordance with approved procedures. These individuals also stated that in their opinion the work that was done on the stiffeners was good and they were not aware of any problems which would affect the integrity of the steel containment wall. In addition, a Region II Inspector inspected stiffeners selected at random on the fifth, sixth and seventh courses for weld size, appearance and workmanship. The welds examined were found to be consistent with design requirements.

:: Individual A stated that the workers had taken grinders and ground too much metal away from the weld. He said he was worried about how much metal in the containment

wall is laminated and that this could cause a safety problem. He said that if something blows in the plant, the pressure could rip open the wall at the lamination and radiation could possibly get out.

As stated above, the lamination issue was addressed by the Staff and the concerns of Individual A are not warranted. In addition, Inspection Report Numbers 50-413, 414/80-29 and 50-413, 414/80-36 deal with concerns related to the containment liner stiffeners wherein some of the stiffeners on the containment walls were alleged to have been "ground slick" from top to bottom even though the welds were not supposed to be ground in any way. The individual who stated the concern believed the grinding was being done because welders may have made the weld pass too wide or put in overlaps on verticle welds. The Region II staff inspector determined there was no prohibition for grinding containment liner plate to stiffener fillet welds. The inspector examined approximately 150 randomly selected stiffener fillet welds in the second and third courses of Unit 2 containment liner plate. During this inspection, the inspector noted five examples of mechanical undercut at the toe of fillet welds which cut into the liner plate base material in excess of the 1/32 inch permitted by the ASME Code. This was noted as an unresolved item 414/80-29-02: "Mechanical Undercut." These areas were subsequently inspected by DPC and found to be within the acceptable limits prescribed by CP64, "Repair of Arc Strikes and Minor Surface Repairs on Containment Plate." DPC actions in connection with the unresolved item were verified during a followup inspection as reported in Inspection Report Number 50-413, 414/80-36.



:: Individual A stated that he was convinced that the vendor who supplied the steel and Duke Power Company fell down on their responsibility to insure that the materials used in the construction of the plant were of a quality needed to build a safe nuclear facility. He stated that he often wondered if the department that was suppose to check the materials received on site, actually inspected the reactor containment plates.

As part of the construction inspection program the staff reviewed quality records including material certifications and receipt inspection records of selected containment plates to verify compliance with applicable code and specification requirements. These reviews identified no deficiencies.

:: Individual A stated that Duke Power Company Company fell short of its responsibilities when he pointed out a hole 3/8 inch deep in a vendor weld. He said he pointed it out to an inspector and his foreman and asked them how they could ignore something like that. He said that to the best of his knowledge, no one made an effort to file a report on it or to put an NCI on it, or to do anything about it. He stated that the vendor weld with the hole in it was located approximately in the fifth course in the annulus of Unit 2.



The Region II staff attempted to ascertain the specific vendor weld mentioned by Individual A (a vendor weld on approximately the fifth course). In discussions with responsible DPC engineering personnel, it was learned that after Individual A discussed this same matter at the ASLB hearing, DPC attempted to locate the weld in question. DPC had questioned Individual A's foreman who recalled that Individual A did point out a hole in a vendor weld on the fifth course. The foreman had discussed the matter with DPC's Technical Support Group and the weld was repaired in early 1981. The vendor weld in question was at elevation 571 and is part of the welds described in Weld Drawing CN-2FW-58. The particular weld was on a protective shroud support on a 20 inch bellows assembly, penetration 2M377 at azimuth 252 in Unit 2. When the weld was originally repaired in early 1981, an engineering decision was made that the weld would be repaired as miscellaneous steel and no documentation was required for the repair. When this matter was subsequently reviewed in October 1983, an engineering review revealed that the first repair (early 1981) should have been done under the ASME Code. As a result, NCI 17511 was issued to perform another repair of the same weld under proper documentation. The second repair was made per NCI 17511.

The DPC engineer who authorized the first repair of the vendor weld was subsequently interviewed by a member of the Region II staff. The engineer, who is no longer employed with DPC, stated he could not recall the specific weld in question, but he was generally aware that several repairs were made on various vendor welds associated with the containment penetrations.

Individual A's foreman at the time was interviewed by the Staff and he advised he recalled that Individual A did point out a small hole in a vendor weld on a bellows assembly being installed on the fifth course. He said Individual A was concerned about the small hole because it might show up during radiography of a weld he made which was in close proximity to the vendor weld. The foreman stated he brought the matter to the attention of a welding engineer who subsequently approved the repair as a miscellaneous steel repair. The foreman said he told Individual A that the small hole could be repaired and Individual A repaired the hole in the vendor weld. The foreman said two other welders completed the repair on the rest of the weld.

The Staff interviewed the Quality Control Inspector identified by Individual A. This inspector stated that he has been an inspector at Catawba for five years and prior to that he was a welder for two years. He stated that he did not recall talking to Individual A about holes in the vendor welds and he does not ever recall seeing holes in vendor welds that were 3/8 inch in diameter or depth.

He said that he has seen "ugly" welds from the vendor which would not have met the quality demanded by Duke Power Company of their welders and that he is aware that some vendor welds were found to be unacceptable and subsequently repaired within procedure. He stated that many "ugly" welds were inspected and found to be acceptable although they were not cosmetically perfect. He stated that he has inspected over 10,000 welds at the Catawba plant and he does not have any concern over any of the welds that he inspected. He added that he has welded on the containment plates of Unit 1 and he did not recall having to repair any laminations on the plates that he worked on. He stated that repairs were usually

completed before the plates were welded into position. He said that the containment walls were inspected 100 percent and he has no concerns about the integrity of the containment walls.

:: Individual A stated that to the best of his knowledge, CP 88 was created to "cover up" the problems. He said the procedure does nothing but disguise the problem and does not eliminate it. He said that he questioned the possibility that if there was one lamination four feet long, couldn't there be 50 that have not been found.

The Region II staff does not support Individual A's assertion that CP 88 was created to cover up problems. CP 88 is an approved construction procedure which is applicable for the repairs of containment plate laminations. Region II concludes that Individual A does not understand the technical aspects of laminar indications on the structural integrity of the plate material and on the overall integrity of the containment vessel.

These areas were addressed in Region II Inspection Report Number 50-413/83-53 and at the ASLB hearings. Laminations were also discussed in the Partial Initial Decision rendered by the ASLB.

:: Individual A stated that another "deep" concern he had was the inaccurate identification of defects by the x-ray department (Radiography). He said that he consistently

found defects that were in a location other than that indicated by the x-ray. He said that he was even more upset because he would find defects that x-ray had not even identified. He provided several examples, one of which was finding a patch of porosity the size of a silver dollar five inches away from where the x-ray had identified a half inch of lack of fusion. He said that the practice of the x-ray department to identify incorrect problems in the wrong location concerned him greatly.

The Staff reviewed radiography at the Catawba site and the results of that review are detailed in Inspection Report Number 50-413/84-03. In addition, the Staff interviewed numerous welders and found that they could not substantiate the concerns regarding radiography as related by Individual A. Several welders said they occasionally experienced a problem with radiography not being accurate in depicting the exact location of a defect; however, none could relate any instances where radiography was inaccurate to the extent alleged by Individual A. In addition, the radiography issue was also discussed extensively at the ASLB hearing.

:: Individual A related an illustrative example of the radiography concern which occurred in April 1982. He said that a welder came to him raising "holy dickens" about a weld. He said that the welder told him that he made a weld about a year and a half ago and that the weld had just been found

to be defective. Individual A said that the welder told him that the weld had been x-rayed and passed inspection when it was initially made. He said that the welder told him that a recent design change required that a valve be added into the line with the weld and when the pipe was cut, an inspector looked into the pipe and noticed that the weld had drop-through, unconsumed filler material, and a "bunch of things inside on the root pass that would have made the weld absolutely rejectable." Individual A said that the weld was "red-tagged" and that the welder was charged with "so many inches of bad weld" on his record. Individual A said that the weld had to be redone. He said this was one example where the x-ray department had approved something that later was found defective and had to be repaired.

The Region II staff interviewed the welder identified by Individual A as being involved in the incident described above. The welder was advised of the description of the incident as related by Individual A. The welder stated that the description by Individual A was inaccurate. He stated that the weld in question was located in the Unit 1 pipechase and that a section of the pipe had to be cut so that a flange could be installed. He said that after the cut out was made an inspector looked into the pipe and saw excessive penetration on the top inside of a weld down the pipe. He said that the inspector called the weld a bad weld. The welder said that when he heard this he became very upset because he felt the

weld was good and that the so called excessive penetration drop-through was actually borderline. The welder said that the weld was again x-rayed and found to be a good weld. He said that he was never charged with any bad weld for this incident and that Individual A was confused about the entire matter. The Staff reviewed the documentation for this weld (1-N18-13) which indicated that it was initially accepted on December 12, 1977. The weld was ultrasonically tested in 1982 and again accepted as a good weld. This matter was documented in NCI number 1986.

:: Individual A stated that in late Spring 1981, they had a batch of bad carbon TIG wire. He said this wire "sparkled like Fourth of July sparkler" when it was used in welding. He said that he would be welding with the wire and "it would sparkle and flake and get all over the tungsten." He said that good welding procedures required stopping at that point to identify the problem and if the deposited weld material had porosity it had to be removed. He said that they (the welders) had to sand the copper coating off the wire and they would find a seam in the wire that was filled with "trash and filth." He said that all of the welders on his crew delegated him to be the person to go up and present the bad wire stubs to the foreman and tell the foreman what was going on. He said that he did this and handed over the "little bunch of TIG wire from all the welders." He said that he told either the foreman or

lead man that each welder had given him two or three stubs and that he had a whole piece to show him. He said he sanded off the rod and "showed him how bad it was." Individual A stated that he told the foreman or leadman that somebody needed to know about the problem and that perhaps they needed to scrap the batch of wire. He said that either the foreman or the lead man carried the problem "up the hill" to the General Foreman. He said that the word came back that he was paid to weld and "to weld what (he) was given to weld with." He said that he was told that his crew was the only one that complained and that the message was very clear that they were to keep working and not worry about quality.

During an interview with the Region II staff, Individual A identified 15 welders who he had worked with who would be able to verify the problem with the TIG wire. All of these individuals were interviewed by the Staff. To the man, they stated that Individual A was never designated as a spokesman for the crew concerning the defective wire. They all acknowledged that during the general time frame of early 1981, there was some problem with a certain batch of TIG wire. None of the welders interviewed stated that the defective wire caused any problems with welding or the welds that were made with the TIG wire. Several welders stated that Individual A was the only welder who really complained about the problem. Generally, they stated that they did sand down the wire and if they found a defective rod they discarded it. None of the welders stated that they were



forced to use the defective wire. They generally agreed that only a small portion of the wire was defective and that management acted quickly on the problem. They were told to sand the wire and if they found defective material (one that contained a black discoloration) they were to discard the material. None of the welders stated that the defective wire caused a morale problem among the crew. One welder stated that he was assigned as Individual A's helper and he recalled that Individual A showed him a TIG welding wire that had some black scoring; however, when Individual A welded with the defective wire he did not notice anything unusual about the way it burned during welding. All of the individual welders interviewed stated that the problem lasted only for a short period of time.

The Staff interviewed a Weld Engineering technician who conducted tests with the defective TIG wire. The technician stated that he recalled that construction supervisors came to him and told him that some welders were experiencing problems with some TIG welding wire. He said that he was able to determine during his examination that the problem was caused by some scoring on some of the material which contained a black colored residue. He said that several tests were run using the worst case TIG wire they could find. His welding tests indicated that the material in question did not produce any slag or porosity. He said that the resolution to the problem was to instruct the welders to examine their TIG wire and if imperfections were found they were to discard the defective material. The technician stated that he did not think of keeping any documentation of the testing at the time as it did not seem to be a significant issue.

:: Individual A stated that there was a similar problem with the 3/32 inch 7018 stick rods. He said that there was a period as long as a month where every welder seemed to be having the same problems with the stick rods. He said they were picking up mainly porosity as a result of the flux cracking on the rod. He said that if the flux drops off while welding it creates porosity and after a welder had that problem so many times, he gets disgusted. Individual A said that he was concerned that the bad TIG wire and bad stick rods have left an undetermined number of bad welds at the site.

The Staff was not able to substantiate Individual A's concerns that bad welds resulted from the welders using defective TIG wire and stick rods. None of the welders interviewed stated that the defective welding rods caused them to make defective welds.

:: Individual A stated that he sensed that he was on the "list" of people who were to be gotten rid of because of the CP 88 and TIG wire incident.

The Region II staff was not able to substantiate the existence of a "list" which contained names of people who were to be terminated because of the CP 88 and TIG wire incident. Craftsmen and supervisors were interviewed and the Staff developed no indication that the licensee maintained any type of "list" targeting workers for termination of employment.

:: Individual A stated that assignment to the night shift or places like the cooling tower were used as punishment.

The Staff interviewed several supervisors and this statement could not be substantiated. Those interviewed denied that transfer to the night shift or the cooling tower was used as a means to punish employees. DPC has administrative procedures detailing the procedures and requirements for handling disciplinary problems. In addition, a review of Inspection Report Number 50-413, 414/81-02 for a Region II inspection conducted during the period January 26 - February 6, 1981, indicated that the site had a Construction Department Employee Recourse Procedure which expressed the belief that employee concerns should be addressed promptly and should receive thorough consideration without recrimination. The procedure directed employee relations specialists to assist in preparation of grievances as desired by employees and it also detailed steps and required response times in addressing employee concerns. Also, an informal procedure was described which provided for oral discussions through four steps to the project manager. A formal written procedure was also described with steps up through the president of DPC.

:: Individual A stated that there were serious problems that affected the quality of construction on the Catawba site. He said that one of these problems was that of foremen overriding the craft people in order to meet construction dealines.

The issue of foreman override was investigated extensively by the Region II staff. Every individual that was interviewed was questioned concerning this matter. The Staff was able to develop information that there was a problem with one particular foreman and this issue has been reviewed as a separate allegation. The Staff maintains the position that the issue of foreman override is not a pervasive problem at the Catawba site and numerous interviews with both craft personnel and supervisors substantiate this position. There are approximately 300 foremen at Catawba for a work force of approximately 3000 people. No information was developed to substantiate Individual A's concern that foreman override affected quality on a significant scale.

:: Individual A related another example involving a particular welder who allegedly lost his stencil when a line was cut and a weld that was made two years earlier was found to be defective. Individual A said the welder involved in this incident told him that he made the weld while on the night shift and the fitters had made a "sloppy" fit for the weld in that they did not put the proper bevel or proper land on the pipe. Individual A said the welder told him that he went to his foreman and told the foreman about the bad fit up. The foreman allegedly told the welder that because it was only a Class G weld that he should go ahead and make the weld. The welder told Individual A that when he started welding the gap opened on one end place and slammed together at the other.

The Region II staff interviewed the welder identified by Individual A as being involved in the above incident. The welder stated that the description of the incident by Individual A was inaccurate. The welder stated that he was working on the first shift at the time he made the weld and he did not have any problems with the fit up or with gap on the top or bottom of the weld. He said that the weld was questioned when the line was cut approximately three feet from the weld and when the line was examined the weld was found to have approximately 1/8 inch of penetration. He said that as a result of the excess penetration being found he was sent to retest on the TIG welding process by the General Foreman. The welder said he took the test, passed, and went back to work. He said that his stencil was not pulled as a result of the incident and he received no disciplinary action. The welder further stated that to the best of his knowledge he never talked to Individual A about the incident and he does not know where Individual A got his version of the incident.

:: Individual A stated that another example of the foreman override issue occurred when he was sent to do some work for another foreman. He said the crew had 12 inch lengths of stainless steel pipe that were to be joined to 90 degree couplings. He said he was told to work on the sections of pipe and that he would be given the paperwork later. Individual A said he refused to tack the pipe until he received the proper paperwork and his foreman criticized him for not doing the work as instructed.

The Staff interviewed the foreman identified by Individual A as telling him to do the work without the proper paperwork. The foreman denied that the incident occurred and he said he did not know on what Individual A had based his remarks.

:: Individual A stated that because workers could be given an "A" violation for "failure to follow instructions, either written or oral", workers were often in the difficult position of choosing between following the foreman's instructions or following proper procedures; "that is, violating the laws governing nuclear power plant construction or risk losing their jobs."

During the interviews conducted by the Staff, this concern was generally not substantiated. The Staff did develop information which indicated that one particular foreman may have engaged in activity which could be considered foreman override. This particular matter was pursued by the Region II staff as a separate allegation under Allegation Number RII-84-A-0012.

:: Individual A said that he and two other welders were "dumped" on a specific foreman's crew to "teach them a lesson or to try to get rid of them." He said they were given menial jobs to do while the rest of the crew was working on the cooling loops using a special welding process called the heavy wall TIG process.

The two welders identified by Individual A in this incident were interviewed by the Staff. One of the welders stated he did not feel he was "dumped" on that particular crew. He said he was doing menial work, but he felt the foreman was checking him out to see what kind of a worker he was on the job. He stated he is still on that crew and doing the same kind of work as the rest of the crew. The other welder was also interviewed and he stated that he never felt he was "dumped" anywhere. He said when he was assigned to another job it was because his work was finished. He added that he never felt he was being punished nor was he ever given any tasks which he felt were menial.

:: Individual A stated that he felt continually under pressure at the Catawba site. He stated he wanted to do high quality work and that he took an extreme amount of pride in the welding repairs he did at the site. He said his reputation as an excellent worker was very important to him. He stated that it became increasingly apparent to him that the Catawba management did not want high quality work and that they just wanted to get the plant finished as quickly as possible. He said that it seemed that every problem that was identified and every "red tag" that a welder got caused supervision "to get meaner and meaner with the work force or the workers." He said that because he earned a reputation as being a worker who identified problems and was not afraid to bring them to supervision, the pressure on him became intense. He said he felt as if the only reward he got for being a conscientious employee was "a kick in the teeth."



The overwhelming majority of workers interviewed by the Staff did not subscribe to Individual A's perception that Catawba management did not want high quality work and that they (the management) just wanted to get the plant finished as quickly as possible. In addition, no workers interviewed could substantiate that supervision was getting "meaner and meaner with the work force or worker." Many of the workers who were acquainted with Individual A said he was in fact a good welder, but many also commented that in their opinion he had undergone dramatic personality changes during his last few months at the work site. Many of these workers attributed this personality change to the personal problems he was experiencing which seemed to cause a deterioration of his work and interpersonal relationships. Many workers said they felt pressure but they were able to associate this pressure with the realities of a major construction project. Individual A refers to his perceived pressures in his affidavit citing several personal problems which he stated contributed to his feeling of being under pressure.

:: Individual A stated that when he returned to work in November 1982 following a grand mal seizure he was assigned to a welding crew and given "menial jobs" on ground level. He said he had volunteered to work in the pipe fabrication shop again, but he was not permitted to work there.

The Staff interviewed the foreman of the crew to which Individual A was assigned following his seizure. The foreman stated that his primary concern was Individual A's medical condition and he assigned him to work at a welding table

where he was welding pipe hangers and miscellaneous steel. The foreman said he gave this job to Individual A because he (Individual A) had a doctor's excuse restricting him from climbing. He said that Individual A fully understood why he was placed at a work table. The foreman stated that Individual A was not doing menial work, in fact, table work was always easy work and anyone on the crew would have wanted the job. The foreman said he was very sensitive about the jobs he gave to Individual A because of his medical problem. He said he did not want to put Individual A in any physical danger should he have another seizure. The foreman said that no one was trying to get Individual A off the job, in fact, everyone was "bending over backward" to help him. He said Individual A never understood this and never realized it. He said that normally a man with a work record such as Individual A would have been terminated, but Duke Power Company went out of their way to help him.

The Staff interviewed the foreman of the pipe fabrication shop concerning Individual A's volunteering to work there. The foreman stated that Individual A never worked for him and that he has never had any communication with Individual A.

:: Individual A stated that in early June 1983, his foreman sent him to be recertified for the TIG 200 welding process. Individual A said this recertification is required every 90 days. He said when he got to the office that maintains the certifications, he found his name on the list as being recertified on April 11, 1983. He said this was

impossible as he had not certified in either April or January 1983. He said that he had done no TIG welding since his seizure in November 1982. He said he believed someone falsified his certification and he was "90% sure it was done deliberately." He said he was concerned because the falsification of his certification indicated that perhaps others who were not certified or qualified to do TIG welding were also being recertified through this "mysterious pencil whipping." He said he reported the falsified certification to a QC inspector in Quality Control and asked if he (the QC inspector) could provide the name of the person who falsified his certification. He said the QC inspector could not give him the name.

The Staff reviewed Individual A's welding certifications which indicated he was certified in the TIG 200 process on the following dates: September 13, 1982; November 19, 1982; January 31, 1983; April 11, 1983; June 9, 1983; and August 16, 1983. These records indicate that a QC inspector certified Individual A on January 31, 1983 and April 11, 1983. This would indicate that the inspector observed Individual A use the TIG 200 process on those dates. The Staff interviewed the inspector who performed those certifications to ascertain the basis for the recertification. The inspector, who is no longer employed with DPC, stated he could not recall specifically the recertification of Individual A on January 31 or April 11, 1983. He stated that if the recertification was signed off by him then he either observed Individual A using the TIG 200 process

while welding a specific weld or he had Individual A weld a coupon using the process. He stated that if he signed off the recertification he observed Individual A do the required welding. When it was indicated to the former inspector that Individual A stated his recertification was falsified, the former inspector emphatically denied ever falsifying any recertification documents. He said that if the documentation states Individual A was recertified then he was observed using the process being certified. The Staff has had no indication from other interviews that welder recertification was a concern. In addition, the foreman for whom Individual A worked for following his seizure and subsequent restriction from climbing stated that Individual A worked at a ground level table welding miscellaneous steel using primarily stick welding. The foreman said there was a possibility that Individual A may also have used the TIG process on occasion while doing table work. The foreman also recalled that he had arranged for several of his crew to be tested for the TIG process at the work area, but he could not recall if Individual A was tested while he was on his crew during the period November 82 to his (Individual A) termination. The foreman stated that if Individual A had tested or used the TIG process during this time it could account for his recertifications in January and April 1983. Individual A's concern could not be substantiated.

:: Individual A stated that another example of the foreman override problem involved the fabrication of construction hangers. He said that construction hangers were not necessarily safety related; however, the welding procedures for working on construction hangers were specified and

depending on where they were installed, they may be safety related. Individual A stated that instead of the construction procedures being followed, he saw two foremen overriding their workers to get the construction hangers completed. He said that foremen and workers were writing "VI ok" or "Vis ok" (meaning they were visually inspected and acceptable) on the hangers with a black pen.

The Staff interviewed Individual A's foreman regarding this matter and he advised that construction hangers did not require quality assurance inspections, that visual inspections were made of the hangers and that he put the notation "VIS ok" on the construction hanger after he inspected them. He advised that this was in accordance with procedure for construction hangers. The Staff reviewed CP 315 "Inspection Requirements for Non-QA Condition Rigorous, Equipment, Constructions, and Field Routed Pipe Support/Restraints." Under the "Responsibility" section of this CP it is stated that "The Construction Manager is responsible for the inspection of all support/restraints covered by this procedure and for assuring that good workmanship practices are followed for each support." This guidance is executed by the administrative option of marking "VIS OK" on a hanger when the foreman completes his inspection of the hanger for workmanship quality.

:: Individual A provided another example of foreman override and related an incident wherein a welder was loaned to another foreman to do some work, "a Friday afternoon

special." Individual A said that the welding machine that the welder was using was defective and did not have enough power to push a 1/8 inch welding rod. He said the welder ran out of 3/32 inch welding rods and when he told the foreman he was going to get more 3/32 inch welding rods, the foreman told him to finish the job with 1/8 inch welding rods because he was the foreman and he was telling the welder to go ahead and use the 1/8 inch welding rods. Individual A said the welder used the 1/8 inch welding rods and made a mess of the job. Individual A said that over the weekend, someone found the bad work and the welder "was called on the carpet." Individual A said the welder tried to explain his side of the story but no one would listen. The welder's stencil was pulled and his certification was taken. The welder was sent to the weld test shop to retest. Individual A stated that in his opinion the foreman was to blame for the incident.

The Staff interviewed the welder involved in the incident described above. The welder stated the incident did not occur as related by Individual A. The welder stated that he started the job with 1/8 inch welding rods and finished the job using 1/8 inch welding rods although he knew the welding machine he was using did not have enough power to melt the rod. He said he knew he was not doing a good job and he intended to repair the weld on the following Monday. He said he left the hanger with the defective weld on the table in the shop. He said apparently

the General Foreman walked through the shop and saw the hanger on the table with the bad welding. The General Foreman took the hanger to the Superintendent's office and on Monday morning the welder said his foreman told him to take the hanger to the weld test shop and repair it. He said that initially he did think his supervisors were trying to get him in trouble, but he quickly realized they did the proper thing. He said he stayed in training for a week or two and passed his welding test. He said he should not have left the bad welding on the hanger and that his supervisors were only doing their job. He said he has never been pressured by his foremen and that he was never told to do any work out of procedure.

The Staff also interviewed the foreman who was involved in the above incident. He related essentially the same as the welder adding that he never told the welder in an authoritarian manner that he had to do what he told him to do.

:: Individual A stated there had been a problem with the inconsistency of Duke's welding symbols with the universal (American Welding Society) welding symbols. He said this resulted in constant confusion, particularly for new welders who were trying to read the instructions on field blue prints.

The Staff could not substantiate the concern that "constant confusion" resulted from inconsistent weld symbols. Interviews conducted with numerous welders did not reveal any problems with weld symbols. None of the welders interviewed



provided any information relating to inconsistencies in welding symbols. The Staff also determined that similar concerns have been raised and addressed previously. Region II Inspection Report Number 50-413, 414/80-16 reflects that the NRC Inspector observed that some of the welding symbols and letters that were used on the Class 1E electrical cable tray support drawing number CN-1915-05, revision 10, were not defined in either section 2 of the applicable AWS standard or in any other standards or specifications which were used at the site. The NRC inspector was informed that DPC QA audit group planned to further evaluate the nonstandard use of welding symbols as they relate to civil, mechanical and electrical installation activities. The NRC inspector identified this observation as a noncompliance. Failure to define weld symbols and letters on construction drawings was identified as an item of noncompliance (a deficiency) number 413, 414/80-16-01.

More recently, the Region II staff discussed the concern with DPC's cognizant design engineering personnel to determine the scope of the problem and ascertain what actions had been taken to evaluate and correct any problems related to the concern. The licensee representatives stated that the problem primarily involved partial penetration welds on structural steel supports and cable tray supports.

Through these discussions the Staff determined that although the weld symbols used on design drawings generally complied with the requirements of AWS A2.4 there were instances where certain symbols deviated from the accepted nomenclature. The licensee attributed this error in part to the inexperience of the engineer who worked on these drawings. The licensee provided the Staff with

copies of memoranda generated by design engineering for review. These documents reemphasized DPC's commitments to ASME, AWS and AISC codes and/or standards, described the establishment of training seminars on weld symbol standardization and described the training course outline and the dates when they took place. In addition, the Staff reviewed copies of engineering drawings indicating revisions to correct and standardize weld symbol nomenclature. Based on this work effort the Staff has concluded that the licensee has established and implemented adequate measures to correct the discrepancies in weld symbols used and preclude the recurrence of this problem. Therefore additional work effort in this area is not justified at this time.

:: Individual A stated that supervision was determined to get rid of him.

The Staff developed no information to indicate that management was trying to get rid of Individual A. In fact, interviews indicate that management did try to help Individual A. A U.S. Department of Labor (DOL) investigation (initiated at the request of Individual A) did not verify that discrimination was a factor in the actions comprising Individual A's complaint that termination on October 30, 1983, was a direct result of his exposing his concerns to the NRC on October 14, 1983, and that his suspension initiated on the same day resulted from his rejection of the Employee Relations Department's "institutionalized violation" of his rights. DOL concluded that his allegations are unprovable. In addition, the DOL investigation did not substantiate that he was, in any way, harassed or intimidated by his supervisor or DPC.

INDIVIDUAL B (RII-84-A-0004)

Individual B was initially interviewed by members of the Region II staff on October 25, 1983, at Rock Hill, SC. In addition to the Staff, Individual B requested the presence of two other individuals (associated with GAP) at the interview. Individual B stated his concerns as follows: 1) during a class conducted to train QC welding inspectors, the members of the class were given copies of the weekly test with the answers; 2) welding associated with the stiffeners on the containment vessel wall had numerous problems such as roll-overs, slag, voids, undercuts, lack of fusion and bad tack welds; 3) a 30 inch pipe which passed through a sleeve had a flange which was removed and not properly reinstalled; 4) improper repair of laminations in containment wall; 5) violation of preheat requirements; and, 6) prenotification of NRC inspections. In addition to information provided during the above interview, representatives of Individual B also later provided a copy of an affidavit dated January 26, 1984, in which he stated additional details related to his concerns.

A detailed review of the concerns expressed by Individual B and the findings of the Region II staff associated with those concerns are set forth as follows:

:: Individual B stated that in mid-October 1977, he entered the QC Welding Inspector Class with 11 other individuals from the plant. He said three of these individuals were welders and eight individuals were mechanical inspectors. He declined to identify these individuals by name, stating

that a review of the class roster would identify all the individuals in the class. Individual B said that the class lasted approximately six to eight weeks. He said that during the first week of class, they were given instructions concerning the processing of metals and as the weeks went on they studied metallurgical processes and welding defects. He said that at the end of each week of class they were given a written test covering the material presented in class during the week. Individual B said that everyone did poorly on the first test which involved basic metallurgical material. Individual B stated that on the Thursday before their second test, the class returned from lunch and as he was going through his class notebook he found a copy of an examination with the answers filled in. He said he asked several other individuals in the class if they also had a copy of the examination and when they looked through their note books they found that they also had a copy of the examination. Individual B said that everyone in the class had a copy of the examination. He said that the next day they were tested and it was the same test as they found in their notebooks. He stated that this continued for the remaining weekly examinations given during the course. Individual B said that he did not know who put the copies of the examinations in the class note books, but he assumed it was one of the

instructors. He said that inasmuch as everyone was getting copies of the tests, they did very well in the class. He said that they needed at least a cumulative average of 80 percent to pass the course and overall the class far exceeded the minimum required grade. Individual B said the tests usually contained 30 to 40 questions and he assumed that all the previous classes also received this help because he was occasionally asked by other certified QC inspectors if he was getting any help. He said that judging from the way they asked, it appeared they knew the class was getting the tests and answers. Individual B stated that no one in the class ever questioned this practice assuming it was a matter of routine. He said that had it not been for the tests and answers that several of the students in his class would not have completed the course. Individual B said that at the end of the course they were also given an oral examination. He said for this examination the first student came out and told the rest of the students the questions and answers. Individual B said he does not know who provided the copies of the examinations and he estimated that half the class would have failed had it not been for the copies of the examinations that were provided. He said that although he felt qualified to be an inspector based on his extensive welding knowledge, he has doubts about the other students who did not have a welding background.

The Region II Staff did not address this issue; however, the Regional Administrator requested the Office of Investigation (OI), Region II Field Office, to conduct an investigation into this matter. The OI investigation has been completed and OI Report Number 2-83-039 has been provided to Region II. A Staff review of the OI report revealed that the allegation of cheating was not substantiated.

:: Individual B stated that sometime in January 1978 he was inspecting the stiffeners on the reactor containment walls. He said his inspection procedure involved checking the area where the weld would be made for cleanliness. He explained that stiffeners were strips of steel measuring on the average six to eight feet in length and four to six inches in width. These strips were welded to the containment vessel wall to add strength to the wall. He said that the weld area was supposed to be cleaned out to a half inch on each side of the weld area and that the stiffener was to fit flush against the wall. He said his initial inspection activity involved examination of the fit up prior to the final weld being made around the stiffener. He said he found some problems with the fit up tack welds which included slag and voids at the tack weld. He said that initially he tried to help the welders clean up the slag, but after two or three days he noticed the fit ups were getting worse as he found rollovers, bad undercuts, lack of



fusion, and excessive tack welds. He said he then decided to write a nonconformance report because the problem was continuing. He said that in addition to the nonconforming item (NCI) report he also placed red tags on all the stiffeners to stop additional work from being done. He said he took the NCI to his supervisor who reviewed it and told him (Individual B) to take the NCI to the Quality Assurance (QA) Manager. The QA manager reviewed the NCI and told Individual B that it should not have been written because there could be gaps and slag on the stiffeners. Individual B said he explained to the QA Manager that there was more than a small problem with the stiffeners and he felt the problems should be documented. Individual B said that the QA Manager had a habit of making inspectors feel intimidated every time they took an NCI to him for review. Individual B said he often felt the QA Manager was trying to intimidate and harass him because he was trying to do his job. Individual B said that the QA Manager finally signed the NCI on the stiffeners and Individual B took it to Document Control to log it in the QA record. Individual B said that within an hour after he logged the NCI into QA, a welding engineer came to containment and told him to remove the red tags and let the welders continue with their work. Individual B said the welding engineer then instructed him to go to QA and clear the NCI.



Individual B said he removed the red tags and went to QA and cleared the NCI by signing it off with his own signature which in effect meant that the NCI was cleared by him when it was really not. He said that the welding engineer should have been the one to clear the NCI from the QA log. Individual B said that he had frequent problems with the QA Manager. The QA Manager's behavior, wisecracks, threatening and intimidating comments, and general demeanor was considered by all the welding inspectors to be something like the "Gestapo" that was really running the plant. Individual B said that the QA Manager always gave the inspectors a hard time about their NCIs and on one occasion he told Individual B that number two reactor was not going to be like number one reactor. Individual B said the QA Manager told him it took a long time to clear NCIs on number one and that it was not going to take that long for number two, even if he had to get different inspectors to do it. Individual B said he took this statement to mean that the QA manager was going to closely review every NCI he signed to see if it was really valid. Individual B estimated that he took approximately five NCIs to the QA Manager for approval. Of these five, he was able to get three of them approved and logged into QA. He said, however, that after some of those were logged he was told they were incorrect or not justified and he was instructed

to go back to QA to remove them from the log. He said he cleared the NCIs from the QA log based on verbal instructions from the welding engineers. He said that in effect when he signed the log clearing the NCI, his signature indicated that he resolved the problem which in fact he did not. He said that the proper procedure would have been for the welding engineer to sign the log clearing the NCI.

Individual B stated in his affidavit of January 26, 1984, that during the time he was a Quality Control Inspector, the log for logging in NCIs was kept in the main office. He said for every NCI that he wrote up, or attempted to write up, the item was fixed by a change in engineering judgement, not repair. He said that although he did not remember the name of the specific welding engineer who often voided the identified conditions, it was often the same person. He said that sometimes the welding engineer would go over to the reactor and say, "Take the tags off and let them go back to work," referring to the craft. Individual B stated that other times, the welding engineer just tore the tags off himself and cleared out forms, in fact, signed the logs off where QC inspectors should have signed them off. Individual B said he does not know of any procedure which directed welding engineers to perform that function or give them the authority to clear out nonconforming conditions.

The Staff interviewed several welders who worked on the welding of the stiffeners on the containment. None of the welders could substantiate the concerns of Individual B with regard to the poor workmanship to the welding of the stiffeners. A welding inspector was interviewed and he stated that he conducted numerous inspections on the stiffeners and he did not find any unusual problems with the welding. Individual B's supervisor was interviewed and he stated that all of the problems he was aware of have been properly corrected and repaired. Another welder stated that he worked on the vertical stiffeners on the containment wall and he did not have any problems with the welding. He said he did not have to do a lot of grinding and that the welding was very simple. He said he could not recall that porosity was a major problem.

In addition, Individual B had previously reported his concerns regarding the stiffeners wherein he stated that stiffeners on the containment walls are "ground slick" from top to bottom even though the welds are not supposed to be ground in any way. He stated that he believed the grinding was being done because the welders may make the root pass too wide or put in overlaps on a vertical weld (roll over). He also stated that although the welds are tested, the tests cannot determine if the welds are adequate. A Region II welding inspector determined that there is no prohibition for grinding containment plate liner plate to stiffener fillet welds. The inspector examined approximately 150 randomly selected containment plates to stiffener fillet welds in the second and third courses of Unit 2 containment liner plate and noted no examples where weld width exceeded that permitted by the applicable Welding Procedure Specification.

The Region II inspector did note five examples of mechanical undercut at the toe of stiffener to plate fillet welds in the liner plate base material in excess of the 1/32 inch permitted by ASME Code. These examples were evaluated by DPC and found to be acceptable. A Region II inspector reviewed the DPC evaluation and concurred. This matter was reported in Inspection Reports 50-413, 414/80-29 and 50-413, 414/80-36.

The welding engineer identified by Individual B as removing the red tags from the stiffeners and instructing Individual B to clear the NCI from the QA log was interviewed by the Staff and he stated that he recalled the incident with Individual B and he said that he never verbally told Individual B to remove the tags or to go to QA to clear the QA NCI logbook. The welding engineer stated that some slag was permitted in the area behind the stiffeners. He said that welders were required to remove as much of the slag as practicable. He said there was a gap tolerance of zero to 1/16 inch between the stiffener and containment liner plates. He said that because fillet welds were used some slag could remain in the gap without affecting the fillet weld. He also said that gaps larger than 1/16 inch were permitted with proper evaluation and documentation. In these cases, the size of the fillet weld would be increased by the amount the gap exceeded 1/16 inch. With reference to giving Individual B verbal instructions, the welding engineer stated that he did not give verbal instructions to Individual B, but that his instructions would have been noted in the action step on the NCI document. He said he may have noted on the NCI that the red tags should be removed and that Individual B would have had to respond to the required action noted on the NCI.

The Staff reviewed a copy of the Q1A (NCI) log sheets made available by the licensee. Volume I contains the first 8000 NCIs and covers the period July 16, 1974 to March 20, 1980. Particular attention was given to the review of the period from September 1977 to June 1978 which covered the time that Individual B was an inspector. Only two NCIs were found which had been entered by Individual B and these were issued on February 10 and February 28, 1978, respectively. There was no indication of any NCIs being voided or crossed out by Individual B. The Staff also concurs with the explanation regarding slag behind the stiffeners as stated in the above interview with the DPC welding engineer.

The Staff interviewed the QA Manager identified by Individual B and he stated that there was never any animosity or harsh atmosphere in his dealings with Individual B. He stated that to the best of his recollection, Individual B never became upset over any NCIs that were not placed in the NCI log, nor was Individual B ever adamant about such NCIs. The QA Manager stated that Individual B was never made to clear any NCIs from the QA log book. He stated that the only time he could recall any problems with Individual B was in the matter of his termination.

The Staff also visually inspected several stiffeners on both containments and no defects were noted during this inspection. The Staff concludes that Individual B's concerns relative to improper welding of the stiffeners is unwarranted.

Relative to concerns about harassment, OI has conducted an investigation into harassment at the site, although not prompted by the allegers concerns. This investigation generally involved the alleged harassment and intimidation of QC welding inspectors. The results of that investigation were reported in OI report - number 2-83-038 which was reviewed by the Staff. That report concluded that although there were examples of alleged harassment and intimidation, there was no information developed which indicated that any inspector accepted unsatisfactory work. None of the individuals interviewed during that investigation stated that they were aware of defective workmanship that was not reported, documented, reviewed and resolved in some fashion. In addition, the Staff review of the OI investigation found that it was consistent with issues raised during the ASLB safety hearing and found that the investigation provided no information to indicate that the alleged harassment and intimidation resulted in the improper inspection of work. In one case the Staff is taking enforcement action because of findings made during the ASLB hearing. In this particular incident intimidation was found to have occurred though no improper inspection of work resulted. In addition, DPC has initiated policies and procedures to deal with harassment and intimidation concerns.

:: Individual B advised that there was a 30 inch pipe which came off the Auxiliary Building on the number two reactor side. He said that a pipe passed through a sleeve which was embedded in a concrete wall at the fourth level. He said there was a problem with the concrete settling around the pipe sleeve and that the concrete did not completely



settle behind a flange on the pipe sleeve. Individual B stated that when the problem was detected the flange was removed and the holes in the concrete were chipped and patched. He said that when the workers tried to put the flange back on the pipe sleeve they could only weld the flange from the front because it was flush against the concrete wall. Individual B said the construction drawings called for the flange to be welded on the front and back. He said he wrote an NCI because there were no welds on the back side of the flange and when he took the NCI to the QA Manager he refused to sign it. Individual B said this incident occurred in February 1978.

The Staff reviewed this matter with the licensee. The licensee advised that the pipe flange that Individual B was referring to was actually a feedwater penetration sleeve near azimuth 180 degrees in the Reactor Building. Originally this was a 51 inch diameter sleeve going through the concrete containment from the Reactor Building to the Auxiliary Building. Unit 2 feedwater pipes pass through the 51 inch sleeve. A problem was discovered with this sleeve in January 1978 when the sleeve opening was found to be six inches too high and a decision was made to lower the sleeve opening six inches. The pipe sleeve was cut in the center along its length and the lower half of the sleeve was removed. The concrete in the lower half of the opening was chipped out to permit the lower portion of the sleeve to be dropped six inches. Two six inch plates were welded to each side of the upper sleeve and the bottom of the sleeve was put back and



welded to the bottom of the six inch plates. Type D grout was then pumped in under the bottom portion of the sleeve. The grout was fluid enough to fill all voids and was pumped in under pressure. Welding on the sleeves was done using a single V open butt weld with the TIG process which did not require the back side or outside of the sleeve to be welded. The weld was nondestructively examined and found acceptable. The Staff found the modification to be well documented and the welds in question are depicted in Drawing Number CN-1093-14. The licensee advised that although this was not a 30 inch pipe as described by Individual B, the location, timeframe and basic problem correspond to the concern provided by Individual B. The Staff sees no further action to be warranted regarding this concern.

:: Individual B stated that in early February 1978 he was inspecting the containment wall on the second level where a walkway was being installed. He said he observed that there were some laminations in the steel plate which had been detected during a magnetic particle test (MT). He said the area was approximately two inches square near a lug which was used to lower the steel containment wall into place. He said the small area of lamination was subsequently ground out and filled with weld metal. He stated he prepared an NCI because the ground out area was deeper than allowed by the specifications and when he took the NCI to the QA Manager he was not permitted to file the NCI. He said he threw the NCI away.

The Staff maintains its position concerning laminations as reported in Inspection Report Number 50-413/83-53 with regard to this concern. Information provided by Individual B in regard to this concern was limited.

In discussing this matter with the licensee, the Technical Support Welding Group Leader advised the Staff that minor surface defects such as laminar indications were to be documented on a form M19E, Minor Surface Defect Record, which is part of the M19 procedure. Individual B used this procedure to document deficiencies on two occasions, December 15, 1977 and April 3, 1978. The Welding Group Leader stated that this procedure would have been appropriate for the situation described by Individual B instead of an NCI.

:: Individual B stated that in early 1978 a large ring was being welded in an opening for the personnel air lock (number 205-206) on the number two reactor. The specifications called for the weld area to be preheated. Individual B said the welders were not preheating the surface and as a result the tack welds were cracking. He said that when QC inspectors were on the scene the welders would preheat the welding surface, but when QC inspectors were not there inspecting, the welders would not preheat. He said he knew this because when he came back into the area he could see they were not preheating as required. He estimated that a major portion of the tack welds were not preheated. He said he wrote an NCI and when he took it to

the QA Manager for approval, the QA Manager asked him a lot of questions which he felt bordered on intimidation; however, he signed it and Individual B then took and logged it in at Document Control. Individual B estimated it was approximately ten minutes later when the welding engineer came to see him and told Individual B that he had researched the problem and found that the welders could weld at a minimum temperature of 40 degrees and that they did not have to preheat. He said the welding engineer then instructed him to go to QA and clear the NCI from the log. He said this was another example of this having to sign off and clear an NCI based on the instructions of another individual.

The Staff has previously technically examined the preheat issue raised by Individual B in this incident and reported the results of the inspection in Inspection Report 50-413, 414/80-29. Individual B's supervisor at the time was interviewed by the Staff and he stated he could not specifically recall the preheat issue raised by Individual B. He said he recalled some preheat problems with the airlocks on Unit 1 and 2 where there were tack welds that were cracking because of the lack of preheat or because tack welds that were too small. He said that all the problems he was aware of have been properly repaired. Individual B's former supervisor further stated that in his opinion, the QA Manager did discourage the inspectors from writing NCIs. He said that the inspection program directed that deficiencies be reported, but there was no way that this could be done at the time other than through the Quality Inspection

program. He said that part of the problem was with the procedure itself which stated that if there was a violation of procedure an NCI would be written. He said that the procedures at that time did not offer an alternative for reporting discrepancies during the fabrication period.

Individual B's supervisor stated that there was no clear guidance as to what precisely constituted an NCI so all deficiencies were consequently reported via the NCI. He said that at the time there was no R2 procedure and that the only option available to document a deficiency was the NCI or the accept/reject portion of the Q1A form, which was discouraged. He said that many of the issues discussed by Individual B would be appropriately documented today under the R2 system which is currently used at the construction site.

The Staff found that one of the two NCIs written by Individual B involved welding preheat on personnel airlocks PAL 205/206 which Individual B issued on February 10, 1978. This NCI, number 2669, was closed on February 16, 1978. The resolution of this NCI was examined by an NRC inspector during the period October 14 - 17, 1980, and determined to be consistent with ASME Code requirements.

During the Staff interview with Individual B, he related that there were several instances when he was notified in advance that an inspector would be looking at a particular weld. He said that he would find process control sheets in his work message box which were asterisked at a certain point which indicated a hold point for an inspector. He said that sometimes these inspectors were insurance inspectors (Authorized Nuclear Inspectors). He said he would also receive notes

in his work message box that said an inspector would be looking at some welds. He stated that he never had information that an NRC inspector would be coming to examine a specific weld, although he was verbally told on occasion that NRC inspectors would be at the site. He said when he was told that NRC inspectors were coming he would usually see them that day or the next day. He said he never received information in advance of two or three days. He said for example that he would be told on Monday that NRC would be on site and there he would see them on the following Wednesday. It was explained to Individual B that NRC inspectors usually conduct unannounced inspections, that is, the licensee does not know in advance that an NRC inspector is scheduled to arrive at the site for an inspection. An NRC inspector usually begins his routine unannounced inspections on a Monday and the inspector is required to conduct an entrance interview with plant management to announce his inspection and discuss the general areas he intends to inspect. Based on discussions during the entrance interview, plant management will generally make arrangements to provide whatever assistance the inspector requests. It has been the Staff's experience that word quickly spreads that NRC is conducting an inspection. This would account for Individual B being told that NRC inspectors would be conducting inspections.

INDIVIDUAL C (KI-84-A-0003)

Individual C was initially interviewed by members of the Region II staff on February 1, 1984. This interview was conducted in the presence of a GAP representative at the request of Individual C. Individual C currently remains under the protective order of the ASLB.

Individual C stated that he began his employment at the Catawba project in [REDACTED] when he was hired as a [REDACTED]. He said he worked on the installation of [REDACTED] in the Auxiliary Building, the installation of Class B stainless and carbon steel process pipe in the [REDACTED], and on the installation of [REDACTED] in the Unit 2 pipe chase and annulus. He said he also worked on the installation of plastic, fiberglass, cast iron and steel pipe in the vicinity of the [REDACTED]. He said he was terminated from employment in [REDACTED].

Individual C said when he began working at the Catawba project he was put on work involving the installation of [REDACTED]. He said that this was basically [REDACTED] but he was not being [REDACTED]. He said that after approximately six months of working on [REDACTED] he was moved to the Unit 1 pipe chase [REDACTED] where he remained for approximately [REDACTED]. He said he was then transferred to the [REDACTED] shift as a [REDACTED] and worked in the Unit 1 annulus. He said he did not want to go



to the [REDACTED], but he agreed to go when he was told that he would only have to [REDACTED]. He said he remained [REDACTED] because of a [REDACTED] which occurred while he was [REDACTED]. He said the [REDACTED] required workers [REDACTED] the [REDACTED] areas. He said that when his [REDACTED] were completed he was transferred back to [REDACTED] and worked in the [REDACTED]. He said that in the [REDACTED] he [REDACTED] [REDACTED]. He said he [REDACTED] was working in the [REDACTED]. He said that after [REDACTED] he was [REDACTED] [REDACTED]. Individual C said he worked on [REDACTED] for approximately [REDACTED].

Individual C related the following concerns during the interview with the Region II staff:

:: Individual C stated that during a six month period prior to [REDACTED] he worked in the [REDACTED] installing [REDACTED] containment spray system sprinkler heads for testing. He said that the pipefitter [REDACTED] told him that a weld fit up was cut out of the system without the proper paperwork. Individual C said that although



he did not witness the cut out he did observe four or five pipefitters working on the pipe for four or five hours in the area the improper cut out was supposed to have been made. Individual C said he thought the weld was one of the last permanent welds made prior to the system being flushed. He said that the pipefitter also told him that the welders wanted the QC inspectors kept away from the area while they worked on the pipe. He could not provide any further specific information.

The Staff was unable to substantiate that a weld fit up was cut out of the containment spray system without proper paperwork. The pipefitter identified by Individual C is no longer employed by DPC and a certified letter was sent to his last known address requesting him to contact the NRC. This individual did subsequently call a member of the Staff and he was interviewed telephonically. The individual was asked if he was aware of any repairs made on the containment spray system without proper documentation. He stated that he was not aware of any repairs made on the system without proper documentation. Interviews were conducted by the Staff with numerous workers who worked on the containment spray system as welders and pipefitters. None of those interviewed could provide any first hand information indicating that any welds were cut out without proper documentation. One individual related an incident which he said occurred in either September 1979 or September 1980 when he overheard an argument between a pipefitter and a lead man which resulted when the lead man instructed the pipefitter to cut out a weld on a section of the containment spray system. He

said the pipefitter refused to do the work because the lead man did not have the proper paperwork for the job. He said the lead man told the pipefitter that he would get the paperwork and based on that statement the pipefitter went ahead and cut out the weld. The individual said he did not know if the lead man obtained the paperwork. He said he was aware that the lead man informed the foreman of the incident and the foreman was extremely upset over the incident. He said that the weld was subsequently repaired and radiographed and signed off by QC inspectors. Another pipefitter stated during his interview that his lead man had told him to do some work without the proper paperwork. This individual said he refused to do the work and after explaining to the lead man why the work should not be done he did not have to do it. He said the lead man was new to the job and did not have much experience in ASME class work.

Several of the pipefitters interviewed asked the name of the individual who made the allegations concerning the containment spray system. Although the name was not provided in response to those questions, they stated that if in fact it was Individual C they would place no credence in anything that individual said concerning pipefitting. One individual stated that Individual C told him that should he ever be fired from the job he would "sue the SOBs." He said that Individual C had a bad attitude about almost everything going on at the construction site.

:: Individual C said that sometime during the Spring of 1981, approximately 5,000 to 10,000 gallons of sulfuric acid leaked out of a pipe into the ground. He said the pipe



The Staff contacted licensee representatives who were familiar with the acid spill incident described above. The licensee representatives advised that in July 1981 a two inch polypropylene lined carbon steel pipe between the water chemistry building and waste water treatment area developed a leak. Sulphuric acid (93%) was being pumped through the line to the waste water treatment pond when the leak was discovered. Approximately 3,000 gallons of sulphuric acid leaked from the pipe before the leak was located. The leak resulted from an overtorqued flange on the pipe. The licensee reported the spill to the South Carolina Department of Health and Environmental Control and to the National Response Center.

The Staff finds the above examples identified by Individual C to be illustrative of temporary and general construction activity associated with water and sewage treatment facilities and that they do not represent the engineering, construction and inspection activity associated with nuclear safety related systems. The Staff did not examine the above issues in greater depth as these issues are not within the scope of safety related concerns.

:: Individual C related an incident that occurred in the Unit ■ pipe chase while ■ working a schedule 80 three inch stainless steel line. Individual C stated they had to cut out a weld in the line and when they cut the pipe it sprung about a foot and a half away from the wall. He described the location of this incident as near the access point to the pipe chase on the diesel

generator side. He said the pipe was on the containment side of the pipe chase about five feet off the floor, close to the walk area. He said the pipe was a radius pipe.

The Staff interviewed the pipefitter identified by [REDACTED]. He stated that he has cut a lot of pipe in the Unit 1 pipe chase and he has never had any pipe spring on him. He further added that he would not hesitate to cut any pipe that he installed in the pipe chase. The pipefitter asked who made such an allegation and he was advised that that information could not be disclosed. He then said that if it was [REDACTED] he would give no credence to anything the man said. He added that [REDACTED] what made the matter worse, was that [REDACTED] did not know what he was talking about. The pipefitter said that [REDACTED] was not a pipefitter and knew nothing about pipefitting.

:: Individual C stated he was [REDACTED] grind and prepare a section of pipe for a weld. He stated that he used two come-alongs to get the pipe lined up for the welding. He said he recalled that the pipe was mounted on temporary hangers, but he could not recall how the come-alongs were attached to hold the pipe. He said the pipe was tack welded and the come alongs were left in place. He said he was not there when the pipe was welded and when he returned the next day he removed the come alongs from the pipe. He said he could not provide the exact location of the pipe.

The Staff interviewed [REDACTED]

[REDACTED] The [REDACTED] stated the incident was probably related to an incident where he had [REDACTED] hold a small section of pipe while he was trying to prefit the pipe. He said that [REDACTED] dropped the pipe and he [REDACTED] put a come along on the pipe to hold it in position. He said no excessive force was used to fit up the pipe and he had never seen any excessive force used to fit up pipe during the three and a half years he worked in the pipe chase.

:: Individual C stated that he worked with a pipefitter to install an eight inch vertical run on the containment spray system. He said this line was part of the system that ran from the ground to the top of the dome. He said they had a 16 foot section of pipe in the vertical run that was off line by three to three and a half feet and they used a come along to pull the pipe into line. He said this misalignment apparently occurred when another pipefitter (who Individual C could not identify) who initially installed the section of pipe was not concerned about lining up the pipe with the top connection. He said this incident occurred [REDACTED]

The Staff interviewed the pipefitter identified by Individual C and he stated that he has been a pipefitter for 20 years and he seriously doubted if anyone would pull a pipe over the distance of three to three and a half feet. He added



that in his opinion it would be impossible to do. He said he has never seen any cold springing and that if he had problems with fitting a section of pipe he would report it to his foreman. He said he did experience some problems with fitting and the problems were properly resolved by engineering.

The Staff interviewed the individual who was the pipefitter foreman on the containment spray piping installation. He said he worked on the entire system from the installation of the first pipe to the final flush. He stated he was confident the system would function as required and that the work that went into the system was of the best quality. He explained that when pipe was installed it was first put up in temporary hangers which were positioned every few feet along the pipe. He said that the pipe is firmly fastened in the temporary hangers and it would be impossible to forcefully pull a section of pipe three feet and force fit it. He said that often times rigging would be left on the pipe during fit up, but this was normal practice. He stated that all rigging was removed prior to inspection as the inspectors would not inspect the fitup if the rigging was in place.

The Staff interviewed a pipefitter who stated that the majority of his work during 1980 and 1981 was on the risers of the containment spray system in Unit [REDACTED]. He said that during his work on the risers he never saw any excessive force used to pull pipe into position for fit up. He stated that he never saw any pipe pulled a distance of three feet or more adding that it would be virtually impossible because the pipe was hung in temporary hangers and to pull a pipe that distance would certainly bend the pipe.



Of the 15 pipefitters who were interviewed, none stated they were aware of excessive force used to force fit or stress fit pipe. The Staff could not substantiate this concern.

:: Individual C stated that force was used on two or three other pieces of pipe that he worked on but he said that he could not recall any specifics as to location, time, or who he was working with at the time. In addition, he stated that he knew that stress fitting pipe was also done by other crews as well.

The Staff could not evaluate this concern due to the lack of specifics. Based on the interviews conducted with the 15 other pipefitters who stated that they had never seen excessive force used on pipe to stress fit or force fit, the use of force in fitting pipe as stated by Individual C could not be substantiated.

:: Individual C stated that he had many instances of pipe being out-of-round when he was working on the installation of check and gate valves on the vertical risers going up the wall to penetrations at the top of the containment. He said that he often had to grind the pipe to get it into round and that he did not use any special measuring tools such as calipers or micrometers to determine if he ground out too much metal. He said that he judged the amount of grinding "by eye", that is, he estimated that the proper

amount of metal was ground out. He stated that his concern was that no one was concerned about minimum wall thickness and that he did not have access to measuring devices to gauge if he did the proper amount of grinding. He said the problem that resulted was reducing the minimum thickness of the wall of the pipe. He said he was never informed he violated minimum wall thickness and he does not know if in fact his work was checked to determine if he did violate minimum wall thickness.

During the interviews conducted with the 15 pipefitters and foremen, the question of out-of-round pipe was discussed. None of the pipefitters stated that they had any problems with out-of-roundness on pipe. Several mentioned that much of the pipe that went into the containment spray system did have an oval shape simply because it was radius pipe and took on a degree of ovality when it was put through the mandril to round the length of pipe. Several of the pipefitters stated that wall thickness was always checked by the QC inspectors when they check the fit up of the pipe. Several of the pipefitters stated that measuring tools such as micrometers and calipers were available on the job and that they had easy access to such devices although they did not normally carry them around with them. They stated that wall thickness could be corrected by grinding as this was an authorized procedure used to correct wall thickness variations between ends of pipe that were being fit up. A former foreman who worked on the entire containment spray system in Unit 1 stated that out-of-round was not a serious problem on the pipe used for the containment spray system. He stated

that if the ends of pipe being fitted had the same degree of ovality there was not a problem with the fit as the ends of pipe matched. He stated that sections of pipe had to be cut out of the system when radiography showed that the pipe did not meet the minimum wall thickness requirements. He added that much of the system was also ultrasonically tested and that this verified wall thickness. The former foreman stated that the QC inspectors who worked on the containment spray system were very exacting on their inspections and they watched the job very closely. A pipefitter who spent considerable time working on the Unit [REDACTED] containment spray system stated that ovality in pipe was not a serious problem and he corrected some ovality in pipe which was permitted by procedure. He said that at times there were some problems with fit up of pipe, however, these problems were corrected within proper procedure. A pipefitter [REDACTED] [REDACTED] stated that he never experienced any problems with minimum wall thickness although he would occasionally have to correct some problems with high/low wall match up which was corrected by grinding. He said that while he was working on the containment spray system, the QC inspectors would always check wall thickness match up during fit up inspections.

The Staff was unable to substantiate the above concern expressed by Individual C based on interviews conducted.

:: Individual C stated that he made a tool to correct out-of-roundness in schedule 40 eight inch stainless steel pipe. He described the tool as a friction clamp in which he placed six bolts through holes in the sides of

the friction clamp. He said that he would place the clamp over the end of the pipe and tighten the bolts to force the pipe into round. He stated that his foreman knew he was using the device to correct out-of-roundness on the pipe.

The Staff interviewed 15 pipefitters to determine if they had ever seen such a device as described by Individual C. None of the pipefitters interviewed saw such a device and many stated that such a device would be useless to efficiently correct out-of-roundness in the ends of pipe. Several of the pipefitters pointed out that such a device would leave marks on the pipe where the bolts were tightened down against the side of the pipe. They stated that any such scoring or marking would have been detected during fit up inspections. The foreman identified by Individual C stated that he has never seen such a device as described by Individual C and that if there was such a device it would not be effective in correcting out-of-round. He said that common friction clamps were used to relieve some out-of-round and that this was authorized by procedure.

[REDACTED]

[REDACTED] It should be pointed out that the foreman was not advised of the identity of the person making the allegations and that he

offered the information regarding Individual C without solicitation from the Staff. Several other individuals who were interviewed asked if Individual C was in fact the person making the allegations. This was neither confirmed or denied.

The Staff was unable to substantiate the fact that the clamp described by Individual C above was available at the site or ever used to correct out-of-round on pipe used on the containment spray system.

:: Individual C related an incident where he observed several individuals standing around in the parking lot passing a cigarette between themselves. He said he was with another individual at the time and when he saw the individuals passing a cigarette around he started to walk over to them when the individual who was with him stopped him and asked him where he was going. Individual C said that he told the individual that he was going over to the group of individuals and give them some cigarettes because he felt bad that they had to share a cigarette between them. Individual C stated that his friend told him that the individuals were not smoking a regular cigarette, but that they were smoking marijuana. Individual C said that he did not know who the individuals were who were allegedly smoking the marijuana cigarette.

The Staff did not pursue this matter of alleged marijuana use because of the nonspecific nature of the information provided by Individual C. This information is speculative and based on conjecture.

In addition to the above concerns expressed by Individual U, he was asked if he had any additional concerns. He stated that he was worried about the quality of construction that went into the plant and he wants it to be safe before fuel is put into the plant. He was asked if he had any other concerns he wanted to discuss with the Staff and he stated that DPC owed him money. It was explained to Individual C that there was nothing the NRC could do as far as helping him collect any monies owed to him by DPC.



INDIVIDUAL D (RII-84-A-0002)

Individual D was initially interviewed by members of the Region II staff on December 7, 1983, at Charlotte, North Carolina. Individual D currently remains under the protective order of the Atomic Safety and Licensing Board. At the onset of this interview it was explained to Individual D that the intended purpose of the interview was to obtain his technical concerns and supporting information he had regarding those concerns. Individual D stated that earlier that day he had read an article in the Charlotte Observer newspaper regarding the testimony of several NRC inspectors which related that the inspectors said that there were no problems at Catawba. He stated that as far as he was concerned there were problems. Individual D was advised that the Staff would discuss his technical concerns regarding the construction of the Catawba plant. Individual D discussed five major technical concerns which are summarized as follows:

:: Individual D stated that he was employed at the Catawba site [REDACTED]. His work involved the [REDACTED], [REDACTED], [REDACTED], and [REDACTED]. He said that during the initial excavation of the site for the plant there was a considerable amount of ground water leaking out of the ground at the excavation site. He stated that he did not know the source of the water, but thought it may have been ground water and springs. He said that many of



the crew working the excavation site were concerned about the water being present at the site, however, the engineers on the job told the crews to keep pouring the concrete even though there was water in the immediate area. He said that concrete was poured over the water in many cases. Individual D stated that the concrete was poured over an area he believed was to form the base mat. He stated that his concern involved the possible consequences should a leak or other accident occur in the future which would possibly release radioactive contamination into the ground and into the ground water.

The Staff examined this concern and reported its findings relative to this concern in Inspection Report Numbers 50-413/84-30 and 50-414/84-15. This report states that groundwater did seep into the excavation during preparation for the foundation of the auxiliary building and reactor building and some fill concrete may have been placed in water in low sump areas. Construction photographs, records and drawings showed that the groundwater seepage was controlled by a system of gravity drains and sumps. A permanent monitored groundwater drainage system consisting of foundation underdrains and exterior wall drains have been installed to control groundwater seepage and any contaminated liquids resulting from an accident.

:: Individual D expressed a concern regarding the installation of rebar in the walls of the turbine building. He stated that the rebar was not installed properly in that rebar

spacing was improper and that the bars were not spread evenly throughout the wall. He stated, for example, that vertical rebar came up out of the floor and the first horizontal rebar was supposed to be set three inches above the floor and the remaining horizontal rebar was to be set approximately every 12 inches up the vertical rebar. He said that if the design called for 10 horizontal rebar they were put in every 12 inches, however, the last two bars could not be placed on 12 inch intervals because there was not enough room at the top of the wall. He said that in this case, the last two remaining rebars would be placed together very close to each other near the top of the wall. He stated that the last horizontal rebar had to be placed three inches from the top of the wall. Individual D stated, that in his review, this would have been done better had the first horizontal rebar at the bottom and the last horizontal rebar at the top been installed first and then measurements taken and calculations made to insure that the remaining eight rebars were installed evenly spaced between the first and last rebar. Individual D stated that the inspectors would not look at spacing, but only inspect to insure that the required number of rebar was installed in the wall. He stated that, in his opinion, the Quality Control Inspectors did not know what they were doing.

The Staff examined this concern and reported its findings relative to this concern in Inspection Report Numbers 50-413/84-17 and 50-414/84-06. The Staff found through a review of drawings, specifications, and procedures that requirements for placing rebar were adequate. Discussions with responsible QC inspectors indicated they were knowledgeable in these requirements and that rebar spacing problems did occur and were corrected in accordance with the requirements. The Staff concludes that Individual D's chief concern is the inefficient methods used in placing the reinforcing steel. Individual D stated during his interview of December 7, 1983, he stated he was not aware of any rebar spacing problems in the Reactor Building.

:: Individual D stated that he had a concern involving construction of the "decontamination pit." He stated that the pit was constructed adjacent to a wall already in place. The wall of the decontamination pit, which was adjacent to and parallel with the wall already in place, was not fastened or secured to the existing wall. Individual D stated that ties should have been used to secure the pit wall to the existing wall. He said that the existing wall was also used as a part of the concrete form for the pit wall and when the concrete pour was made the opposing wood frame (parallel to the existing wall) sagged approximately three inches. The weight of the concrete caused the forms to sag because the forms were not properly braced and reinforced. Individual D said

that the sag occurred on the first pour above ground level. He said that when the concrete dried, construction crews were called in and the three inch bulge was chipped away and the wall straightened.

The Staff examined this concern and reported its findings relative to this concern in Inspection Report 50-413/84-15 and 50-414/84-11. This report states that forms did break loose during placement of walls in the decontamination pit and a two to three inch bulge occurred in the hardened concrete of an inner wall of the decontamination pit. However, the inspector concluded that the buckling of the forms and resulting bulge did not affect the structural integrity of the concrete wall. The two to three inch bulge was in a four foot square area of an inner wall and was satisfactorily repaired.

:: Individual D stated that during the time frame 1978 to 1979, there were problems with design pours in Unit 1 exterior doghouse walls (the wall near the river toward the cooling towers). He said that the concrete used in some of the pours was very dry, that is, it contained very little moisture and did not run good like a wet slurry. He stated that the concrete was so dry that it probably did not get in between the rebar inside the concrete forms. He stated that when the forms were removed from the wall there was considerable honeycombing in the concrete. Individual D stated that when the foreman saw the honeycombing he immediately had the forms placed back on the walls. Individual D stated that he did not know if the honeycombing was eventually repaired.

The Staff examined this concern and reported its findings relative to this concern in Inspection Report number 50-413/84-07 and 50-414/84-06. This report states that examination of completed work and records, and discussions with responsible engineering personnel, inspectors and craftsmen showed that numerous case of minor honeycombing and several cases of severe honeycombing did occur during concrete placements. Examination of procedures and specifications showed that the licensee is aware of the problem and that adequate means have been provided to identify, document and repair the honeycombing. An NRC inspector did document the problem with honeycombing as an unresolved item as a result of an NRC inspection conducted in October 1980. This item was identified because the licensee's methods were not clear as to the tracking and identification of honeycombing that occurred in concrete pours prior to 1979. This unresolved item was later upgraded to a violation and documented in Inspection Report numbers 50-413/84-49 and 50-414/84-23. This violation cited the licensee for numerous honeycomb defects which were not identified at the time of form removal in concrete pours made prior to 1979. This unresolved item was upgraded to a violation as a result of a 100 percent reinspection of concrete which was conducted by the licensee. This reinspection identified numerous areas of honeycomb that had not previously been documented as required by procedure. Subsequently, an NRC inspector conducted a complete walkdown inspection of the exterior surfaces of all Category I structures and the interior surfaces of the doghouse, Auxiliary Building and Unit 1 Reactor Building. The results of this inspection showed that the licensee has identified and repaired honeycombing in Unit 1 in accordance with licensee requirements. Repairs are still being made in

Unit 2. Upon completion of the repairs in Unit 2 they will be examined by NRC. Additional information concerning honeycombing is also discussed in Inspection Report numbers 50-413/84-15 and 50-414/84-11. The Staff concludes that honeycombing is not a safety related problem and is satisfied with the licensee's actions on these matters.

:: Individual D expressed a concern regarding the construction of the turbine generator pier located in the turbine building. He said that when the concrete for the pier (or floor) was poured, the forms holding up the bottom of the pier were removed after 16 days. He stated that the forms should have been left in place for a period of 21 to 28 days, which he stated was the requirement for a suspended floor. He said that the early removal of the forms should not have been done as it could affect the safety of the plant. Individual D identified a foreman who ordered the early removal of the concrete forms.

The Staff examined this concern and reported its findings to this concern in Inspection Report Numbers 50-413/84-07 and 50-414/84-06. This report states that the forms were removed after 16 days in accordance with standard concrete practices and specifications.

In addition the five major concerns stated by Individual D as identified above, he had several other issues he brought up during his interview. One of Individual D's concerns was "nepotism" which he stated was frequently used at the site to fill supervisory positions during the early years of construction. He said positions were also given out under a "buddy system" where supervisors would put their friends in the better jobs. Individual D expressed his opinion that these actions did not necessarily put the best qualified person in positions of supervision. He also said that he felt that some of the people assigned to supervisory jobs may not have really been qualified nor fully competent to be in those positions. The staff did not develop any information regarding concerns of nepotism and feels that such an issue would not be within the purview of NRC. The issue of supervisors being incompetent could not be substantiated through interviews or review of NRC inspection reports for the period 1973 through 1979.

Individual D related another concern which involved wrong size doors in the Auxiliary Building. He said there were several doors [REDACTED] install in openings that did not match the size of the doors [REDACTED]. He cited this example as raising questions about deviations between the design blueprints and the actual as-built condition of the plant. The Staff concludes that that the example cited above lacks merit and that it does not raise valid questions concerning deviations between actual design and actual as built conditions of the plant. Individual D said that to the best of his knowledge, doors were not installed in the openings as of the time he left employment at the site. The Staff did not pursue this concern.



Individual D related another concern involving hardware at the Catawba construction site. He stated there were several outside doors on the back of the Auxiliary Building which had elaborate electronic security locks, but which were not secure. He said that no one installed security hinges on the door and that the hinge pins could be easily pulled and removed which would serve to defeat the purpose of the security doors. The Staff assured Individual D that prior to the plant being licensed for operation, a comprehensive and extremely thorough security inspection would be conducted by the NRC Region II Physical Security Staff which would include an evaluation of the adequacy of security related hardware.

During the period June 25 - 29, 1984, a preoperational security inspection was conducted by the Region II Physical Security Staff. This inspection verified that applicable security hardware was in place and functional as required by regulatory requirements.

Individual D also mentioned several other concerns involving worker/industrial safety issues such as electrical wire for temporary electricity laying on the ground; scaffolds being jury rigged because of space; never seeing NRC inspectors at the construction site; scaffolding resting on pipe and permanent cable trays; and electrical boxes tied onto rebar.

The issue of scaffolding resting on pipe and permanent hangers has been previously addressed in Region II Inspection Report Numbers 50-413, 414/80-19 and 50-413, 414/80-12.

In addition to the interview with Individual D, the Region II Staff received a copy of his affidavit dated January 30, 1984, which was given to a GAP representative by Individual D in order to protest what Individual D referred to as a "completely inadequate report" when referring to Inspection Report 50-413/84-07 and 50-414/84-06. Individual D stated in the affidavit that the report mentioned above dealt with only a small number of his concerns. It should be noted that the above report dealt with three of his five concerns. During the interview of December 7, 1983, Individual D was advised that the Region II staff would examine his technical concerns and he related the five addressed in this report. He was asked if these constituted all of his concerns and he replied that they did represent his major concerns. He also related several other issues such as the security doors, nepotism among plant supervision, and several industrial safety issues. It was explained to him that those non-safety related issues would not be examined and that the Staff would thoroughly examine his technical concerns.

Individual D cited ten concerns in the affidavit which he stated were not covered. These concerns are as follows:

- 1) his complaints about time and schedule pressure
- 2) his complaints about the outside door hinges providing inadequate security protection
- 3) the incompetence or poor training of many of the civil QC inspectors

- 4) the doors that were inadequately designated for installation according to the design drawings in the auxiliary building
- 5) the dangers of the many family relationships between workers and Duke management and midmanagement
- 6) the verification of what Duke and the NRC did to [REDACTED] in response to his allegation including the fact that he witnessed a "death threat" to another individual
- 7) the failure of a foreman's crew to insure that the wall was properly braced
- 8) the abuse by some workers of their primary responsibility to quality of construction by selling items for personal profit - such as selling Tupperware on the job
- 9) the abuse of Individual D's rights as a worker by Duke's Employee Relations Department, or the failure of Duke to notify him of his Department of Labor recourse
- 10) the practice of placing building scaffolding on pipes, cable trays and unistruts

Some of the concerns identified above by Individual D do not come under the jurisdiction of NRC. For example, concerns 5, 8 and 9 represent issues that would not be safety related concerns. Concerns 4 and 7 are general construction concerns which reflect problems with building practices and do not affect the integrity of the structure. Concern 2 is addressed in this report. Concerns 1, 3, 6 and 10 were discussed at the ASLB hearing and further examination by the Staff would not add to the substance of the hearing record. The Staff has considered Individual D's opinions in the evaluation of his concerns. The Staff also believes that it is important to note, as an example, that Individual D stated he intentionally misplaced hardware during construction to fool the inspector, and yet he states in his affidavit that he is concerned that workers abused their "primary responsibility to quality" by selling Tupperware on the job.

Throughout the Staff's efforts in dealing with the concerns of the above individuals, the individuals related generalizations in an attempt to demonstrate what they considered to be fundamental problems affecting the very basis from which the entire construction effort emanated. While the Staff reviewed specific allegations related to plant safety whenever possible, faced with broad generalizations, the Staff must rely on the validated premise that years of regional inspection program followup and literally thousands of hours of inspection effort do not substantiate generalized concerns that fundamental flaws exist in the basic construction programs in place at the Catawba Nuclear Plant.

The NRC inspection program, as applied to reactor facilities under construction, utilizes sampling inspection techniques to determine whether there is reasonable assurance that the plant is constructed and tested according to the requirements of the construction permit and NRC regulations, and the commitments made by the licensee in its Preliminary and Final Safety Analysis Reports (PSAR and FSAR) and in various correspondence with the NRC. These techniques are also used to establish whether the licensee's quality assurance and quality control (QA/QC) program is effective in inspecting, correcting and documenting activities in a way that assures protection of public health and safety. Furthermore, beyond the construction phase, the NRC inspection program is applied to plants undergoing start-up testing after they are licensed for operation, and for plants already in routine operation, to provide this same assurance.

The NRC inspection program is designed as a preventive program and is applied to structures, systems, components, and activities that are important to safety. This preventive objective is achieved by examination of management controls, quality assurance and quality control manuals, procedures and records, and observation of work in progress. Work in progress is inspected by experienced engineers in various technical disciplines for quality of workmanship, conformance to codes and standards and the licensee's established QA/QC program requirements. Records are examined to verify that purchased equipment meets quality standards and that quality control inspections are implemented throughout the construction and preoperational test phases. Enforcement action is taken for violations of NRC requirements in accordance with the Commission's enforcement policy.