

Report on Welding Allegations

Prepared by Brookhaven National Laboratory

LICENSEE: Consumers Power

FACILITY: Midland Nuclear Power Station, Units 1 & 2

TECHNICAL SPECIALISTS:

Carl Czajkowski
Carl Czajkowski

1/18/85
(Date)

Thomas F. Burns
Thomas Burns

1/18/85
(Date)

REVIEWED BY:

John H. Taylor
John H. Taylor

1/18/85
(Date)

Robert E. Hall
Robert E. Hall

1/21/85
(Date)

8503280493 850322
PDR ADOCK 05000329
A PDR

54-329
54-334

CONTENTS

	<u>Page</u>
I. Summary.....	1
II. Allegation Categories.....	2
A. Description of Allegation Categories.....	2
B. Allegation Sort by Category.....	3
III. Allegation Analysis and Response.....	4
 Attachments	
1. Allegation Sort By Originator	

I. SUMMARY

This report is an analysis of sixty-one allegations made by an alleged against the welding program at the Midland Nuclear Power Station in NRC Region III and two other Nuclear Power Plants in Region III and V, respectively.

The allegations have been grouped into categories which are described in Section II. The analysis and response to each allegation is contained in Section III. And finally, Attachment 1 lists all of the allegations in chronological order and identifies the source documents from which the allegations were formulated. The alleged's name or inferences to the alleged's identity are not used anywhere in this report.

Four of the allegations (Category A) are non technical and should be referred to the Office of Investigation for resolution.

Thirty of the allegations (Categories B & C) have been responded to on a technical basis. Two of the allegations (#13 - pg. 13, #24 - pg. 15) in this category require a response or action, but are not significant. Allegation #57 (pg. 23) identifies an arc strike, which should be corrected.

Seventeen of the allegations (Category E) were either 1) applicable to other sites, and therefore not addressed, or 2) were too general and undefined and therefore could not be addressed by BNL.

Finally, eleven of the allegations (Categories D & F) required large scale physical inspection programs, which could not be conducted by BNL in the time available.

VI. ALLEGATION CATEGORIES

A. Description of Allegations Categories

- Category A - Office of Investigation - These allegations are outside of the scope of work for BNL. Due to the nature of the allegation, no technical response can be provided and we recommend the item be referred to the NRC Office of Investigation (or other appropriate agency) for resolution.
- Category B - Code Requirements alleged to be inadequate - These allegations are an expression that those Codes, Standards and Practices utilized by industry are inconsistent, contain errors, and/or conflict in some areas. These allegations do not specifically identify or address an unorthodox or deviant condition or practice at the Midland Plant site.
- Category C - Technical response can be provided - These allegations were evaluated and a response provided which is based on a technical analysis, document search, compliance verification, actual item examination or other observation.
- Category D - Procedures/Specifications fail to comply with Code (ASME) or, are inadequate - The allegations assigned to this category are too generalized for a meaningful response to be developed. No item is specifically identified such that a particular specification or procedure can be evaluated for code compliance. However, a response could be developed based on the selection and review, for code compliance, of erection, fabrication, procurement and welding specifications and procedures. The selection would be made such that the sample would include safety related components, items, structures and systems which perform a pressure retaining function of the reactor coolant pressure boundary or its support.
- Category E - Allegation not site specific or too general-Dismissed - The following allegations are not specific to the Midland Plants and therefore could not be substantiated or verified during this recent site visit. Also, we are including those allegations in this category which do not warrant further action due to their vague and subjective nature.
- Category F - Additional Work/Investigation required - These allegations, although considered by BNL to be broad subjective and general are such that a meaningful technical response could be provided when based on an analysis of results obtained from a specific inspection plan or effort. This effort was not made due to the obvious magnitude involved. It is entirely possible that a response could be provided which will be based on the data obtained during overinspection, corrective action and/or other quality verification plans and programs which have been (or will be) accomplished at the Midland plants.

B. Allegation Sort by Category

Category	Allegations	Responses Provided	Further Work Required	No Response Required
A	16, 17, 19, 20		X	
B	32, 42, 48, 50	X		
C	3, 9, 10, 11, 13, 14, 15, 24, 25, 26, 28, 29, 30, 31, 33, 41, 44, 46, 51, 53, 54, 55, 56, 57, 58, 59	X		
D	2, 6, 7, 8, 34		X	
E	1, 5, 12, 18, 21, 22, 23, 35, 37, 38, 39, 40, 45, 47, 49, 52, 61			X
F	4, 11, 27, 36, 43, 60		X	

Note: Due to category definition, certain allegations will be found classified in more than one category. However, one response has been provided in the report text.

III. Allegation Analysis and Response

The allegations are grouped by category in this section for ease of response. For reference the allegations are listed below in chronological order with corresponding page number.

<u>ALLEGATION NO.</u>	<u>PAGE NO.</u>	<u>ALLEGATION NO.</u>	<u>PAGE NO.</u>
1	27	32	6
2	26	33	20
3	9	34	26
4	32	35	29
5	27	36	32
6	26	37	29
7	26	38	29
8	26	39	29
9	9	40	30
10	10	41	20
11	10 & 32	42	7
12	27	43	33
13	13	44	20
14	14	45	30
15	14	46	21
16	5	47	30
17	5	48	8
18	27	49	30
19	5	50	8
20	5	51	21
21	28	52	31
22	28	53	21
23	28	54	21
24	15	55	21
25	16	56	22
26	17	57	23
27	32	58	23
28	18	59	24
29	18	60	33
30	19	61	31
31	20		

CATEGORY A

Office of Investigation

The following allegations are outside of the scope of work for BNL. Due to the nature of the allegation, no technical response can be provided and we recommend the item be referred to the NRC Office of Investigation (or other appropriate agency) for resolution.

Allegation 16:

WITHHELD FROM PUBLIC DISCLOSURE

Allegation 17:

WITHHELD FROM PUBLIC DISCLOSURE

Allegation 19:

WITHHELD FROM PUBLIC DISCLOSURE

Allegation 20:

WITHHELD FROM PUBLIC DISCLOSURE

CATEGORY B

Code Requirements Alleged to be Inadequate

The following allegations are an expression that the Codes, Standards and Practices utilized by industry are inconsistent, contain errors and/or conflict in some areas. These allegations do not specifically identify or address an unorthodox or deviant condition or practice at the Midland Plant site.

Discussion:

The codes specifically identified are in fact, not identical and, were not intended to be so. The codes referenced differ in many areas as they were developed for completely different applications. The reference to "AWS" is presumed to mean the American Welding Society (AWS) Structural Welding Code - Steel (AWS D1.1). This document is an American National Standard approved by the American National Standards Institute. This code is prepared by the AWS Structural Welding Committee and is intended to cover welding requirements applicable to the construction of welded structures (buildings, bridges and tubular structures).

The reference to "ASME" is presumed to mean the American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code. This document is also an American National Standard and is prepared by the ASME Boiler and Pressure Vessel Committee. The scope of this document is extensive and it consists of eleven sections and numerous subsections. The stated purpose of the Committee (through the issue of this code) is to establish rules of safety governing the design, fabrication, and inspection during construction of boilers and pressure vessels.

The stated purpose of each of these codes is clearly different and are not intended to be interchanged. Since there are areas where similar processes and materials are used, it is understandable that differences might not be apparent to infrequent users. The evaluation and development of these codes has occurred over a span of many years by two entirely different and separate industrial bodies. Therefore, differences are not "inconsistent", "discrepant" or in "error" and, these differences are not cause for alarm. Given the specific purpose of each code, they cannot (and were never intended) to be identical (even for similar processes).

Each of these codes has been in use for their respective applications for a combined total of over one hundred years (AWS-1911, ASME-1928) and through use, review, comment and revision have evolved into a formidable set of requirements which have kept pace with the advances in construction technology.

Allegation 32:

"Pg. 125, para. 3 - Allegor states a discrepancy exists between AWS and ASME stating: AWS limits the size of electrode for vertical and overhead position welding to 5/32" diameter - ASME does not."

Response:

This difference does exist between the two referenced codes and should not be considered "discrepant" since AWS permits use of "prequalified" joint configurations in specific positions while ASME requires qualification of all procedures. Each code requires the qualification testing of welders in specific positions to qualify for "all" position welding.

Allegation 42:

"Alleger expresses concern of the lack of dew point control in argon gas."

Response:

The results of inspection revealed that argon gas procured for welding at the Midland site was obtained as "welding grade" with no specific dew point specified. The term "welding grade" in and of itself does not denote a specific dew point or moisture content.

There is no requirement for the control of dew point (moisture content) of gas or gas mixtures used for shielding or backing in the performance of welding in accordance with the requirements of ASME Section III (Division 1 - Nuclear Power Plant Components). There is a requirement in AWS D1.1 (Para. 4.13 Shielding Gas) that gas or gas mixtures used for shielding in two specific welding processes (gas metal arc or flux cored arc welding) shall have a dew point of -40°F (-40°C) or lower.

Pressure retaining components (to include the reactor coolant pressure boundary) are fabricated and erected in accordance with the requirements of ASME III at the Midland site therefore, no nonconforming condition exists as regards the dew point of argon gas procured and used in these activities. Due to time constraints, we were unable to determine if welding had been performed on safety related components or structures under the rules of AWS D1.1 using the referenced processes.

We note that this "allegation" is not made to identify a nonconforming practice but, was an expression of "concern". The control of this variable in argon gas is a matter of engineering judgement since it is not a predominant source of weld defects. In the event construction activity should resume at the Midland site, we believe this item can be resolved by the following activities:

- a. Determine if welding had been performed on safety related structures and/or components under the rules of AWS D1.1 (any edition as far back as 1972) using the gas metal arc or flux cored arc welding processes.
- b. Determine if the gas or gas mixture used was procured with a dew point of -40°F or lower.

As of this date, the allegation was not substantiated.

Allegation 49:

"Alleger expressed concern over the code not addressing weld ripple spacing.

Response:

The weld acceptance criteria is adequately specified in both referenced codes and, both codes address the weld profile and surface appearance (AWS D1.1, Para. 3.6, 8.15 and ASME - NX4424) in substantial detail to include "weld ripple".

Allegation 50:

"Pg. 51, para. 2 - indicates alleger was upset that there were several instances of inconsistencies or errors between AWS and ASME."

Response:

The response is provided in the discussion portion of this allegation category.

CATEGORY C

Technical Response Provided by BNL

The following allegations were evaluated and a response provided which is based on a technical analysis, document search, compliance verification, actual item examination or other observation.

Allegation 3:

"Bechtel has hired engineers and QC inspectors who were not adequately qualified or trained for the complicated work in a modern nuclear plant."

Response:

A review of the Bechtel Power Corporation qualification requirements for engineering personnel could not be accomplished since travel to their San Francisco headquarters would be required for file search and evaluation. Allowable time did not permit BNL to accomplish this review. The response we have provided to allegations 26 and 46 is appropriate to the concern the allogger has expressed regarding the qualifications and training of QC inspectors. This allegation has not been substantiated.

Allegation 9:

"(The subject is socket weld engagement length.) ... stated that as long as the pipe is not withdrawn from the fitting, it will be approved. This means that a gap of nearly any length will be tolerated between the end of the pipe and the bottom of the socket. ...the ASME code has, for this reason, established a much more rigorous specification."

Response:

The following documents which govern the socket weld fit up requirements for those systems being fabricated and erected in accordance with ASME III - Division I were reviewed at the Midland site:

1. GWS-SN, Rev. 3 (7/16/76) and Amendment #9 (7/22/83) - General Welding Standard (Stainless and Nickel)
2. GWS-FM, Rev. 4 (7/16/76) and Amendment #10 (7/22/83) - General Welding Standard (Ferritic and Martensitic)
3. GWS-NF, Rev. 2 (8/7/78) General Welding standard (Nonferrous)

These documents were found to contain specific and detailed requirements for the fit up of socket welds. The instructions contained specific gap requirements (1/16" approximately - later increased to 1/8" approximately in the above referenced amendments) with procedural requirements for verification. These gap requirements are in compliance with that found in ASME III - Division I. No items of noncompliance with the ASME code were identified in the Bechtel requirements for socket weld fit up. This allegation is not substantiated and we recommend this item be closed without further action or investigation.

Allegation 10:

"Equally as serious as the problem of downgraded specifications were the problems created by the incompetence and ignorance of QC. Even something basic like knowing how to use the fillet gauges correctly to measure the size of welds was beyond the ability of some of the Bechtel inspectors and

One QC engineer was also there to hear the explanation, and he admitted after I showed him the diagram that he'd been approving bad welds himself, mistakenly determining inadequate fillet welds as being adequate."

Response:

Allegations 10 & 15 (page 14) - These allegations have been combined and an identical response provided since their basic contention is the same and, they are highly subjective. During the BNL visit to the site, the records for qualification and training were examined for thirteen personnel (including the individual identified by name) and, no items of non-compliance were identified. All personnel had been trained, were tested and qualified to perform their respective tasks. Also, subsequent to qualification, periodic training sessions were held to appraise the inspector(s) of ongoing changes in procedures and specifications.

We noted that the requirement existed for all welders (involved in welding under the requirements of ASME, ANSI B31.1 and AWS D1.1) to be qualified in accordance with requirements established in the respective code (usually ASME Section IX or AWS for structural welding). These requirements are extensive and very thorough and could hardly be considered "less than formal". Inexperienced welders will not be able to successfully accomplish these tests satisfactorily.

Implementation of the recommendations for allegations 4 and 60 (page 32, 33 - Category F) would supply further information as to the substance of this allegation. Presently, we find the allegation not substantiated and recommend this item be closed without further action or investigation.

Allegation 11:

"Because of this, I was very concerned to discover that many welds in the piping had been improperly ground down, grinding down the pipe wall thickness along with it."

Response:

Technical Specifications for Weld Fabrication and Installation of Piping for Nuclear Service for the Consumers Power Company, Midland Plants, Units 1 and 2, Midland, Michigan 7220-M-204(Q) Rev. 15, 6/16/81, page 11, para. 5.2.6 Wall Thickness Requirements states "Minimum wall thickness for fabricated assemblies as finally fabricated shall be at least:

- a. 87 1/2% of the nominal wall thickness for pipe specified by nominal wall, or

- b. The minimum wall thickness for pipe specified by minimum wall.
- c. 75% of the nominal wall thickness for 12-inch and under HCB and HCC class pipe only.

Paragraph 3, codes and standards of this document states:

"All material, fabrication, installation, testing and examination shall be in accordance with the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section III, hereinafter referred to as the Nuclear Power Plant Components code, and applicable portions of the Pipe Fabrication Institute (PFI) standards as referenced, ANSI N45.2.1 and ANSI N45.2.2.

Documents incorporated by reference into these Specifications shall be the issue (including latest Addenda), in effect on the date of issue of the specifications. Adoption of any Code Cases, interpretations and rulings, or subsequent issue of codes shall be subject to the approval of the Project Engineer. Code Case N-282 is approved for use.

All nuclear piping is classified in one of three Nuclear Piping Classifications. The Nuclear Piping Classification is shown on the Piping class Sheet. All piping systems shall be fabricated in accordance with Nuclear Power Plant Components Codes and these Specifications for the Nuclear Piping Classification shown on the Piping Class Sheet."

Same title document Rev. 23, 6/8/84, page 13, para. 5.2.1 states:

"Care shall be taken in handling and installation of piping to prevent surface damage. Defects such as scratches, gouges, and pits shall be acceptable provided the depth does not violate minimum wall thickness requirements (see Section 5.2.6) and is not greater than 1/16 inch deep. Arc strikes are acceptable if there are no visible cracks and the crater depth is not greater than 1/16-inch and does not violate minimum wall thickness requirements (see Section 5.2.6). Deposited weld metal need not be ground out in order to inspect the arc strike. Surface porosity is not a criterion for rejection."

Same document, para. 5.2.6, Wall Thickness Requirements states:

"Minimum wall thickness for fabricated assemblies as finally fabricated shall be at least:

- a. 87-1/2% of the nominal wall thickness for pipe specified by nominal wall, or
- b. The minimum wall thickness for pipe specified by minimum wall.
- c. 75% of the nominal wall thickness for 12-inch and under HCB and HCC class pipe only.
- d. As specified in the material specification for pipe made from plate.

The as-installed wall thickness of piping assembly may be less than that required by Items a through d above provided that it is greater than or equal to the minimum required thickness, t_m , determined using the procedure in Appendix C. Cases in which the as-installed wall thickness is between that generally required by Items a through d above and t_m shall be documented via field change notice. Field calculations are to be done in accordance with Specification 7220-G-35(Q)."

Appendix C, Rev. 22 is attached. The code applicability of this specification is called out in para. 3, Codes and Standards.

"All materials, fabrication, installation, testing and examination shall be in accordance with the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section III, hereinafter referred to as the Nuclear Power Plant Components Code, and applicable portions of the Pipe Fabrication Institute (PFI) standards as referenced, ANSI N45.2.1 (1973) and ANSI N45.2.2 (1972). However, certain equipment supplied by vendors as part of a package may be specified to other codes as appropriate. Examples include, but are not limited to, the following: rotameters, venturis and flow elements from Babcock & Wilcox (ANSI B31.7), decay heat removal heat exchanger and makeup pump lube oil coolers from Babcock & Wilcox (shell side to ASME VIII), steam generator main feedwater ring from Babcock & Wilcox (ANSI B31.1), auxiliary feedwater pump turbine driver from Terry Turbine (none), and piping embedded in reactor building basement from Southwest Fabrication and Welding Company (B31.7).

ASME Section III Code-effective dates and approved code cases shall be as stated in Specification 7220-M-324(Q).

All nuclear piping is classified in one of three Nuclear Piping Classifications. The Nuclear Piping Classification is shown on the Piping Class Sheet. All piping systems shall be fabricated in accordance with the Nuclear Power Plant Components Code and these Specifications for the Nuclear Piping Classification shown on the Piping Class Sheet.

Piping Class sheets for the Consumers Power Company, Midland Plant, Units 1 and 2 Midland Michigan, 7220-M-481(Q), Rev. 26, 6.6.84, Code applicability attested to by licensed P.E. Manohar, L. Hora, Engineer No. 25292 (State of Michigan)

"I, the undersigned, certify that these Piping Class Sheets accurately define the requirements prescribed in Subparagraphs NA-3252(b), NA-3252(f) of ASME III, Division 2, Boiler and Pressure Vessel Code, 1971 Edition with Addenda through Summer 1973."

The above listed specifications take into account the evaluation of minimum wall thickness requirements. Additionally, the Quality Control Instruction used for pipe weld inspections (PW-1.00, Rev. 3, 10/12/81) states in Section 21. "Verify that the pipe, pipe fitting, piping subassembly, valve or in line component is free from damage." This document references Spec. M204 para. 5.2.1, 5.2.3, 5.2.6 and 6.3.2. A sign off

section for this attribute is also found on Quality Control Inspection Record PQCI No. 7220/PW-1.00 Form 19517. The specifications take into account minimum wall thickness and these requirements have been translated into inspection documents. These engineering and inspection procedures would be adequate identifying non-conforming conditions of over grinding if implemented correctly. For a complete evaluation of this allegation, a detailed physical inspection is required therefore, this allegation was not substantiated due to time constraints. This allegation is also listed under Category F.

Allegation 13:

"...Bechtel allowed low-hydrogen electrodes used in welding to be taken out of their hot ovens or hermetically sealed containers for up to eight hours before use. The American Welding Society (AWS) standard allows only four hours maximum in the open air."

Response:

This allegation is identical to 31 and has a concern regarding the exposure time of low hydrogen electrode to the environment after removal from their hermetically sealed containers or drying/storage ovens. It is our understanding that the portable rod heaters (or, caddies) do not constitute a drying/storage oven since their temperature requirements do not comply with that specified in AWS D1.1. As a result of the review of the Bechtel Welding Standard (WFMC-1, Rev. 6, Amend. 9) for the control of weld filler metal at the Midland site, these allegations have been substantiated. The Bechtel weld filler metal control policy was not in compliance with the requirements of AWS D1.1 at the time the allegation was made. The program as amended on November 29, 1983, was still not in compliance. Specifically (as amended), the specification permits electrodes having low hydrogen coverings to be exposed to the atmosphere for a period which exceeds that specified in AWS D1.1 (10 hrs. vs. 4 hrs.). This requirement is found in AWS D1.1 (para. 4.5.2, 4.5.2.1 and Table 4.5.2). Relief is granted by AWS D1.1 from this requirement (time limit is increased to 10 hrs. maximum) if the user established, through testing, what the maximum allowable exposure time can be without degradation of weld quality as affected by changes in the moisture content of the electrode coating.

Bechtel personnel at the Midland site believe their program has NRC approval. Several documents were examined which indicate an alternative program was submitted to the NRC and accepted by the Division of Reactor Construction Inspection, IE (dtd. December 8, 1977, G.W. Reinmuth to R. H. Engalken) but, was specific to the Palo Verde site. Inference is made in this memo that the alternative program was acceptable for "any nuclear plant". An internal Bechtel memorandum of April 28, 1978, B. D. Hackney to P. A. Martinez (of the Midland Project) states that the alternative program "has been submitted to and accepted by the NRC as a Topical Report thereby permitting generic use of the alternative electrode control practices and procedures described."

Since documentation specifically approving the program for use at Midland could not be located, BNL recommends that this item not be closed until

documentation can be produced which unequivocally states that the alternative program has been approved by the NRC either generically for all plants or specifically for Midland.

Allegation 14:

"One QC engineer who has been at Midland for many years told me that in his opinion over 90 percent of the piping in the entire plant has had to be cut out and replaced at one point or other. In my mind, this raises serious questions of safety"

Response:

Two documents were reviewed in the investigation of this allegation - Bechtel Power Corporation Project Quality Assurance Activity Report No. 80-5 dated 6/2/80, which outlined (page 5, Chart 1A) a twelve week trending for all Final Inspection Radiographed Rejects (pipe welds). The graph plotted the rejects over the 12 week period of 2/2/80 - 5/9/80. The reject rate was 2.87% (percent of welds rejected/no. of welds radiographed). The second document reviewed was a Bechtel Site Construction - Midland Nuclear Project - X-ray Welds % Form (W-1). This form covered the period of January 1982 - September 1983 and showed a reject rate varying between approximately 28% to approximately 9% during the period. This form also covered final inspected welds. It should be noted that during the course of construction, there may have been in-process repairs which would not be recorded on these forms. The performance of in-process repairs is not considered unusual and is a common and necessary practice. Since the reject rates recorded on these documents is significantly lower than 90%, this allegation is not substantiated.

Allegation 15:

"They have happened because Bechtel has hired inexperienced engineers, welders, and inspectors.

There were few formal requirements to become a welder, or even an inspector.

If this was supposed to be corrected through a thorough training program, it didn't happen.

The training periods were only a couple of weeks, and based on my experience in working with the engineers, welders, and the inspectors, I can state that they were not properly trained."

Response:

Allegations 10 (page 10) & 15 - These allegations have been combined and an identical response provided since their basic contention is the same and they are highly subjective.

During the BNL visit to the site, the records for qualification and training were examined for thirteen personnel (including the individual identified by name) and, no items of noncompliance were identified. All

personnel had been trained, were tested and qualified to perform their respective tasks. Also, subsequent to qualification, periodic training sessions were held to appraise the inspector(s) of ongoing changes in procedures and specifications.

We noted that the requirement existed for all welders (involved in welding under the requirements of ASME, ANSI B31.1 and AWS D1.1) to be qualified in accordance with requirements established in the respective code (usually ASME Section IX or AWS for structural welding). These requirements are extensive and very thorough and could hardly be considered "less than formal". Inexperienced welders will not be able to successfully accomplish these tests satisfactorily.

Implementation of the recommendations for allegations 4 and 60 (page 29, 30 - Category F) would supply further information as to the substance of this allegation. Presently, we find the allegation not substantiated and recommend this item be closed without further action or investigation.

Allegation 24:

"Bechtel Specification WQ-2, sheet 20, note 1, requires "shall not exceed 1/3 inch ..." regarding maximum groove weld reinforcement at Midland, Michigan's Twin Nuclear Plant. This requirement should read "shall not exceed 1/8 inch ..." as required by the ASME Section III code on groove weld reinforcement."

Response:

Allegations 24 & 33 are identical and were made in regards to both the Midland plants and the San Onofre plant. The same document (WQ-2, Bechtel Power Corporation, Welding Standard, Performance Specification) would apply at both sites since this is the Bechtel practice. An examination of this document (Rev. 2, April 4, 1980) reveal that the referenced "note 1" does read "Butt and corner joint reinforcement shall not exceed 1/3" and shall have a gradual transition to the plane of the base metal surface."

The referenced document is one which contains the requirement for the qualification of welders to make acceptable welds, in accordance with AWS D1.1 and AWS D12.1. The specific requirement on "sheet 20" of WQ-2 is titled "Visual Inspection of Weld Profiles" and is identified as Drawing WQ-2-8, Rev. 0 and "note 1" is made in reference to the sketch of a butt weld which shows a case of excessive convexity (reinforcement). The sketch is specifically identified as an unacceptable butt weld profile. This document does not apply to or govern the field welding of any components, structures, piping or attachments thereto whether safety related or not. Its sole function is to establish the procedure for conducting the welder qualification test and, sheet 20 illustrates the required weld profile for qualification tests performed using plate test material. This dimension (1/3" appears to be a typographical error since the code (AWS D1.1) requirement is 1/8" maximum.

There is no deleterious effect as a result of this typographical error. The work accomplished by welders at the Midland site is subject to inspection and acceptance by an independent quality organization which

derives its acceptance criteria from specifications which govern the field fabrication and erection of ASME components. These specifications are independent of the referenced WQ-2.

Therefore, although these allegations have been substantiated, we recommend that this item be corrected by Bechtel Power Corporation and then closed without further action.

Allegation 25:

"I believe that the caliber of individuals employed by Peabody Testing to perform nondestructive examination (NDE) on welds in nuclear service applications was not acceptable. This belief is based on the observation of many spelling errors,"

Response:

Allegations 25 and 53 (page 21) - Since Peabody was an NDE contractor at the Midland site under the name of G.E.O. Construction Testing as well as Peabody, we examined (by random selection) the following G.E.O. Construction Testing, Certified Report of Nondestructive Examination (Form 112-6843). The following reports covered dye penetrant examinations:

<u>Examiner</u>	<u>Date</u>	<u>Weld No.</u>
Donna A. Dorsey	3/11/82	PW100 FSKM-ICCB-45-3-24
" " "	3/11/82	PW100 FSKM-ICCB-45-3-31
" " "	3/5/82	PW100 FSKM-ICCB-45-3-32
" " "	3/5/82	PW100 FSKM-ICCB-45-3-33
" " "	3/5/82	PW100 FSKM-ICCB-45-3-34
Steven Bonnell	3/2/82	PW100 FSKM-ICCB-45-3-35
" "	3/4/82	PW100 FSKM-ICCB-45-3-36
" "	3/4/82	PW100 FSKM-ICCB-45-3-37
Donna A. Dorsey	3/4/82	PW100 FSKM-ICCB-45-3-38
" " "	3/4/82	PW100 FSKM-ICCB-45-3-39
" " "	3/4/82	PW100 FSKM-ICCB-45-3-40
" " "	3/4/82	PW100 FSKM-ICCB-45-3-41
" " "	3/4/82	PW100 FSKM-ICCB-45-3-42
" " "	3/4/82	PW100 FSKM-ICCB-45-3-43
" " "	3/4/82	PW100 FSKM-ICCB-45-3-44
H. D. Lyles	5/3/82	PW100 FSKM-ICCB-54-2-H1
Craig C. Tapani	3/23/82	PW100 FSKM-ICCB-54-2-H3
Brain Hanni	4/6/82	PW100 FSKM-ICCB-54-2-22C1
David K. Waun	9/29/82	PW100 FSKM-ICCB-54-2-22C3

No spelling errors were noted on any of the reports reviewed and, each report had been checked and signed by a Bechtel Level II NDE examiner.

The following Peabody Testing Radiography Reports (Form 102E) were also reviewed:

<u>Examiner</u>	<u>Date</u>	<u>Weld No.</u>
Gary Smoot	8/7/78	2 HCB M614 SH3 FW 10 R1
W. M. Pardee - Bechtel	8/8/78	" " " " " " "
Gary Smoot	7/20/78	2 HCB M614 SH3 FW 10
W. M. Pardee - Bechtel	7/21/78	" " " " " "
C. W. Stoughton	5/29/79	2 HCB M614 SH3 FW 53
E. R. Stankiewicz - Bechtel	5/29/79	" " " " " "
R. Cook	6/28/79	2 HCB M614 SH3 FW 8
E. R. Stankiewicz - Bechtel	6/28/79	" " " " " "

Each of the radiographs listed above were reviewed by Bechtel NDE personnel as indicated with results recorded on a Radiographic Review Form (BBS10844).

No spelling errors (or other errors) were noted on these reports.

The qualification records of all the Peabody (GEO) personnel listed above were reviewed and, it was determined that each examiner was a Level II qualified by examination to ASNT-TC-1A. The qualifications were certified by a Level III examiner (also to ASNT-TC-1A) in the appropriate discipline as follows:

<u>Examiner</u>	<u>Discipline</u>	<u>Level - Date</u>
Bonnell	Penetrant	2 - 7/24/81
Lyles	Penetrant	2 - 4/2/81
Dorsey	Penetrant	2 - 9/8/81
Tapani	Penetrant	2 - 1/27/82
Hanni	Penetrant	2 - 11/12/81
Waun	Penetrant	2 - 7/14/81
Smoot	Radiography	2 - 7/12/77
Cook	Radiography	2 - 2/16/79
Staughton	Radiography	2 - 3/20/79

No items of noncompliance were identified during the review. Therefore, these allegations have not been substantiated and we recommend the items be closed without further action.

Allegation 26:

"I believe that established industry standards regarding the qualification of NDE personnel are not sufficient to assure an adequate level of personnel capability and knowledge in this very important area of inspection."

Response:

Allegations 26 and 46 (page 21) - The Nondestructive Examination (NDE) qualification program established by Bechtel Corporation for the Midland project requires that personnel be qualified in accordance with ASNT-TC-1A. There are no age requirements established in ASNT-TC-1A although there are very specific education, employment, vision, general and specific verbal and written test requirements.

These requirements are extensive and, are recognized throughout industry as an acceptable qualification standard for NDE personnel. The qualification records for eleven NDE inspectors at the Midland site were examined for compliance with the requirements of ASNT-TC-1A. These records of inspector qualifications were selected at random from the years 1979 thru 1982 and, no items of noncompliance were found. All inspectors had been qualified in their respective discipline.

Additionally, the training records for two QC Inspectors were examined. It was found that the inspectors had received training in those specifications, procedures (as they were revised) and test methods within their area of responsibility. Therefore, we conclude that this allegation is not substantiated and recommend this item be closed without further action or investigation.

Allegation 28:

"It is alleged that Bechtel designers used only fillet welds on web-to-web connections of beams and pipe supports and tray hangers and did not weld all around to restrain forces in all directions. Allegor also questions seismic loading calculations and feels that there is no actual test on welds under seismic conditions. Allegor states also that AWS D1.1 demands end returns on fillet welds and these were lacking in many places."

Response:

Allegations 28, 44 (page 20), and 51 (page 21) - These three allegations are identical and are considered to apply to the Midland plants since the allegor does not identify specific locations. The allegations have their origin with the Structural Welding Code, AWS D1.1 (para. 8.8) and, our review reveals that this Code does not require or demand "end returns" (also known as boxing) of side or end fillet welds. The terminology used in AWS D1.1 is "wherever practicable" and therefore an element of engineering judgement is implied rather than the establishment of a mandatory requirement. Should the Engineer decide to use "end returns" or "boxing of side or end fillet welds, the AWS D1.1 code requires that this be indicated on the drawings. Due to the lack of available time while at the site, BNL was unable to verify the use of "end returns" and, whether they were specified on the drawings when they were, in fact, used.

Allegation 29:

"It was stated that ASME code requires adequate root penetration of fillet welds and states that vendor-supplied equipment did not always conform to this requirement. Specifies Zack Co."

Response:

As a result of our investigation, it was determined that the vendor identified as "Zack Co." did not, and was not, under contract to supply any equipment, components, parts, materials or appurtenances of any type in which the ASME Code was the Code of design, fabrication or installation at the Midland site. An examination of the "Zack Co." purchase

contract revealed that this vendors responsibilities were limited to the fabrication and installation of Heating, Ventilation and Air Conditioning (HVAC) equipment. These fabrication and installation activities are governed by codes and standards unrelated to the ASME Boiler and Pressure Vessel Code.

This allegation is not substantiated and we recommend closure of this item without further investigation.

Allegation 30:

"It was stated that A-7 rim steel may have been used in critical applications on SONGS."

Response:

Although this item was not specific to the Midland Plants, BNL personnel verified that the referenced material (ASTM A-7) had not been procured for use at Midland in safety related applications or in safety related structures.

A comprehensive review was performed on the following specifications:

- A. 7220-C-233(Q) Rev. 24 and prior revisions - Technical Specification for Purchase of Miscellaneous Metal.
- B. 7220-C-36 Rev. 0 (initial issue and subsequent revisions) - Technical Specification for Furnishing, Detailing, Fabrication, Delivery and Erection of Structural Steel.

These specifications were found to specifically identify by standard that ASTM A-36 was to be procured for the structural applications. We note that ASTM Standard A-7 was discontinued in 1957, and replaced by Standard A-283 and A-306 with A-36 being added in 1973.

Additionally, the following Bechtel field purchase orders were selected at random (from the very early years of the project) to verify that structural steel for "O" (quality) had been purchased to meet the requirements of Standard A-36.

<u>Purchase Order</u>	<u>Material Size</u>	<u>Quantity</u>
F28141 (6442)	3"x2"x3/8"x40'	200 ft. - channel
F17797 (2575)	2"x2"x3/16"	10 pcs. - plate
F33818 (8365)	2"x2"x1/8"	100 ft. - channel
M106AC (4158) - 1977	4"x4"x1/2"	100 ft. - channel
F19512 (3090) - 1977	7'x12'x3/8"	4 pcs. - plate
F3134 (8467)	6'x6'x1 3/8"	4 pcs. - plate
M106AC (4185) - 1977	2'x20'x1/4"	5 pcs. - plate

All items were identified as ASTM A-36.

Allegation 31:

"Alleger questions the code adequacy of Bechtel's procedures regarding E7018 electrode out of oven time."

Response:

See response to Allegation 13 on pg. 13.

Allegation 33:

"It is stated that reinforcements of groove welds on Bechtel from WQ2, Sheet 20, differed from ASME code requirements."

Response:

See response to Allegation 24 on pg. 15.

Allegation 41:

"Alleger states that runoff plates were not used on structural members."

Response:

A resolution to this allegation was not pursued during our visit to the Midland site due to time constraints. However, based on our past experience at numerous other Nuclear construction sites, there is a very high probability that this statement is true. We also offer the following:

1. The code of origin is AWS D1.1 (para. 3.12) and the use of run-off plates is not a requirement of this code. Additionally, their use is not a requirement of any other code, standard or guide that we are aware of.
2. The use of run-off plates is considered good welding practice when using welding processes which utilize extremely high rates of heat input (submerged arc, electroslag, etc.) and where weld termination does not lend itself to the level of control which can be exercised with manual processes. The welding processes utilized at Midland for joining structural members (shielded metal arc, flux-cored and gas tungsten arc) lend themselves to a very high level of control by the welder. This level of control is such that run-off plates are rarely necessary with no compromise of weld quality at the termination of the joint.

We believe further action regarding this allegation to be unnecessary and, no noncompliance exists.

Allegation 44:

"Alleger states that many examples of non-existent end returns on welds are at SONGS, Palisades, and Midland."

Response:

See response to Allegation 28 on pg. 18.

Allegation 46:

"Alleger expresses the concern that many young people were inspecting welds with no real knowledge of welding."

Response:

See response to Allegation 26 on pg. 17.

Allegation 51:

"Alleger contends that end returns are not specified on Bechtel Power Corporation detail drawings in violation of AWS D1.1, para. 8.8.6, 8.8.6.1 and 8.8.6.2."

Response:

See response to Allegation 28 on pg. 18.

Allegation 53:

"The alleger was concerned that since there were many spelling errors on nondestructive test reports by Peabody Testing that the examinations performed by these people may be questionable."

Response:

See Allegation 25 on pg. 16.

Allegation 54:

"Main steam pipe just outside of containment before first relief valve had weld with unacceptable concavity."

Response:

Specific welds were not identified by the alleger therefore, two welds in main steam piping outside of primary containment and before the first relief valve were selected for examination with attention to the weld profile (specifically, concavity). The welds examined were:

1. 632 - SH2 FW1
2. 632 - SH3 FW1

The welds examined were found to be acceptable to the criteria of ASME III - Division I, para. NX-4426.2.

Allegation 55:

"Some pipe hangers of questionable construction," (no welding on hanger flanges)."

Response:

A review of a memo from Perry to Sanders, dated June 20, 1984, Subject - Midland Energy Center Project Technical Trending of HRP Activities was made for this allegation. The document reviewed was a Technical Evaluation of the hanger reinspection program nonconformance reports for the Midland site which stated in part that "... At the time that the NCRs utilized by this report were generated, the "rate of rejection" of inspected pipe supports was 90%, i.e., 9 out of 10 pipe supports were found to have one or more rejectable attributes, thus the 445 NCRs utilized for this report represent approximately 500 (445/.9) inspected supports ..." [page 3, Section 3.1, third paragraph]. Additionally, Section 3.2 Significance of Data, subparagraph 1. Weld Deviations states "The family of weld deviations comprises 47% of all significant deviations. In addition, weld deviations represent 41% of all identified deviations. This is the largest contribution of any deviation family." [page 3] Even though more than half of these deviations could be accepted "as is" by an engineering evaluation, an approximately 50% initial reject is sufficient cause for the allegation to be considered substantiated. However the reinspection programs established by the licensee should have identified the hanger deficiencies had the plant not been shut down.

Allegation 56:

"Deficient socket welds could be found in "Q" piping in lowest level of the auxiliary building."

Response:

No specific identification was provided for these socket welds. Due to the vagueness of this allegation, a random selection of socket welds in "Q" piping was made in the lowest level of the auxiliary building. The following welds were visually inspected for required size and profile:

1. 1HCB-4-1 FW9
2. 1HCB-4-1 FW10
3. 1GCB-36-1 FW23
4. 1GCB-36-1 FW24
5. 1GCB-36-1 FW25
6. 1GCB-36-1 FW41
7. 1GCB-36-1 FW40
8. 1GCB-36-1 FW42
9. 1GCB-36-1 FW45
10. 1GCB-36-1 FW43
11. 1GCB-36-1 FW47
12. 1HCB-270-1 FW43
13. 1HCB-270-1 FW45
14. FSKM-610-4-20 FW2
15. FSKM-610-4-16 FW1
16. 1GCB-36-2 FW8
17. 1GCB-36-2 FW6
18. 1GCB-36-2 FW7

19. 1GCB-36-2 FW9
20. 1GCB-36-2 FW10
21. 1HCB-16-612--3-2 FW35 (Top off valve TN 3-3)

No nonconforming conditions were identified.

Allegation 57:

"Welds #89, 90, 91 on drawing FSK-M-1HBC-58-2 (service H₂O) lines being the worst."

Response:

Three welds were specifically identified in this allegation by drawing and field weld number (FW89, 90 and 91 on Drawing FSK-M-1HBC-58-2). These three welds were located and visually inspected for required size and profile. The weld size and profile were found to be acceptable although a rejectable arc strike crater was identified on FW91. The allegation that these three welds constituted a "worst" case was not substantiated by the inspection results.

Allegation 58:

"Bechtel spec. for argon purge allowing 104 cfm Ar (he feels too much flow rate latitude), does not require checking dew point on Ar used for purges."

Response:

The reference in this allegation to "104 cfm" for purge gas is believed to be in error. The volume of purge gas specified on the most commonly used Bechtel weld procedure specification (WPS) for the joining of stainless steels (no purge is required for carbon steels) is 1 to 40 cfm. This volume is specified on WPS P8-AT-Ag for weld root closure and the second pass (which is optional).

The flow rate permitted provides a generous range for a number of valid technical reasons. Among them are:

1. These procedures are useable on all pipe diameters. This range is extensive and would cover every diameter from 2" to 20'.
2. The use of purge dams would greatly affect the volume of purge gas.
3. The inability (in certain welds) to use a purge dam or, the ability to "dam" only one end of the system or pipe.
4. Amount of turbulence in the immediate area.

Also, the rate of purge flow (and its use) is not an essential variable of ASME IX. The use of a purge gas and its control within a narrow range is not essential to the completion of the weld with the achievement of a high degree of quality. More importantly, the percent of oxygen in the exiting gas is the true measure of whether one has provided

the necessary degree of protection for root closure. When the purge is initially introduced, the flow rates would be exceedingly high for large diameter pipe but, would be reduced as the argon displaced the air and, oxygen content was reduced to low levels (usually 1 1/2 to 2%). At this time, the flow rate would be reduced to a level which would maintain this low oxygen content. The bechtel corporation WPS and the General Purge Specification (GPS-1, Rev. 4) provides for the testing of exit gas to assure the purge is effective.

The range specified is not abnormal for the welding variables encountered in the use of this procedure. No item of non-compliance has been identified and further investigation of this allegation not recommended.

Allegation 59:

"Undersized welds had been accepted by Morris and his qualification revoked."

Response:

Items reviewed in the investigation of this allegation include:

1. Bechtel Thermal Power Organization Construction Quality Control Training Record - for Morris, A. C. (4/13/81).
2. Bechtel Thermal Power Organization Construction Quality Control Education and Experience Resume - for Morris, A. C., 7/21/81.
3. Bechtel Thermal Power Organization Construction Quality Control Physical Examination Record - for Morris, A. C., 5/19/81.
4. Bechtel Thermal Power Organization Construction Quality Control Certificates of Qualification - for Morris, A. C., (3), 1/29/83.
5. Bechtel Nonconformance Report No. 4084, 3/18/82.
6. Bechtel Power Corporation memo to QC File from Fredianelli, D. L. (LWOCE) and Creel, W. J. (LPMOCE), 3/12/82.

The referenced memo (6) stated in part "Following the rescission of A. Morris' certification on 1/19/82, an ongoing overinspection of his work prior to decertification has identified many undersized weld...". The final results of this overinspection were documented in Nonconformance Report No. 4084 (5). The reference memo (6) also documented an inspection of 5 socket welds per each Construction Quality Control Engineer COCE to determine if a generic problem existed at the line of the incident. The memo stated that no generic problem existed at Midland. This inspection does lend support to the conclusion that QC inspections did have an adequate knowledge of fillet weld sizing and weld gage use. See allegation 60, pg. 33. We conclude that this allegation is substantiated but, is of no technical significance. Information provided within the referenced documents reveals that the condition was identified by the constructor (not the allegor) and, once discovered, the constructor undertook appropriate actions to assess the extent of the condition and

establish corrective measures. This action provides confidence in the effectiveness of the quality program at the Midland site. We recommend this item be closed without further action.

CATEGORY DProcedures/Specifications Fail to Comply
With Code (ASME) or, are Inadequate

The allegations assigned to this category are too generalized for a meaningful response to be developed as a result of the time available for investigation. No item was defined or specifically identified such that a source document or activity could be directly examined for code or regulatory compliance. However, a response to a generalized and vague allegation can be developed by the review of a selection of safety related components, items, structures and systems from their specification stage through erection or installation. This would necessarily be a broad scale effort.

Allegation 2:

"Bechtel Corporation has systematically downgraded standards for safety-related equipment to the point where I believe that much of the construction will not withstand the stresses it should be built to take.

Allegation 6:

"I was astonished to see that in numerous places, Bechtel has established standards which fell below those of the ASME Code."

Allegation 7:

"Despite this, Bechtel in some cases made the decision, based on their own engineers' opinions or short-term testing in San Francisco, to modify these standards."

Allegation 8:

"But in the area of welding, where I was qualified to judge, the new specifications were inadequate to the needs of a nuclear facility."

Allegation 34:

"Pg. 133, para. 1 - It is stated that Bechtel welding procedures leave a lot to be desired."

CATEGORY E

Allegation Not Site Specific or Too General - Dismissed

Allegations 12, 35, 37, 38, 39, 45, 47, 49 and 52 were not specific to the Midland Plants and therefore, were not addressed during the site visit. Also, included in this category are those allegations which do not warrant further action due to their vague and subjective nature.

Allegation 1:

"It is my professional opinion that the Midland plant is the worst nuclear facility I have ever seen."

Response:

A response cannot be provided to this allegation because of its broad and subjective nature. We find this allegation is not substantiated as made and recommend no further action or investigation.

Allegation 5:

"I will also give examples of the unhealthy degree of reliance that certain NRC inspectors have placed in the Bechtel personnel whom they are supposed to monitor. ... the inspection reports that were supposed to represent a completely separate check on Bechtel performance often wound up basing their approval on Bechtel's evaluations of its own work."

Response:

A complete review of all affidavits, statements and records of interviews with the allegor was made by BNL and no specific "examples" could be identified. Therefore, this allegation is not substantiated by factual data and investigation by BNL was not carried further.

Allegation 12:**WITHHELD FROM PUBLIC DISCLOSURE**Response:

This allegation was not made specifically at the Midland Plants but, was applicable to the Palisades facility.

Allegation 18:

"Never in my life have I ever seen so many critical welds accepted in nuclear work and then found to be unacceptable."

Response:

A response to this allegation cannot be provided due to its broad and general nature.

Allegation 21:

"After nearly twenty years of work as an engineer and welding authority, I know a deficient weld when I see one, and I know many of these welds and other problems went undetected (or ignored) by the men responsible for inspecting them."

Response:

This allegation could not be addressed due to its lack of specificity. An allegation of such a broad and general nature could only be addressed in a large scale re-inspection of the welding activity. We believe that were the "Quality Verification" portion of the "Construction Completion Program" (CCP) to be accomplished, the results would form the basis to refute or substantiate this allegation. We recommend this item be closed without further action.

Allegation 22:

"Bechtel has shown by its attitude that it cannot be trusted to perform work of the high quality necessary in a nuclear plant."

Response:

A response to this allegation cannot be provided due to its broad and undefined nature. We recommend this item be closed without further action or investigation.

Allegation 23:

"The ASME Code requires adequate root penetration of fillet welds. I recall that some of the vendor-supplied welded hardware appeared to not have adequate root penetration. I recommended that the NRC examine the beginning and end of fillet welds to assure root penetration at these areas and verify that all craters are filled, and conduct destructive testing of selected supports supplied by this vendor to determine if other fillet welds and groove welds have adequate root penetration or other code violations.

Response:

BNL technical specialists were unable to conduct an indepth investigation of this allegation due to the lack of identification of the equipment or vendor involved. From the wording of the allegation, it appears that it may be directed at a support of some type (pipe, electrical, cable tray or HVAC ducting and/or equipment). Also, we were unable to deduce (from the statement) whether this allegation applied specifically to Midland or, the San Onofre plant. We believe an adequate investigation could be conducted if further (more specific) information were

provided regarding the equipment or vendor. Otherwise, attempts to provide a meaningful response would be futile. We recommend this item be closed unless and until further information becomes available.

Allegation 35:

WITHHELD FROM PUBLIC DISCLOSURE

Response:

This allegation is not site specific to Midland therefore, no response is provided. Also, the allegation is such that it does not lend itself to generic consideration based on the particular practices of the Architect/Engineer.

Allegation 37:

WITHHELD FROM PUBLIC DISCLOSURE

Response:

This allegation is not site specific to Midland therefore, no response is provided. Also, the allegation is such that it does not lend itself to generic consideration based on the particular practices of the Architect/Engineer.

Allegation 38:

WITHHELD FROM PUBLIC DISCLOSURE

Response:

This allegation is not site specific to Midland therefore, no response is provided. Also, the allegation is such that it does not lend itself to generic consideration based on the particular practices of the Architect/Engineer.

Allegation 39:

WITHHELD FROM PUBLIC DISCLOSURE

Response:

Although this allegation was site specific to SONGS, BNL believed the problem was potentially generic and undertook to evaluate it further as applies to the Midland plants. During our visit to Midland, BNL determined that the Nonconformance report in question (NCR E-1941) was evaluated by Bechtel Corporation as a "potential problem" on Deficiency Evaluation Report No. 69 (11/4/80) for the Midland site. The evaluation concluded that the Midland site was not subject to the problem which

originated at SONGS. We terminated our investigation of this allegation after our review of the evaluation report. The allegation was not considered to be applicable to the Midland plants.

Allegation 40:

"Alleger discusses the qualifications of "Hilti-type" studs and a stud that failed in a brittle manner."

Response:

We were unable to further define the nature of this allegation. Since the statement(s) made do not identify or constitute a nonconforming condition we recommend this item be closed without further action or investigation.

Allegation 45:

WITHHELD FROM PUBLIC DISCLOSURE

Response:

This allegation is not site specific to Midland therefore, no response is provided. Also, the allegation is such that it does not lend itself to generic consideration based on the particular practices of the Architect/Engineer.

Allegation 47:

WITHHELD FROM PUBLIC DISCLOSURE

Response:

This allegation is not site specific to Midland therefore, no response is provided. Also, the allegation is such that it does not lend itself to generic consideration based on the particular practices of the Architect/Engineer.

Allegation 49:

WITHHELD FROM PUBLIC DISCLOSURE

Response:

This allegation is not site specific to Midland therefore, no response is provided. Also, the allegation is such that it does not lend itself to generic consideration based on the particular practices of the Architect/Engineer.

Allegation 52:**WITHHELD FROM PUBLIC DISCLOSURE**Response:

This allegation is not site specific to Midland therefore, no response is provided. Also, the allegation is such that it does not lend itself to generic consideration based on the particular practices of the Architect/Engineer.

Allegation 61:

"March 22 memo of Foster, pg. 2, last paragraph - all welds onsite should be reinspected."

Response:

A response to this allegation cannot be provided due to its broad and undefined nature. We recommend this item be closed without further action or investigation.

CATEGORY F

Additional Work/Investigation Required

The following allegations, although considered by BNL to be broad, subjective and general are such that a meaningful response could be provided when based on an analysis of results obtained from a specific inspection plan or effort. This effort was not made due to the obvious magnitude involved. It is entirely possible that a response can be provided which will be based on the data obtained during overinspection, corrective action and/or other quality verification plans and programs which have been (or will be) accomplished at the Midland plants.

Allegation 4:

"I have seen Bechtel personnel, both QC inspectors and engineers with QC responsibilities, routinely accept sub-standard work."

Response:

We presume the allegor is referring to weld related items. Lacking further definition, our recommended approach is as stated above unless specific cases or details can be identified.

Allegation 11:

"Because of this, I was very concerned to discover that many welds in the piping had been improperly ground down, grinding down the pipe wall thickness along with it."

Response:

See response to allegation 11 on page 10. This allegation was not substantiated.

Allegation 27:

"It is alleged that pipefitters used pipe cutters to place scribe marks on socket weld fitup measurements."

Response:

This allegation was site specific to the San Onofre nuclear plant and therefore, was not pursued further at Midland. If the allegation is considered to be a generic concern (with the alleged practice to have also taken place at the Midland plant) its resolution can be accomplished by the development and implementation of an inspection plan for examination of socket welds for evidence of "pipe cutter" use for placing scribe marks.

Allegation 36:

"P. 139, para. 4 - Allegor states that at Midland undersized fillet welds were documented as acceptable."

Response:

See response to Allegation 4 on pg. 32.

Allegation 43:

"Pg. 223, para. 2 - Allegor states that in Region III plants inspectors documented undersized fillet welds as being full sized socket welds when they were not."

Response:

See response to Allegation 4 on pg. 32.

Allegation 60:

"Both Midland and Region III inspector did not know how to use a fillet weld gauge properly."

Response:

A sample examination of fillet welds would refute or substantiate this allegation. If we presume that unfamiliarity with the use of the fillet gauge was widespread, the data accumulated would substantiate the allegation by high reject rates upon reinspection. If unfamiliarity with the use of the gauge were minor or localized, a sample (regardless of its size) could refute the allegation. Additionally, see response to allegation 53 on page 21.