366

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
CONSUMERS POWER COMPANY	)	Docket Nos. 50-329 OM & OL
	)	50-330 OM & OL
(Midland Plant, Units 1 and 2)	)	

NRC STAFF FURTHER SUPPLEMENTAL FINDINGS OF FACT AND CONCLUSIONS OF LAW CONCERNING QUALITY ASSURANCE

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Dated: May 25, 1984

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I. INTRODUCTION

1. In this Partial Initial Decision we address the issues raised in the December 6, 1979 "Order Modifying Construction Permits" insofar as those issues relate to quality assurance. Those issues are (1) whether the facts set forth in Part 2 of the Order are correct and (2) whether the Order should be sustained. We also address various contentions raised by Intervenors and accepted by this Board.

2. Following evidentiary hearings addressing quality assurance issues, Applicant submitted proposed findings in October 1981, March 1982, and four sets of responses to other findings in April 1982. Intervenor Stamiris submitted proposed findings in December 1981 and supplemental findings in March 1982. The NRC Staff submitted proposed findings in December 1981 and supplemental findings in March 1982. Subsequent to evidentiary hearings addressing technical issues, Applicant submitted proposed findings in August 1983, the Staff in November 1983 and Intervenor Stamiris in December 1983.

3. On April 30, 1982 we issued, sua sponte, a Memorandum and Order imposing certain interim conditions pending issuance of a Partial Initial Decision. Consumers Power Company (Midland Plant, Units 1 & 2), LBP-82-35, 15 NRC 1060. Our reasons for issuing this Order are set forth fully in the Order. We authorized the Director of Nuclear Reactor Regulation to amend both construction permits to require that Consumers Power Company (CPC) obtain explicit prior approval from the NRC Staff (to the extent such approval had not already been obtained) before proceeding with designated soils related activities.

4. In a letter to this Board dated June 29, 1982 the Staff advised us that it had determined it was necessary to supplement testimony previously submitted by Region III. As discussed below, Regional Administrator James G. Keppler believed that CPC's soils QA was not being performed as well as he had anticipated in his testimony before us in the Summer of 1981. We treated the Staff's letter as a request to reopen the record and in a Memorandum and Order dated July 7, 1982, we ordered that the Staff's request to reopen the record on QA and management attitude matters was granted. Hearings on these issues were held during 1983 on February 14-18, April 27-30, May 26, June 1-4, June 6-10, June 27-July 1, July 28-30, August 1-4, September 20-23, October 31-November 4, November 7-9, and December 3.

5. CPC and the Staff presented extensive testimony which covered a broad range of issues relating to quality assurance implementation at Midland.

6. The Staff's general testimony on quality assurance implementation was divided into two segments. One segment consisted of a

panel of inspectors assigned to Midland. More specifically, these inspectors were members of the "Midland Section" of the Office of Special Cases, which had been created when it was determined that two plants, Midland and Zimmer, needed greater Staff attention. The inspectors who testified were Wayne D. Shafer, Chief of the Midland Section until April 1983, John J. Harrison, Mr. Shafer's successor, Ross B. Landsman and Ronald N. Gardner, regional based inspectors and Ronald J. Cook, resident inspector.[1/] The other segment of general testimony was by Regional Administrator James G. Keppler.[2/]

7. Also, various Staff members sat on other panels dealing with specific incidents or issues that reflect on implementation of quality assurance at Midland. The panel members and any prefiled testimony are identified at the point where their particular testimony is discussed.

8. A panel consisting of James W. Cook, Vice President of Projects, Engineering and Construction for CPC, Roy A. Wells, Jr., Executive Manager, Midland Project Quality Assurance Department (MPQAD) and John A. Rutgers, Becthel Power Corporation Project Manager for the Midland Plant testified on a spectrum of quality assurance issues.[3/] In addition, Mr. James A.

1/ The Midland Section prefiled two sets of testimony. The first, dated October 29, 1982 follows Tr. 11,391. ("Midland Section October 1982 testimony"). The second, dated March 25, 1983 follows Tr. 14,374. ("Midland Section March 1983 testimony").

2/ Mr. Keppler's prefiled testimony was dated October 29, 1982 and March 25, 1983. The first set follows Tr. 15,111, ("Keppler, October 1982 testimony"). The second set follows Tr. 15,114 ("Keppler, March 1983 testimony").

3/ Each of these panel members prefiled testimony. Mr. J. Cook's testimony follows Tr. 18,025 ("J. Cook"). Mr. Wells' testimony follows Tr. 18,027 ("Wells") Mr. Rutgers' testimony follows Tr. 18,035 ("Rutgers").

Mooney, Executive Manager, Midland Project Office testified on CPC's implementation of remedial soils work. Walter R. Bird, then Manager of MPQAD, Robert M. Wheeler, Soils Section Head, Midland Construction Department and Bruce Peck, Construction Superintendent, also testified about quality assurance at Midland.[4/]

9. CPC presented testimony on certain specific events and issues that relate to implementation of quality assurance. The witnesses and any prefiled testimony will be identified at the point where the particular event or issue is discussed.

10. The QA hearings held in 1983 cover the period from approximately early 1982 through late summer 1983. It is undisputed that during this period, effective implementation of quality assurance was not being carried out at the Midland plant. Hence, as will be discussed below, CPC has undertaken and we have imposed extraordinary steps to assure both that quality assurance will be effectively implemented in the future and that work already done is inspected and verified.

11. We note at the outset that although these protracted hearings have involved extensive presentations of evidence and cross-examination, the final positions of the Staff and the Applicant are essentially the same. In Mr. Keppler's testimony filed on March 25, 1983, he stated that he was not prepared to place confidence in CPC's Quality Assurance

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4/ Mr. Mooney's prefiled testimony follows Tr. 17,017. ("Mooney"). Mr. Bird and Mr. Wheeler prefiled joint testimony with respect to various drilling incidents on site. That testimony follows Tr. 11,407. Additionally, Mr. Bird and Mr. Wheeler prefiled individual testimony which follows Tr. 16,975 and 18,784 respectively. ("Bird," "Wheeler"). Mr. Peck's prefiled testimony follows Tr. 18,921. ("Peck").

Program to provide reasonable assurance that CPC could complete the Midland Plant consistent with regulatory requirements. He stated specifically what requirements he thought were necessary to obtain reasonable assurance, noting that while he would like this Board to lift the requirements of our April 30, 1982 Order sometime in the future, CPC's performance does not warrant such a change now. (Tr. 15,119-20). In proposed findings filed by Consumers Power Company on January 27, 1984, the Applicant took no exception to Mr. Keppler's testimony and urged the Board to continue in effect the requirements of our Order of April 30, 1982. In proposed findings filed on May 25, 1984, the Staff took the same position. For reasons that we discuss at length below, we agree with the Staff and Applicant that the appropriate action to be taken by this Board is to continue in effect our April 30, 1982 Order.

12. On May 7, 1984 we granted in part and denied in part a motion to reopen the record filed by Ms. Stamiris. We admitted what we designated as OM Contention 6 involving alleged misrepresentations by CPC of their schedule for completion of construction and OM Contention 7 involving CPC's reliance on U.S. Testing soils test results. Consumers Power Company, (Midland Plant, Units 1 and 2), LBP-84-20, 19 NRC ___, (May 7, 1984). These issues, over which we retain jurisdiction, will be the subject of a subsequent decision by this Board.

II. RULINGS ON ISSUES

A. The facts set forth in Part II of the December 6, 1979 Order, insofar as they relate to quality assurance, are correct.

13. The first issue for resolution is whether the facts set forth in Part II of the December 6, 1979 Order Modifying Construction Permits are correct. The Staff dealt with this issue at length in findings filed on December 30, 1981. Joint Exhibit 1 (Tr. 1175) was a stipulation offered by CPC and the Staff which recognized certain quality assurance deficiencies related to soil construction activities prior to December 1979. CPC agreed not to contest the Staff's conclusions that the quality assurance deficiencies referred to in the stipulation constituted a breakdown of quality assurance with respect to soils placement at Midland and constituted an adequate basis for issuance of the Order of December 6, 1979. (Staff's proposed findings, December 30, 1981, ¶¶ 234-35).

14. We ruled that the stipulation to facts concerning quality assurance necessary to support issuance of the December 6, 1979 Order made litigation of those facts unnecessary. (Tr. 1174).

B. The December 6, 1979 Order should be sustained to the extent of continuing in effect the April 30th, 1982 Order.

15. The second issue set forth in the December 6, 1979 Order is whether the Order should be sustained. As noted above, the position of

CPC and the Staff is the same - that the December 6, 1979 Order should be sustained to the extent of continuing in effect the Order of April 30, 1982. Mr. Keppler's testimony sets out both the factual background for reopening these hearings and the reasons for the Staff's conclusion that we should continue in effect our April 30, 1982 Order.

16. James G. Keppler, Regional Administrator of NRC's Region III office, testified on May 2 and 3, 1983.

17. In his October 1982 filing, Mr. Keppler first stated the background of this testimony. In July 1981, Mr. Keppler had testified on the more significant quality assurance problems experienced at Midland and the corrective actions. While many significant quality assurance deficiencies had been identified, the Staff concluded that the problems experienced were not indicative of a breakdown in the implementation of the overall quality assurance program. The thrust of Mr. Keppler's testimony in July 1981 was that he had confidence that CPC's QA program for both remedial soils work and for the remainder of construction would be implemented effectively. (Keppler October 1982 Testimony, pp. 1-2).

18. In April 1982, Mr. Keppler became aware of additional problems with the effectiveness of implementation of the QA program. The Systemmatic Appraisal of Licensee Performance (SALP) report for the period July 1, 1980 through June 30, 1981 had rated soils work activities a Category III, which is the lowest acceptable rating given by the SALP review process. During the April 1982 public meeting to present the SALP

findings, Mr. Cook stated that at that time he would still rate CPC's soils work a Category III. At the same meeting Mr. Keppler questioned whether Consumers could "do the job". (Tr. 15,163). Mr. Keppler was concerned that his July 1981 testimony had left us with the impression that by April 1982 Consumers Power Company would be rated a Category I or II in the soils area. (Keppler, October 1982 testimony pp. 2-3). Hence, Mr. Keppler decided that he should supplement his July 1981 testimony.

19. In July 1982 Mr. Keppler recognized that more NRC resources were going to have to be provided to oversee activities at Midland (and Zimmer). Therefore, the Office of Special Cases was created with Robert Warnick assigned as Acting Director. On July 21, 1982, Mr. Warnick requested senior resident inspector R. J. Cook to provide a summary of indicators of questionable licensee performance. Mr. Cook's response was an eight-page detailed memorandum. (Keppler October 1982 testimony, Attachment B). At the conclusion of his report, Mr. R. Cook described as a "damning" concept, the fact that the NRC inspection effort at Midland has been purely reactive in nature for approximately the last year and that the indicators of questionable licensee performance that he discussed are what have been observed in approximately the last six months. Mr. R. Cook then stated, "one can only wonder at what would be disclosed under a rigorous routine inspection and audit program." (Page 8, attachment B to the October 1982 testimony of J. G. Keppler).

20. On August 26, 1982 and again on September 2, 1982, Mr. Keppler and Mr. Darrell Eisenhut, Director, Division of Licensing, NRR, met with top corporate management representatives from Consumers Power Company to discuss NRC disappointment with implementation of QA and possible recommended solutions. Tr. 15,586. One of the points emphasized by NRC at this meeting was that CPC management was not conveying the message to get the job done right in the first place as opposed to trying to inspect quality into the job. (Tr. 14,731-2, 15,124). It was not clear to the NRC staff why CPC was having difficulty implementing their QA program. In fact, Mr. Keppler consistently testified that despite NRC's attempts to determine the reasons for CPC's inability to implement their QA program, the NRC did not know the root cause. (Tr. 15,122, 15,178, 15,380, 15,609). CPC was directed to develop and propose to the NRC actions which would improve QA implementation and to provide confidence that the program was being implemented properly. (Keppler October 1982 testimony pp. 4-5). CPC's response to the NRC's request was contained in two letters dated September 17, 1982 which are included in the record as attachments E and F to the Keppler October 1982 testimony.

21. When Mr. Keppler and Mr. Eisenhut met with CPC management there was no specific agreement within the NRC as to recommendations to resolve the QA problems at Midland. (Tr. 15,178). Since the NRC did not really know what the cause of the problem was, the NRC discussed with CPC all of the recommendations that had been made and told the utility that it had to come up with a program that the Staff would then consider. (Tr. 15,178). It was clear to the Staff, however, there was a communication problem and a problem of issues not getting to top management. (Tr. 15,183).

22. Intervenor Stamiris interrogated Mr. Keppler with respect to the extent to which CPC took the initiative in responding to the meetings of August 26, 1982 and September 2, 1982. When NRC met with CPC on those two dates the NRC told the utility to submit a "get well program." in effect, placed a mandate on them to come in with a program" - and that CPC's submittals of September 17, 1982 were in response. (Tr. 15,212).

23. Despite the continued questionable performance by CPC at Midland, the Staff was of the opinion that soils remedial work should be permitted to continue. First, the Staff expected that CPC would have independent third-party assessments of the Midland construction project. These assessments were expected to include reviews of safety-related work in progress and of completed work activities. In October 1982, the scope of and contractors for the third-party assessments were still under review by the NRC. In addition, the Midland section of the Office of Special Cases had expanded its inspection effort and had taken actions to assure compliance with the Licensing Board's April 30, 1982 requirement that remedial soils work activities receive prior staff approval. The Midland section had established a procedure for staff authorization of work activities proposed by CPC. This work authorization procedure, dated August 12, 1982 is attachment H to the Keppler October 1982 testimony. The Midland section had also caused stops of remedial soils work in August 1982 and in September 1982. (Keppler October 1982 testimony, pp. 5-6, Attachments I and J).

24. Mr. Keppler discussed the status of the proposals submitted by Consumers Power Company to resolve its problems with implementing quality

assurance. Attachments E and G to the October 1982 testimony had been integrated into a construction completion program which was submitted by CPC to the Staff on January 10, 1983. The construction completion program does not address the soils remedial work, but does address the balance of safety-related work. (Keppler March 1983 testimony, pp. 1-2).

25. A letter dated September 17, 1982 from CPC Vice President James Cook to the Director of NRR and to Mr. Keppler describes steps which either had been or would be taken to assure that quality assurance would be adequately implemented for remedial soils work. (Attachment F to the October 1982 testimony by J. G. Keppler). The Staff found the commitments in attachment F acceptable. (Page 2, March 1983 testimony of J. G. Keppler). The most significant step taken by CPC was the retention of a third party to independently assess the implementation of remedial soils work. By March 1983, Stone & Webster had been on the site for 23 weeks for this purpose. The Staff had determined that Stone & Webster satisfied the Commission's criteria for the competence and independence of third party reviewers. (Keppler March 1983 testimony, pp. 2-3, Attachment 2).

26. On December 9, 1982 the Staff authorized CPC to go beyond preliminary underpinning work and permitted the performance of actual excavation work beneath a major structure. The Staff authorized CPC to begin work relating to the excavation and installation of piers W12 and E12 under the turbine building. The turbine building is not a safety-related structure but excavation beneath it was necessary to gain construction access to the adjacent auxiliary building. It was the Staff's intent that although this initial excavation work would not be excessively complex, it would permit the Staff to assess whether it would allow further remedial soils work to be done. As of March 1983, Region III had found no major

problems with the work authorized by the Staff on December 9, 1982. (Keppler March 1983 testimony, p. 3).

27. From October 12 through November 29, 1982, Region III conducted a thorough inspection primarily of work accomplished in the diesel generator building. The results of this inspection indicated a significant breakdown in the implementation of CPC's quality assurance program. Attachment 4 to the March 1983 testimony of J. G. Keppler is Inspection Report 82-22 dated February 8, 1983 which addresses the inspection of the diesel generator building. Attachment 3 to that testimony is a February 8, 1983 letter from Mr. Keppler to Consumers Power Company President John D. Selby enclosing a notice of violation and proposed imposition of civil penalties in the cumulative amount of $120,000. (Keppler March 1983 testimony p. 4).

28. The Staff presented its inspection findings to CPC on November 25, 1982. In early December 1982, CPC was informed that NRC expected them to take some decisive action or the Staff would recommend a shutdown. (Tr. 15,662). On December 2, 1982 CPC informed the Office of Special Cases that it planned to stop all safety-related work except for the following activities: (1) NSSS installation work performed by Babcock and Wilcox; (2) HVAC installation work performed by Zack Company; (3) post-system turnover work; (4) hanger and cable reinspection; (5) design engineering; (6) system layup activities; and (7) remedial soils work (which could only be performed according to the work authorization procedure). (Pages 4 and 5, March 1983 testimony of J. G. Keppler).

29. NRC does not have confidence in CPC's QA program alone to provide reasonable assurance that CPC could complete the plant consistent with regulatory requirements. NRC believes the following actions are necessary to provide that reasonable assurance: (1) An independent overview by a qualified outside organization of safety-related work, as CPC commits in its Construction Completion Program. The overview should continue until such time as CPC's implementation of its quality assurance program has been demonstrated to the NRC staff -- by sustained good performance -- to be adequate; (2) An independent design and construction verification (ID-CV) review of completed work on selected safety-related systems by an outside organization other than the one selected to conduct the overview described in (1); and (3) NRC oversight of the construction activities and the implementation of the CPC's QA program through its inspection program. (Pages 5 and 6, March 1983 testimony of J. G. Keppler).

30. Mr. Keppler was asked whether he agreed with testimony by Dr. Landsman, that the work at the site is liable to jeopardize the public health and safety of the people of the City of Midland and the surrounding counties. (Tr. 15,117). He responded that clearly there is a relationship between quality of construction and potential health and safety problems and that that is one of the reasons an operating license is not granted until the NRC is convinced that the plant has been constructed properly and that the utility is prepared to operate the plant safely. (Tr. 15,118). The NRC is assuring that an extensive program will be put into place to verify the quality of the plant before an operating license is issued and there will be third-party overviews required to assure that the quality assurance program is being

implemented properly. These steps should alleviate health and safety concerns. (Tr. 15,119).

31. Mr. Keppler hoped he could asked the Board to lift the requirements of the April 30, 1982, Order so that Consumers Power Company would not need explicit NRC approval for remedial soils work, but that he did not think it appropriate at this time. (Tr. 15,119). The NRC staff wants to get out of its present role as soon as it has confidence that QA and the third party review are working. The NRC staff could then revert to true regulatory posture at Midland. (Tr. 15,628). Before he requested the Board to lift the requirements of the April 30, 1982 Order, he would have to be convinced that the ongoing quality assurance activities with attended third-party overview are doing the job. He described the existing situation as a "hand-holding program" and said it was difficult to assess CPC's performance because the NRC quickly halts soils work that does not meet regulatory requirements. (Tr. 15,504).

32. Intervenor Stamiris pressed Mr. Keppler on why the Staff, authorized CPC to perform actual excavation work at piers W12 and E12 under the turbine building, in light of various indications of QA problems (such as the diesel generator building inspection). (Tr. 15,310). Mr. Keppler responded Dr. Landsman had made that recommendation. The Staff viewed this as a token effort designed to offer the Staff a chance to see if improvements that had been made by CPC would be implemented effectively. (Tr. 15,279, 15,310-11, 15,323).

33. Assurance that completed work construction work at Midland is

sound will be obtained from the construction completion program, third party overviews the independent design verification program and the independent construction verification programs. (Tr. 15,382).

34. Stone and Webster has been given the responsibility for third party review for the soils work at Midland. (Tr. 15,417). They were nominated for that work on September 17, 1982, began their overview on September 20, 1982, and were approved by the NRC on February 24, 1983. (Tr. 15,417-18, Tr. 15,443). Even though Stone and Webster had not been approved as a third-party to oversee soils work at the time of the release of the underpinning work under the turbine building, NRC was aware that Stone and Webster was on the site and Region III did take "some comfort" in Stone and Webster's observations. (Tr. 15,311).

35. Mr. Keppler described the review process by which a third party is selected. (Tr. 15,433). What is sought is an organization that is reasonably free from ties with the utility that it is going to work for and an organization that has the technical competence to do the job. (Tr. 15,433). In particular, a third party review team must meet the criteria for competence and independence set forth in Chairman Palladino's letter to Congressmen Ottinger and Dingel. (February 8, 1982). (Keppler, March 1983 testimony, pp. 2-3, Attachment .). When reviewing independence and competence, NRC looks at the organization and the individuals involved. (Tr. 15,433).

36. Before Stone and Webster began their work the Staff was aware that they had been involved in a large number of nuclear power plants in the country. Their reputation as an engineering firm and in quality assurance activities was recognized and accepted by the NRC. (Tr. 15,445).

37. NRC accepted Stone and Webster's reputation in the industry as indicative of the job they could do. (Tr. 15,450). They have been the architect/engineer and constructor of a number of plants in the country. (Tr. 15,450). The NRC looked at the individuals' and their past experience at the various plants where they worked and consulted NRC inspectors and various licensee organizations to obtain information on how the proposed team members had performed. (Tr. 15,450).

38. A question arose as to the performance of Stone and Webster at other facilities. Mr. Keppler responded that many organizations, although generally accepted as competent construction and engineering firms, do not always do a good job. (Tr. 15,458). When they do not do a good job it is up to the NRC and the regulated industry to get that turned around. (Tr. 15,458). What the NRC tries to focus on is not the organization per se as long as it is a recognized firm, but to focus on the individuals that are doing the work to make sure that in those cases where unacceptable work was performed at other facilities, the same people are not part of a third party review team. (Tr. 15,458). Since the team members are working for Stone and Webster, the NRC does not look at their college degrees and years of experience, but NRC does make sure that they have had experience in nuclear power plants in the area of the work that has to be done. If they have not been involved in a major quality assurance problem, NRC concludes they have not been contributors or causes of major quality assurance problems. (Tr. 15,463-4).

39. Stone and Webster will remain on the site as a third party

overviewer until the NRC has confidence in Consumer's QA program. If Stone and Webster leaves, another team will have to be brought in. (Tr. 15,518-19).

40. Mr. Keppler recommended that the Licensing Board require Region III to come back as some appropriate time and provide the Board with more current observations on how CPC's proposed programs were working. (Tr. 15,631). He stated that testimony with respect to actual experience would be of value to the Board and he recommended that the Board require an accounting of how the process is working. (Tr. 15,632).

III. SPECIFIC SUBJECTS ADDRESSED DURING THE EVIDENTIARY HEARINGS

A. Communications

(i). Reluctance to Provide Information to the Staff

41. One matter that concerns us is the Midland Section's testimony that CPC and Bechtel have failed to readily answer the Staff's questions, provide documents, or otherwise properly communicate with the Staff. As will be discussed below, this problem existed on site primarily prior to the end of 1982. Since then, the situation has improved.

42. Focussing primarily on the time period prior to the end of 1982, the Midland Section testified that in the course of their inspections, there have been instances in which they have had a difficult time obtaining documents that they wished to review. There appears to be a widespread feeling among inspectors that personnel at Midland had been recalcitrant in providing documents requested by the Staff. Mr. R. Cook emphasized that difficulties in obtaining needed documentation has happened several times. He also testified that other inspectors had

continually noted a reluctance onsite o provide the Staff with documents. (Tr. 14,588-89). Mr. Shafer agreed that there had been several instances of recalitrance in handing over documents requested by inspectors. He called it a "mild form of harrassment" and noted that the Staff has had to threaten CPC with issuances of noncompliances as a means of obtaining documents. (Tr. 14,578-79). Finally, Dr. Landsman noted that obtaining documentation at Midland was like "pulling teeth." (Tr. 14,576).

43. There are further indications that there was a pervasive problem with site personnel being unwilling to provide the Staff with requested documents. Speaking of a relunctance on the part of Bechtel to provide the Staff with documents, Mr. R. Cook noted that the situation had deteriorated to the point that the Staff had to go to the CPC site construction manager, tell him they have had all that they could stand, and ask his help in getting the documentation. (Tr. 14,579). Moreover, in three meetings with CPC management and/or the president of Bechtel, Mr. Keppler felt the need to highlight the difficulties the Staff has had in getting documents from Bechtel personnel working on the Midland project. (Tr. 15,622-23).

44. We now turn to examples offered by the Midland Section of instances in which they had trouble obtaining documents needed to conduct their inspections. As isolated incidents, they may not appear significant. However, viewing them in light of what appears to be a consensus among inspectors that Midland personnel were unwilling to provide them with documents requested, we decline to view the examples given as isolated instances. Instead, they appear to be symptomatic of

what was a serious problem at the site.

45. Dr, Landsman testified about one situation in which he had difficulty obtaining static calculations for the auxiliary building. (Tr. 14,397). Another time, Mr. R. Cook needed calculations for a welded connection for the mounting of an instrument panel. Only after Mr. R. Cook threatened to drive to Bechtel's offices in Ann Arbor, Michigan did Bechtel send the calculations to the site (Tr. 14,399, 14,581).

46. A further instance, which happened during the diesel generator building inspection involved the Staff's request to see drawings for mufflers for the diesel generator exhaust pipe hangers. The inspectors asked a CPC employee to see the drawings. The employee attempted to get them, but reported back that Bechtel would not give him the drawings. The Staff then inquired of a Bechtel employee about the drawings. The Bechtel employee responded that he could not speak to the inspectors. They then went to the supervisor of the hanger group. When the inspectors asked him for the drawings, they obtained them, but not without argument. (Tr. 14,580-81)

47. Another example involved Dr. Landsman's request to see the resumes of the geotechnical engineers at the site. His first request to see the resumes yielded nothing more than names followed by one-line statements. Education and experience levels were not included. A second request, apparently to upper management, was needed before Dr. Landsman received the resumes. (Tr. 14,396, Keppler October 1982 testimony, Attachment B, p. 3). Another time, Dr. Landsman asked to see the resume of the QC supervisor in charge of remedial soils and had to wait about a month to see it (Tr. 14,397).

48. The Midland Section indicated that much of the difficulty in obtaining documentation stemmed from Bechtel's reluctance to provide it. In fact, Bechtel was at times unwilling to provide documentation to CPC, its principal. Subordinate CPC employees often appeared willing to hand over requested documents, but they could not get them from Bechtel. (Tr. 14,579, see also Tr. 14,581). While certainly reflecting adversely on Bechtel, it also shows an inability by CPC to control its contractor (Tr. 14,583-84).

49. CPC responded to some of the Staff's testimony about site unwillingness to provide documentation to the Staff.

50. Mr. Rutgers believed that Bechtel had attempted to accommodate CPC and the Staff as Bechtel understood the requirements (Tr. 18,085). He also believed Bechtel had "tried to be responsive to all requests that have been made known to [it]". (Tr. 18,087). Mr. Rutgers also expressed his belief that, at any time, the Staff could have gone to document control either at the site or in Ann Arbor, Michigan and quickly obtain copies of drawings or specifications. (Tr. 18,694).

51. Mr. Rutgers also specifically responded to two of the Staff's examples of inability to obtain documentation from Bechtel, (1) Bechtel's reluctance in providing the drawings for the muffler and (2) the delay in obtaining resumes.

52. Mr. Rutgers' understanding of the circumstances surrounding the Staff's request to see the muffler drawings differed from the Staff's testimony. According to Mr. Rutgers, the original Bechtel employee contacted for the drawings had been on the payroll only six to nine months. He was shaken by Dr. Landsman's presence and asked that his supervisor be

present. When the supervisor showed up, Mr. R. Cook and Dr. Landsman simply walked away. (Tr. 18,090). However, Mr. Rutgers was not involved in the incident. (Tr. 18,630) Rather, about two weeks before he testified, he spent about twenty minutes looking into the matter, an investigation he admitted was cursory. (Tr. 18,630-31, 18,089).

53. With respect to the delay in obtaining resumes, Mr. Rutgers testified that three days after Dr. Landsman made his request, Bechtel gave resumes to him. Dr. Landsman rejected them, saying they were not specific enough. Bechtel then agreed to give him more detailed resumes but asked for time to purge them of family and other personal information. Four days later, the resumes were sent to Dr. Landsman. (Tr. 18,147-48, Rutgers, prep. test. at 20-21). However, in this case, Mr. Rutgers did not do the research for this aspect of his testimony and had not looked into the discrepancies between his testimony and Dr. Landsman's. (Tr. 18,148)

54. In addition to perceiving a reluctance to provide the Staff with documentation, the Staff noted that employees at the site have been instructed or otherwise pressured not to speak freely to the inspectors. (Tr. 14,716, Keppler October Testimony, Attachment B, p. 4).

55. CPC acknowledged that the Staff had been concerned that employees had been instructed to stifle communications with the Staff. CPC hypothesized that the concern might have been triggered by a Bechtel interoffice memorandum dated January 29, 1981. (Rutgers Testimony, Attachment A). The memorandum identifies specific individuals who were to respond to questions posed by CPC, the Staff or outside agencies. While the matrix was designed to assure the availability of accurate

information, Mr. Rutgers believed the memorandum might have been misinterpreted to be calling for a limiting of communications. (Rutgers prep. test pp. 21-22).

56. There was, however, another memorandum which the Staff obtained. (Staff Exhibit 19). It is dated February 24, 1982 and has five items on it. In the right hand corner is the name "Sevo", a Bechtel employee who works as a supervisor within MPQAD. The fourth item states "Contact [conduct?] with NRC inspectors by some is unacceptable."[5/] Dr. Landsman explained that he understood the fourth item to be directed to certain MPQAD employees who were communicating with the Staff regularly, as he thought they should be doing. The memorandum instructed them not to do so (Tr. 14,417-19).

57. After obtaining the Sevo memorandum and encountering difficulty in obtaining the muffler drawings described above, the Staff decided to confront CPC and Bechtel about their reluctance to freely communicate with or provide information to the Staff. The inspectors held a meeting with CPC and Bechtel to discuss the problem. (Tr. 14,584, 16,521).

58. In response to the Staff's concerns about Bechtel being unwilling to communicate with the Staff, Bechtel issued, on November 10, 1983, an interoffice memorandum. That memorandum instructs Bechtel employees to talk to "outside agencies" about matters within the scope of their responsibility. Only if a Bechtel employee is questioned about matters

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5/ Since the Memorandum is handwritten, it is difficult to determine whether the word is "contact" or "conduct". In either case, the tenor of the item would be the same.

outside the scope of his or her responsibility, must the employee refer the "outside agency" to someone else. (Rutgers Testimony, Attachment B, Tr. 14,404, 14,584, 16,523).

59. As the diesel generator building inspection progressed the Midland section found that site employees were becoming more cooperative in providing information to the Staff. (Tr. 16,251-52, Stamiris Exhibit 66). In particular, the Staff commended then site manager Donald Miller and MPQAD manager Roy Wells with inducing the changed attitude. (Tr. 16,253) The increased cooperative attitudes however, was less noticeable in Bechtel employees than in CPC employees. (Id.).

60. Mr. R. Cook indicated that since the DGB inspection, there have been some instances of problems with communications at the site. However, he believed that, on the whole, communications have been smooth since the inspection (Tr. 16,254, 16,522-23). Mr. Shafer also found communications to be smoother since the DGB inspection. (Tr. 16,521-22) As of the time he testified in June 1983, Mr. Gardner was not finding site personnel reluctant to discuss matters with him (Tr. 16,522).

61. Dr. Landsman offered one instance, occurring after the DGB inspection, in which he believes that CPC was not forthcoming with information about a potential difficulty with preparation for the load test on auxiliary building pier 11 W. This event, which occurred in April 1983, is discussed below in more detail. Because of this and couple of other incidents in which the Staff believed CPC was not properly keeping the Staff abreast of occurrences on site, CPC now telephones Dr. Landsman regularly to advise him of what is happening at the site. (Tr. 16,524, 16,762-64).

62. As of September 1983, Mr. Harrison and Mr. R. Cook noted a general improvement in communications between the Staff and CPC. (Tr. 21,167).

63. We consider to be serious the Staff's charges that CPC and Bechtel had been unwilling to provide information to and communicate freely with the Staff. Especially troublesome is the Staff's testimony that memos had been written which urged Midland personnel to not speak freely with the Staff.

64. After weighing the evidence, we find that until late 1982, CPC and Bechtel were uncooperative in responding to the Staff's inquiries.

65. CPC provided little to rebut the Staff's charges. For only two of the instances did CPC provide contradicting evidence. Even then, Mr. Rutgers admitted limited knowledge of the incidents. Hence, we give more weight to the Staff's direct involvement. However, even if Mr. Rutgers' versions of the two incidents were accurate, there is still a large amount of other evidence what shows that through 1982, CPC and Bechtel were recalcitrant in providing documents to or communicating freely with the Staff.[6/] In particular, we are struck by what appears to

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6/ In the course of developing the CCP, Applicant wished to avoid gossip or rumors. Mr. Wells therefore, called Mr. Shafer and asked that while the CCP was being prepared, that channels be set up by which the Staff would communicate with the Applicant about the CCP. While reserving the right to communicate with anyone they wished, the Staff agreed to try to accommodate the Applicant. This type of procedure - asking in advance for permission to channel specific communications with the Staff - is quite proper. (Tr. 14,710-14,720, Stamiris Exhibit 53). It is, however, distinguishable from the other examples the Staff gave. (See, Tr. 14,715-19).

be a consensus of the Midland Section, and apparently other inspectors, that there was such a recalcitrance. With respect to reluctance in providing documentation, the fact that Mr. Keppler felt the need to discuss the problem with CPC management and the president of Bechtel is reflective of a serious problem. Also of significance is the fact that CPC did not even attempt to rebut the Staff's testimony about the Sevo memorandum. Furthermore, we are unpersuaded by Mr. Rutger's "belief" that if the Staff wanted documents, they could go to document control. A "belief" as to how things should be working is not the same as testimony as to what actually is happening. We also question whether offering the Staff another avenue to obtain documentation excuses the recalcitrance of personnel at the site. Even if a document is obtainable through document control, it seems to us that if an inspector requests a document which a site employee either possesses or to which the employee has reasonable access, the employee should willingly provide the document to the inspector.

66. Since the DGB inspection, the Staff is finding greater cooperativeness at the site. We expect this changed attitude to continue.

67. We now turn to an incident, mentioned above which concerns a slightly different problem with communications onsite. This instance, does not involve attempts to stifle communication with the Staff or a reluctance to provide requested information. Rather, it involves an instance in which the Staff believed that CPC was not properly

forthcoming with information about a potential problem with the pier load test on the auxiliary building.

68. During the week of April 18, 1982, CPC requested authorization from the Staff to begin the pier load test. (Tr. 18,904). On April 20, 1982, Robert Wheeler, Section Head of the Soils Section of CPC, and two other CPC employees attended a meeting at Region III headquarters in Glen Ellyn, Illinois. (Tr. 18,785-86). During the course of the meeting Mr. Wheeler received a telephone call from one of his subordinates. Mr. Wheeler characterized the call as a vague discussion about a potential problem with two Project Quality Control Instructions (PQCI) for the Carlson stress meters. (Tr. 18,786) Mr. Wheeler instructed the subordinate to get all the facts together and call him back if there was a problem. The subordinate never called back. The next day, Mr. Wheeler learned that the problem had been resolved. Although not receiving during the day at Glen Ellyn further information about the incident, Mr. Wheeler did not tell the Staff members with whom he was meeting about the potential problem. His reason for not doing so was that he did not have sufficient information to discuss the matter with the Staff. (Tr. 18,785-87) By discussing the matter, Mr. Wheeler believed that he would be forsaking his obligation to give the Staff accurate information. (Tr. 18,787).[7/]

7/ The problem was that two PQCI's were written such a way that neither could be closed until the other one was closed. Hence a new PQCI had to be issued. (Tr. 17,180-81) Unfortunately, as discussed below, resolution of this problem led to further difficulties with the PQCI.

69. Before the meeting, Dr. Landsman had learned about the problems with the PQCIs. However, he wanted to see if the CPC employees would volunteer the information. (Tr. 16,792-93). When the CPC employees at the meeting did not volunteer that there was a potential problem with the PQCI's, he was concerned. (Tr. 16,694-95).

70. This incident must be considered in light of the fact that during the week of the April 20, 1983 meeting, CPC was seeking Staff approval to begin the load test. (Tr. 18,904). In fact, Mr. Mooney was in contact with Mr. Warnick, Dr. Landsman and Mr. R. Cook to obtain permission for the load test just a few days before April 25, 1983. (Tr. 17,179). Mr. R. Cook believed Mr. Mooney was eager to obtain Staff authorization. (Tr. 16,832) While the exact timing of when the CPC asked for permission to begin the load test is not clear, it appears that as of April 20, 1983, CPC had either contacted the Staff for permission to do the load test or was about to do so.

71. Whether Mr. Wheeler should have informed the Staff about the potential problems with the PQCI's is a close question. We are convinced that Mr. Wheeler was not attempting to withhold information from the Staff and that he honestly believed it to be best to wait until he had more information before contacting the Staff. We appreciate Mr. Wheeler's concern that what he tells the Staff is accurate. In this case, there is another consideration. CPC had either already sought, or was on the brink of seeking, permission for the load test. That being so, CPC did not have the luxury of waiting for more accurate information. Without sacrificing his concern for accuracy, Mr. Wheeler should have advised the Staff that his information was sketchy, but that there may

have been a problem with the PQCI's for the Carlson meters. That would have been the prudent course of action.

72. In this instance we find only an honest mistake in judgment on a close question. Accordingly, we will not weigh this incident against CPC.

73. Dr. Landsman now receives regular telephone calls from CPC to advise him what is happening on site. (Tr. 16,524, 16,702-04, 17,047-48). He is apparently satisfied that the courtesy calls keep him current on what is happening onsite. (See Tr. 16,524).

(ii). Argumentativenes

74. We also heard examples where CPC either was needlessly argumentative or made excessive attempts to rationalize the difficulties it ran into. We are mindful that these traits are difficult to assess. We recognize that an applicant has the right to disagree with the Staff or explain mitigating circumstances. In particular, technical differences of opinion should not be confused with argumentativeness. Nonetheless, we will analyze the evidence to see if there is anything that shows CPC to be unduly argumentative or rationalistic.

75. The most significant evidence on the question of argumentativeness is CPC's response to SALP II.

76. SALP II was issued March 1982. (Stamiris Exhibit 55). Its assessment period was July 1, 1980 to June 30, 1981. Since implementation of quality assurance for that time period was addressed during the hearing held in the summer of 1981, substantive comments are of limited use to us. Rather, as discussed below, CPC's response to SALP II sheds light on CPC's managerial attitude. Suffice it to say that

SALP II had both positive and negative comments about CPC's performance during the assessment period. (Id., Section IV). For five out of twelve areas rated, CPC was rated "Category III", which means "minimally satisfactory" (Id., Sections II, III).

77. What followed the issuance of SALP II, was CPC's response dated May 17, 1982. (Stamiris Exhibit 56) A review of the response shows it to be unduly argumentative and defensive.

78. Ironically, SALP II accused CPC of demonstrating an argumentative attitude in their responses to NRC enforcement actions. (Stamiris Exhibit 55, p. v) Moreover, SALP II also charged CPC with "a tendency to spend too much time trying to justify why a finding is not a noncompliance rather than devoting the time correcting the basic problem." (Id. pp. 16-17). CPC's response to SALP II substantiated the very charges contained in SALP II.

79. Staff dissatisfaction with CPC's response to SALP II is reflected in personal notes prepared by Mr. Shafer and Mr. R. Cook in anticipation of a meeting with CPC to discuss their response to SALP II. (Stamiris Exhibits 57 and 58; Tr. 14,784, 15,969). In particular, Mr. R. Cook testified that CPC's response to SALP II reflected poorly on CPC's management. (Tr. 15,973-74).

80. Mr. Keppler agreed that CPC's response to SALP II was defensive and uncalled for; nor did it face up to the issues. (Tr. 15,408).

81. To CPC's credit, Mr. J. Cook acknowledged the shortcomings of the SALP II response. He admitted that it was unduly argumentative and contained statements that could not adequately be defended when challenged. (Tr. 18,387-90).

82. In the summer of 1982, CPC asked the Staff if it could submit a revised response to SALP II (Tr. 14,867). CPC did so, and the Staff was satisfied with the second response. (Tr. 14,802).

83. On July 21, 1982, the Staff issued a draft SALP III report, covering July 1, 1981 to December 31, 1983.

84. On September 6, 1983, CPC submitted its response to SALP III. Unlike the first response to SALP II, this response was not unduly argumentative. In fact, Mr. Harrison described it as a "typical positive SALP response." (Tr. 20,695).

85. The Staff offered, as another facet of an argumentative attitude, CPC's use of statistics as a means of rationalizing apparent quality control deficiencies. In particular, the Staff believes CPC evinced this attitude in responding to the Staff's findings in 1980-1981 that pipe supports had been improperly installed. An over inspection of 123 safety-related supports and restraints inspected by quality control showed that over forty percent of the hangers were rejectable. But, CPC claimed that since the 123 supports and restraints had 940 characteristics to them, the percentage of misinstallation was only 1.4%. (Inspection Report 82-07, Attachment 1 to Midland Section October testimony, Details Section, pp. 4-5). The Staff believes CPC should not have undertaken this breakdown, but should have simply undertook reassessments to determine whether or not construction was adequate. (Keppler October 1982 testimony, Attachment A, p. 2). According to the Staff, breaking down the pipes into characteristics is a meaningless way to assess the QC program for the following reasons; (1) characteristics are determined subjectively (2) any weak link can

cause an overstress and (3) construction and QC programs are on a per hanger basis. (Midland Section October 1982 testimony, Attachment 1, Details Section, p. 5). (See also Tr. 14,389-90, 14,573-75).

86. In response to this accusation by the Staff, CPC explained that in August 1982 it submitted a report to the Staff which offered a statistical analysis of the characteristics of the pipe hangers. However, the theme of the report was the specification of problems and planned corrective actions. (Rutgers, p. 5).

87. The August 1982 report does not address the Staff's assertion that the breakdown of pipe supports into characteristics evades the important question of whether construction of the supports is adequate. The Staff expressed its disagreement with CPC's breakdown analysis before the August 1982 report was submitted. Inspection Report 82-07 is dated July 15, 1982 and was prepared as early as May 1982. (Midland Section October 1982 testimony, Attachment 1, pp. 1, 3). The Staff also expressed this concern in a memorandum dated June 21, 1982. (Keppler October 1982 testimony Attachment A). Assuming, therefore, that the August 1982 report used a breakdown analysis simply as a means of addressing the problems with supports, it does not appear to address Staff concerns expressed before that.

88. Ms. Stamiris cross examined both CPC and the Staff on other purported instances of argumentativeness on CPC's part.

89. For instance, CPC has requested that the emergency diesel generator exhaust system and its hangers not have to be constructed to 10 C.F.R. Part 50, Appendix B criteria. Region III disagrees. The matter has been referred to the Office of Nuclear Reactor Regulation for its

review (Stamiris Exhibit 49, Tr. 14,551-554). We find this example to be a difference of technical opinion between Region III and CPC.

90. Another example of purported argumentativeness was the Staff's insistance that CPC consolidate all underpinning concrete by vibrating it. (Keppler March 1983 testimony, Attachment D to Attachment 2, ¶ b.) Mr. Mooney explained that mixing the concrete with super plasticizers was in accordance with the appropriate codes, thereby making vibration unnecessary. CPC did however abide by the Staff's demand that the concrete be vibrated. (Tr. 17,139-42, 17,325-29). Dr. Landsman characterized as excessive the number of discussions with CPC about the need to vibrate concrete. (Keppler March 1983 testimony, Attachment D to Attachment 1, ¶ b). However, not going into in a detailed and most likely tangential discussion of the merits of super-plasticizer versus vibration, we decline to weigh this example against CPC.

91. Dr. Landsman also testified that CPC evidenced recalcitrance with respect to his request that CPC conduct a proof load test on the FIVP. He believed that a proof load test needed to be conducted with a jacking force equal to 110% of the weight of the FIVP. This was to account for the mudmat beneath the FIVP. In particular, Dr. Landsman was concerned that the mudmat would result in rock bolts, added to the FIVP in 1982, seeing a load greater than their capacities. CPC apparently disagreed on both counts. The Company was unwilling to conduct the load test and, once agreeing to do so, relunctant to increase the capacity to 110% (Tr. 14,632-35, 18,900-01, Midland Section March 1983 testimony, Attachment 1c, p. 5). Dr. Landsman further testified that CPC gave as

its reason the impact the proof load test would have on the schedule. (Tr. 14,633-34).

92. CPC's explanation differs. A test similar to a proof load test had been done in June 1981. (Tr. 18,880-81, 18,901-02). This test, according to Mr. Wheeler, was done to a higher load than what they were going to do the proof load jacking to. Also, a second lifting of the FIVP might detune the system, cause a redistribution of the load and lead to problems with the FIVP structure. (Tr. 17,145, 18,880-83). In addition, Mr. Mooney explained that the mudmat would be broken off as CPC excavated. The support system therefore would not see the weight of the mudmat, making it unnecessary to conduct a load test to account for the concrete. (Tr. 17,144). Mr. Mooney also disagreed that the dispute with the Staff over this matter lasted a year. He placed it at several months, due to changes in design, the need to formulate proposals, etc. (Tr. 17,143-44).

93. The testimony is at variance on the dispute over the FIVP proof load test. Accordingly, we do not conclude that CPC was guilty of undue recalcitrance. We do, however, note that there appear to be valid concerns behind Dr. Landsman's request that CPC do another proof load test on the FIVP. The fact that the FIVP might be burdened with extra weight from the mudmat coupled with the fact that subsequent to the June 1981 load test, the FIVP support system was modified indicate that it was advisable to conduct another load test to a weight greater than the FIVP.

94. While we do not conclude that all examples advanced during the hearing reflect undue argumentativeness or rationalization, two of the examples, cause us concern, the response to SALP II and the breaking down of the characteristics of the improperly installed pipe supports into characteristics. We find well taken the reasons set forth in Inspection Report 82-07 as to why such a breakdown is unacceptable. Similarly, as discussed above, the response to SALP II was needlessly argumentative and defensive.

95. The examples discussed above are apparently not the only instances in which the Staff believes CPC has been unduly argumentative. In attachments to the Staff's prefiled testimony are comments to that effect.

96. As of June, 1982, Region III believed that Midland responses to NRC "enforcement letters" had been more argumentative than those from any other Region III plant. (Keppler October testitimony, Attachment A, p. 3; Keppler October 1982 testimony, Attachment B, p. 6, ¶ 13(a)). Region III also criticized CPC for responding to noncompliances by writing up detailed analyses which argued why the noncompliance was not significant, did not always properly represent the significance of the problem and often raised more questions than they solved. The analyses reflected time that could have been better spend on corrective action. CPC was, in short, unduly conscious of whether an item is properly a noncompliance. (Id.) Since these statements are general in nature and with respect to the "Attachment A" statements, made by Staff members who did not testify, we do not use them as a basis to impose restrictions on

CPC. We are, however, disturbed that the Staff had expressed these concerns.

97. As of spring, 1983, Mr. Shafer still believed that CPC spends too much time rationalizing the difficulties they run into. (Tr. 16,581). Other testimony however, offers hope. CPC's response to SALP III did not have the same argumentative tone as did the response to SALP II. Also, as of September 1983 Mr. R. Cook testified that CPC was not arguing about noncompliances as it did before. (Tr. 21,166). He considered that, along with the response to SALP III, to be good signs. Mr. Harrison agreed that as of September 1983, CPC was appearing to be less argumentative and was evincing a better attitude. (Tr. 21,166-67).

98. We find that CPC has, in the past, exhibited unjustifiable argumentativeness and defensiveness. The Staff has, however, noted improvements. We expect those improvements to continue.

(iii). Cable-pulling Incident

99. We devoted a number of hearing sessions to allegations by the Staff that a Bechtel assistant project manager gave the Staff misleading information about how far along CPC was in installing instrumentation needed to monitor the underpinning of the auxiliary building.[8/] The allegedly misleading statements occurred during a meeting held on

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8/ The instrumentation in question is the entire system needed to monitor the underpinning of the auxiliary building. It consists of conduit (or raceway) cables and instruments such as dial gauges, stress meters, linear variable differential transducers, etc. The installation process involves placing the conduit, cables and instruments, terminating the instruments to the cables, calibrating the instruments and checking out the entire system. (Tr. 17,424-25, 17,432-33, 17,729, 20,115).

March 10, 1982 and during a conference call which took place two days later, on March 12, 1982. As discussed below, the status of its installation is a factor the Staff considered in deciding whether the instrumentation needed to be installed under a "Q" umbrella (subject to the requirements of 10 C.F.R. Part 50, Appendix B).

100. The allegedly misleading statements were investigated by Charles Weil, then a member of the Region III investigative staff, now a member of the Office of Investigations. Mr. Weil's findings are contained in Investigation Report 82-13. (Staff Exhibit 22).

101. Because of the possibility that a deliberate misstatement had been made to the Staff, we wished to afford all parties a full opportunity to develop this issue. Accordingly, a relatively large amount of time was spent on this matter.

102. Testimony for the Staff was offered by Mr. Weil, Mr. R. Cook, Dr. Landsman, Mr. Gardner and Mr. Hood. CPC testimony was presented by Allen Boos, Bechtel assistant project manager, Mr. Mooney, and field engineers Richard Black and Pamela Glass.9/

103. The allegedly misleading statements are discussed below. Before discussing them, it is necessary to provide some background information.

9/ Mr. Black, Ms. Glass and Mr. Mooney prefiled testimony. Mr. Black's testimony follows Tr. 19,778. ("Black"). Ms. Glass' testimony follows Tr. 19,790 ("Glass") and Mr. Mooney's testimony follows Tr. 19,873 ("Mooney").

104. In the first quarter of 1982, the Staff and CPC were having numerous disagreements as to what remedial soils work did and did not have to be done under a Q umbrella. Hence, a meeting between the Staff and CPC was called on March 10, 1982 to resolve this issue. (Tr. 17,478-80, 19,996-98).

105. At the March 10th meeting there was much discussion as to what remedial soils work should be Q and what should not. (Staff Exhibit 22, p.13, Tr. 20,001) After this discussion transpired, the Staff conferred. Upon returning to the meeting, Darl Hood, Staff Project Manager, announced that from that point forward, all underpinning work would fall under the Q umbrella except for very specific items which CPC could justify as not needing to be Q. (Staff Exhibit 22, pp. 13-15, Appendices XI, p. 1, XII, p. 1 Tr. 17,756).[10/]

106. After Mr. Hood stated that from then on all remedial soils work would be Q, Mr. Boos indicated that he would have to stop work at the site. (Tr. 17,427-29, 17,757, 17,943-44, 20,002-03, 20,042). Also, upon hearing Mr. Hood's statement, Mr. Mooney advised the Staff that "certain activities were in progress" and asked whether those activities would have to be done under the Q umbrella. (Staff Exhibit 22, Appendix XII, p. 1).

107. Upon hearing of CPC's concern about work in progress having to be done Q, the Staff factored that concern into its position that all remedial soils work would have to be Q. At the hearing, the Staff panel

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10/ In Staff Exhibit 22, the attachments are called "exhibits". To avoid confusion, however, the attachments will be referred to as "appendices".

explained their reasoning. They felt that it would be unreasonable to arbitrarily require CPC to backfit "half the plant." (Tr. 17,427-28, 17,946) On the other hand, if only a small amount of work on a project had been done, e.g. if only one foot of dirt had been dug for the vertical access shaft to the auxiliary building, CPC would not have had "carte blanche" to do the rest of the work on that project non-Q. (Tr. 17,862-63) Going to the other extreme, if nearly all the work on a project, such as instrumentation, had been done, the rest of the work could be done non-Q. However, the work would have to be demonstrated to be suitable for its use. (Tr 17,858) If work was not to the point of being practically completed, the rest of the work would have to be Q. (Tr. 17,834) But, work already in place would be examined to see whether, although installed non-Q, it could perform its intended function. If it could be so justified, the Staff might then have not required backfitting. (Tr. 17,794-75, 17,834, 17,837, 17,856-58).

108. Dr. Landsman, Mr. R. Cook and Mr. Hood all testified to their reactions to Mr. Boos' statement that he would have to stop work and to the discussion that followed. As will be discussed below, Mr. Hood's recollection differs from Dr. Landsman and Mr. R. Cook's recollection of what Mr. Boos said. We first turn however, to Dr. Landsman and Mr. R. Cook's reaction to Mr. Boos' statement.

109. After Mr. Boos said he would have to stop work, Dr. Landsman and Mr. R. Cook recall inviting Mr. Boos to discuss what work he intended to stop. They impressed upon Mr. Boos their intent not to require unreasonable backfitting. Dr. Landsman and Mr. R. Cook recollect that Mr. Boos then represented that he was referring to excavation of the main access shaft down to elevation 609 and the instrumentation. (Tr. 17,427-29) With respect to the access shaft, the Staff permitted

excavation and bracing down to elevation 609 to be done non-Q. (Tr. 17,428). As for the instrumentation, Dr. Landsman and Mr. R. Cook testified that Mr. Boos led them to think it was essentially complete. (Tr. 17,428, 17,430-31, 17,780, 17,891). Accordingly, under Staff criteria, it could be completed non-Q as long as the instrumentation could perform its intended function. (Tr. 17,428, 17,858). In fact, Dr. Landsman testified that CPC was told that if instrumentation were essentially complete, it would not have to be backfitted; rather, the Staff would check out the instrumentation later. (Tr. 17,428)

110. Dr. Landsman and Mr. R. Cook could not, however, remember the exact words Mr. Boos used. (Tr. 17,427-29)

111. Mr. Weil inquired into what Mr. Boos said on March 10, 1982 about stopping work. His inquiry showed that most participants could not recall any discussion about the status of instrumentation. (Tr. 17,429)[11/]

112. There is insufficient evidence for us to make a finding adverse to CPC based on anything Mr. Boos might have said at the March 10th meeting. Most people at the meeting do not remember the status of instrumentation being discussed. Dr. Landsman and Mr. R. Cook, who

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11/ A review of Staff Exhibit 22 shows that Mr. Kane remembers Mr. Boos stating that "a lot of instrumentation was installed." (Staff Exhibit 22, p. 14) Mr. Rinaldi remembers a statement by someone from Bechtel about instrumentation installation being underway. (Id.) CPC Counsel Frederick Williams remembers Mr. Boos saying that cable had been pulled. However, Mr. Williams recollects that the statement was made prior to the Staff announcing that from that point forward, all remedial soils work would have to be done Q. (Id. at 21) Twelve other attendees interviewed, including Mr. Hood, have no recollection of Mr. Boos making a statement about the completion status of instrumentation. (Id. at 12-20 Tr. 17,762-66).

remember hearing Mr. Boos mention the status of instrumentation installation, do not remember his precise words. They only recollect forming the impression that the installation of the instrumentation was just about finished. Having virtually no evidence as to the specifics of what Mr. Boos said, we cannot make a finding that he misled the Staff.[12/]

113. CPC apparently left the meeting believing that the Staff would permit instrumentation to be installed non-Q. This belief stemmed from Mr. Hood's attempt to clarify the Staff position that from that point forward all soils work would be placed under a Q umbrella.

114. As did Dr. Landsman and Mr. R. Cook, Mr. Hood observed CPC express concern that work in progress might have to be stopped. Mr. Hood, therefore, explained that Phase 1 work,[13/] meaning to Mr. Hood the vertical access shaft, did not have to be done Q. However, beginning with Phase 2, work would have to be installed Q, except for specific activities which CPC could justify as being non-Q. (Staff Exhibit 22, Appendix XII, pp. 1-2, Tr. 17,757-58).

12/ We believe that Mr. Boos did make some mention of the completion status of the instrumentation installation. Four Staff members remember him doing so. Mr. Boos admitted that when he said that he had to call the site to stop work, he had the instrumentation in mind. (Tr. 20,002-03, 20-042). Also, Dr. Landsman remembers responding to Mr. Boos' statements by saying that the Staff would check out the instrumentation later. (Tr. 17,428). Nonetheless, we do not have enough evidence to determine whether Mr. Boos' statements were of a nature as to hold him culpable of misleading the Staff.

13/ In the first quarter of 1982, CPC had identified portions of the underpinning work in terms of four "phases". For a description of the phases, see Tr. 17,747-17,750.

115. The phases, however, were defined work only in terms of the work that would be done underground, i.e. excavation and installation of the underpinning wall. Peripheral activities such as instrumentation were not defined in terms of phases. (Tr. 20,119-20, 20,131, Staff Exhibit 22, p. 15, see also, Tr. 17,747-17,750). Mr. Hood's statement, therefore, left the question open as to whether instrumentation was part of Phase 1 or Phase 2. Mr. Hood believed it to be part of Phase 2. , (Tr. 17,761). Mr. Mooney and Mr. Boos believed it to be part of Phase 1, and therefore, within the scope of work that the Staff would allow to be performed non-Q. (Tr. 20,050, 20,119-120, Staff Exhibit 22, pp. 15-16). At no point during the March 10th meeting, however, did the Staff tell CPC that instrumentation was a Phase I activity. (Tr. 20,120-21).

116. Although Mr. Mooney and Mr. Boos apparently believed that the Staff would accept instrumentation installation as a Phase I, non-Q activity, they did not testify that it was unnecessary to confirm that belief with the Staff. Rather, their testimony is to the contrary, and properly so. Mr. Boos acknowledged that CPC had the obligation to tell the Staff what work was not going to be done Q and seek the Staff's approval. (Tr. 20,051). Furthermore, in an affidavit provided to Mr. Weil, Mr. Boos indicates that "the underpinning instrumentation" was something for which CPC needed Staff concurrence to install as non-Q.

(Staff Exhibit 22, Appendix XI, p.2). Additionally, Mr. Mooney stated that because the underpinning phases did not encompass peripheral work and due to the confusion remaining after the March 10th meeting, CPC felt it necessary to identify ongoing and near term work that was not planned to be done Q. (Tr. 20,008, 20,131).

117. On March 12, 1982, CPC initiated a conference call in order to explain to the Staff what work CPC intended to perform non-Q.[14/]

118. A review of the transcript of the March 12 conference call confirms that Mr. Boos recognized the need to obtain Staff concurrence for installing instrumentation as non-Q. During the call, Mr. Boos stated that "[w]ith respect to remedial soils work, it was the Staff's position that all items were Q unless applicant could demonstrate that certain activities should be non-Q data." (Id. Appendix I p. 1) (emphasis added). Mr. Boos also said that "[w]e were directed that everything was to be Q unless the applicant could demonstrate that items could be classified as non-Q. . . . We want to leave a trail that is crystal clear." (Id. p. 3) (emphasis added).

119. During the March 12 conference call CPC attempted to justify instrumentation installation as a non-Q activity. We first turn to what Mr. Boos said about the instrumentation. The next step will be to analyze the statements to determine whether Mr. Boos' statements were misleading, and if so, whether they were intentionally misleading.

14/ CPC had a stenographer transcribe the call. (Tr. 20,009). The transcription of the call is appendix I to Staff Exhibit 22.

120. Mr. Boos made the following statements about instrumentation.

> [Mr. Boos] Last item is instrumentation. We are talking about the settlement monitoring instrumentation, pier monitoring instrumentation, etc.
>
> Our position here is that the raceway, the wire and the brackets that would accept the instrumentation would be procured and installed as non-Q. The checkout of the system and the taking of the reading would be Q.
>
> [Dr. Landsman] What would you say about the instrumentation in that area?
>
> [Mr. Boos] Instrumentation system is in a data room - it has been procured and installed with enviromental controls as non-Q. The last item which is essentially a repeat of that above under access shafts, gauges, backup gauges, have been procured as non-Q but would be calibrated under a Q program. These are existing dial guages. Our instumentation is essentially well under way. Wiring has been pulled - raceway has been installed, etc. Those are the only comments I have.

(Staff Exhibit 22, Appendix I, pp. 5-6)(emphasis added).

121. It was the underlined sentence that gave rise to controversy.

122. On March 17, 1982, five days after the March 12th conference call, Mr. Gardner, accompanied by Dr. Landsman, arrived on site to inspect the instrumentation, which they expected to be virtually complete. (Staff Exhibit 22, Appendix IV, p. 1, Tr. 17,431)

123. However, the instrumentation was far from being complete.

124. As of March 12, 1982, the day of the conference call, approximately thirty cables had been pulled. Shortly after March 12, but prior to Dr. Landsman and Mr. Gardner arriving onsite, about fifteen cables had to be pulled back due to an obstruction. (Black, pp. 11, 14-16) (Glass pp. 5-8). At the time of Dr. Landsman and Mr. Gardner's inspection, about 2400 to 2600 feet of conduit had been laid. (Tr. 19,863,

Tr. 17,742, Staff Exhibit 22, p. 10).[15/] The instruments had not even arrived on site. (Staff Exhibit 22, p. 22).

125. Having determined that (1) the instruments had not arrived on site, (2) about 2400-2600 feet of conduit had been installed and (3) 30 cables had been pulled as of March 12th, we now analyze this information to determine what percentage it represents of the entire process of installing instrumentation.

15/ The cable and conduit installed as of March 12, 1982 would have been sufficient for what was originally thought to be needed to start Phase II. (Black, pp. 13-14) The instrument locations are highlighted in green on Glass Exhibit 1. (Glass, p. 4; see also Tr. 19,838-45) However, as of March 8th, these requirements changed. At least two deep seated benchmark locations originally not needed to start Phase II work were required as of March 8th. (Compare Glass Exhibit 1 with Enclosure 1 to Staff Exhibit 22, Appendix XIII) Hence, it cannot be said that all of the cable and conduit needed to begin Phase II were installed as of March 12th.

However, when Mr. Boos was discussing instrumentation during the March 12 conference call, he was referring to the total system, not just what was needed to begin Phase 2. In fact, he intended for all of the instrumentation to be procurred and installed non-Q. When he spoke of instrumentation being essentially well underway, he was referring to the entire system. (Tr. 20,072-78). Accordingly, the status of the instrumentation needed to begin Phase II is of little concern to us.

Furthermore, there are indications that as of March 12, 1982, Mr. Boos was aware of the fact that all the cable and conduit needed to begin Phase II had not been installed. Mr. Boos testified that he recollected that as of March 12, 1982, he knew that six benchmarks were needed to begin Phase II work. (Tr. 20,058-61). He also realized that originally CPC had proposed that only four benchmarks be needed to begin Phase II. (Tr. 20,058-61, CPC Exhibit 56). On March 12, 1982, Mr. Black conveyed information, ultimately relayed to Mr. Boos, that the conduit and cable installation needed for the instrument locations originally proposed had been installed (Black, p. 6, 13-14). However, since Mr. Boos recollected that he knew that the location requirments had changed, Mr. Black's message should not have led him to believe that all cable and conduit needed to begin Phase 2 had been installed.

126. A great deal of time was spent attempting to determine man-hours that would be needed to install the instrumentation, the existence of timetables for the installation, the existence of any plans to speed up or slow down work around mid-March 1982, number of conduit on instruments to be required and whether the difficulty of the installation process was increasing. All of these factors would have been helpful in placing in proper perspective the status of instrumentation installation. Unfortunately, the witnesses had little information about them. (See e.g. Tr. 17,731-37, 17,744-45, 17,916-17, 19,863, 19,913-20, 20,113-116)

127. More precise, albeit conflicting, information is available with respect to how much conduit and cable were needed for the entire system. Mr. Black testified that as of March 30, 1983, 213 cables were required. (Tr. 19,864, 19,913)16/

16/ The Staff indicated that they believed 160 cables had to be installed. (Tr. 17,430) However, prior to March 18, cable pulling was not done Q. (Tr. 17,816-17). Therefore, the Staff would not be expected to have extensive knowledge about the details of the system. Similarly, Bechtel Assistant Project Engineer Neal Swanberg believed that as of March 17, 1982 159 cables were needed for the instrumentation system. (Staff Exhibit 22, pp. 10-11) However, neither Mr. Black nor Ms. Glass, both of whom appear to have had line responsibility for cable installation, knew where Mr. Swanberg obtained that information. (Tr. 19,933-34). In view of Mr. Black and Ms. Glass' responsibility for cable pulling, we accept their representation that 213 cables were required for the entire system. We note that the requirement for 213 cables is documented on a drawing issued on March 30, 1982. However, the drawing calls for more instruments than originally planned in February. (Tr. 19,913, 19,943) There is no evidence as to when the requirements for more instruments were actually imposed. (Tr. 19,913) Therefore, we recognize that around March 12, less than 213 cables may have been required.

128. With respect to conduit, Mr. Black and Ms. Glass did not know how much conduit was needed for the entire system. (Tr. 19,862-63) Mr. Gardner believed that more than 75% of the conduit was in place. (Tr. 17,916)

129. As best we can approximate, as of March 12, 1982, about 75% of the conduit and 15% of the cable was installed. However, the evidence is not conclusive.

130. Mr. Boos testified that as of March 12, 1982 the entire instrumentation system was one quarter to a third complete. For what was needed to start Phase II, one half to two-thirds of the work was done. (Tr. 20,086-89).[17/] Since it is Mr. Boos' statements that are being examined, he has had a number of years of experience in the industry,[18/] and there are no contradictory estimates, we accept Mr. Boos' estimates for the overall status of the instrumentation system. Hence we will examine Mr. Boos' "essentially well underway" statement in the context of his estimates on the status of instrumentation installation on March 12, 1982.

131. First, we examine the fact that while on site on March 17, 1982, the Staff was told that cable pulling began on March 11, 1982, one day after the March 10 meeting and one day before the March 12th

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17/ Mr. Boos offered the caveat, which we accept, that he was drawing on recollection, estimates, and years of working in the industry. (Tr. 20,086)

18/ Mr. Boos' resume is attached to the "Testimony of Alan J. Boos and Dr. Robert D. Hanson on Behalf of the Applicant Regarding Remedial Measures for the Midland Plant Borated Water Storage Tank," fol. Tr. 7173)

conference call. Dr. Landsman, Mr. R. Cook and Mr. Gardner specifically remember being told by a CPC employee that cable pulling did not begin until March 11th. (Tr. 17,741-42, 17,905, Staff Exhibit 22, Appendix II, pp. 1-2, Appendix IV, p. 1) The CPC employee in question told Mr. Weil that he did not remember when cable pulling began. (Staff Exhibit 22, p. 9) We have no doubt that the inspectors were told that cable pulling had begun on March 11.[19/] If that were true, we would find Mr. Boos' March 12th statement to be grossly misleading.

132. However, it turns out that both conduit and cable pulling began in February 1982. A meeting to organize the work for instrumentation installation took place on February 8, 1982. (Black, pp. 3-4, Black Exhibit 1) Conduit installation began around February 20, 1982. (Black, pp. 9-11, Glass, pp. 5-6, Tr. 19,796-98, CPC Exhibit 55) Cable pulling began around February 27, 1982. (Black, pp. 10-11, Black Exhibit 3).

133. Our finding that cable pulling began before March 11, 1982 does not end our inquiry. We still must determine whether Mr. Boos' statements were misleading as to how far along instrumentation actually was.

134. Both Staff and CPC witnesses were examined as to what the words "essentially well underway" meant. As the examination showed, these words do not make sense. We even noted during the hearing that something

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19/ In view of this, we fully understand why the Staff became as concerned as it did about this incident.

is either underway or it is not. (Tr. 17,797).[20/] Therefore, well underway is a non-sequitir. Adding the term "essentially" to the phrase engenders even more confusion.

135. We find that the amorphous nature of the words "essentially well underway" makes the statement misleading. Their ambiguity gives rise to many interpretations. Dr. Landsman and Mr. R. Cook thought Mr. Boos meant essentially complete. Some people may have understood Mr. Boos to mean what he intended, one quarter to one third complete for the entire system. Others may have thought he meant even less. We can fully understand how the Staff took the words to mean almost complete.

136. Although we find Mr. Boos' statements misleading, we believe that there was no deliberate attempt to deceive the Staff. Cross examination by the Staff indicated that Mr. Boos was attempting to convey the status of instrumentation as he saw it. (Tr. 20,128) More importantly, Mr. Weil did not, after completing his investigation, believe Mr. Boos intended to mislead the Staff. (Tr. 17,888-89) Similarly Dr. Landsman and Mr. R. Cook could not say that Mr. Boos deliberately deceived the Staff. (Tr. 17,530-34).

137. We recognize that the average person does not always speak with precision. Slips of the tongue and poorly thought-out statements are

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20/ Two examples used during the hearing session were a ship leaving port and a person leaving on a vacation. Mr. R. Cook testified that as soon as a ship leaves port it is underway. (Tr. 17,797) Mr. Boos explained that a person who leaves on a vacation is underway as soon as he drives a block from his house. (Tr. 20,128)

facts of life. However, we do find that, while not intentionally so, Mr. Boos was careless in his statements during the March 12th call.[21/]

138. To be sure, the Staff did not ask Mr. Boos during the call what he meant by the term "essentially well underway." (Tr. 20,137) We are not moved by this point. It is not up to the Staff to read the Applicant's mind. When the Applicant makes amorphous statements, it runs the risk of their being taken in a way that the Applicant did not intend.

139. We are also unpursuaded by Mr. Mooney's assertion that the purpose of the March 12 call was not to discuss status. (Tr. 20,011). Whether or not CPC intended to discuss status, the simple fact is that status was discussed. Once CPC gives information to the Staff, it must bear responsibility for what it said.[22/]

21/ Furthermore, around March 12, 1982, Mr. Boos felt an urgent need to develop a listing of work CPC wished to be able to do non-Q. (Staff Exhibit 22, Appendix XI, p. 2, Tr. 20,122) In fact, Mr. Boos testified that CPC was attempting to obtain Staff approval of the non-Q listing the same day as the conference call. (Tr. 20,123) Where CPC is asking for immediate action by the Staff, there is a greater risk that a careless statement will not be timely rectified.

22/ There are indications that CPC recognized that their attempts to justify work as non-Q would entail a status report on the work being justified. Mr. Mooney testified that CPC "felt that it was imperative that because of the confusion that apparently existed in the March 10th meeting, we thought it was necessary that we identify to the region the work which was ongoing and the work which was proposed in the near future that was being conducted non-Q, so that they could have a full understanding of the activities ongoing and the appropriate quality coverage." (Tr. 20,008) Similarly, Mr. Boos testified that he felt CPC "should do the best job [they could] of identifying [their] plans and work that was completed because [he] was also concerned about a potential retrofit." (Tr. 20,051) An attempt to give the Staff a full understanding of ongoing work not done Q carries with it a high probability that the status of that work will be discussed. If CPC were as concerned as it claimed to be about fully apprising the Staff about ongoing work not being done Q, it should have expected status to come up in the discussion.

140. Mr. Boos stated that he could not testify as to whether the Staff would take the status of work into account in determining whether to accept that work as non-Q. (Tr. 20,126-27) However, the fact that Mr. Boos was not aware that the Staff would consider status in its decision to allow work to be done non-Q does not excuse the misleading nature of the statements.[23/]

141. We have insufficient information about statements made at the March 10, 1982 meeting to make any finding that CPC made any misleading statements about the status of instrumentation installation. As for Mr. Boos' statement during the March 12, 1982 conference call, we find the unclear nature of the statement makes it misleading. By making a statement that can be interpreted many ways, Mr. Boos runs the risk that the statement will be interpreted in a way Mr. Boos did not intend. The significance of the careless statement is enhanced by the fact that CPC was seeking immediate concurrence from the Staff. We do not ascribe the misleading nature of the statement to wilfullness, but to human error. We will factor the statement into our decision as one example, and certainly not the most serious one, of carelessness by CPC.

23/ The Staff did not know of other misleading statements by Mr. Boos. (Tr. 17,483) In view of that and our finding that Mr. Boos did not intend to deceive the Staff, we wish to emphasize that one careless action should not cast aspersions on Mr. Boos' competence as a project manager.

142. A tangential issue discussed during the hearing sessions on the "cable pulling" incident was a statement which Mr. Marguglio made to the Staff on March 17, 1982. Mr. Marguglio told Dr. Landsman, Mr. R. Cook and Mr. Gardner that Mr. Keppler and Mr. J. Cook had an agreement that non-compliances with respect to remedial soils work would be treated differently from non-compliances in other areas. (Staff Exhibit 22, Appendix IV, p. 2).

143. Mr. Marguglio was apparently misinformed. After the March 10th meeting, Mr. J. Cook telephoned Mr. Keppler to discuss the possibility that non-safety-related soils work be included in the QA program, but be exempt from enforcement action by the Staff. (Staff Exhibit 22, p. 26) Both Mr. J. Cook and Mr. Keppler agree that no consensus was reached. Rather, Mr. Keppler said he would consult with his staff and get back to Mr. J. Cook. (Id. at 25-26)

144. Since Mr. Marguglio no longer has direct responsibility for quality assurance, we are not concerned with the circumstances surrounding Mr. Marguglio's statement. (Tr. 15,580).[24/]

24/ According to the investigation report, William Little, Region III Engineering Inspection Branch Chief said to Mr. Weil that Mr. J. Cook told Mr. Little that Mr. Keppler agreed that non-safety related work included in the QA program would be exempt from regulatory action. (Staff Exhibit 22, p. 28) Neither Mr. J. Cook nor Mr. Weil were questioned on Mr. J. Cook's alleged statements to Mr. Little. Furthermore, Mr. Little was not a witness. Without more detailed information as to what Mr. J. Cook may have said to Mr. Little, we cannot make any adverse findings based on these alleged statements.

(Footnote 24 continues on next page)

(iv). Loose Sands

145. In response to our July 7, 1982 Memorandum and Order, the Staff presented testimony with respect to a March 16, 1982 memorandum by Darl Hood entitled "Notification of Loose Sands Beneath Service Water Piping" (See Testimony of Darl Hood for the NRC Staff Regarding Loose Sands Beneath Service Water Piping, fol. Tr. 12,144 - hereafter Staff's prefiled testimony on loose sands). Staff testimony was presented by Mr. Hood and Joseph Kane.

146. The technical issue regarding loose sands was resolved. See SSER Supp. No. 2, Section 2.5.4.5.5.

147. This issue eminated from discussions concerning information provided by CPC to the Staff at a meeting in Bethesda on March 3, 1982. Staff witnesses Hood and Kane testified that at this meeting CPC

24/ (Footnote continued from page 51)

We also note that non-safety related work is not explicitly subject to the requirements of 10 C.F.R. Part 50, Appendix B. That being so, neither we nor the Staff would be concerned as to what type of quality controls CPC puts on non-Q work. In speaking to Mr. Keppler, Mr. J. Cook was apparently referring to CPC's proposal that a new category called "QA" work be established. This was work which CPC considered non-safety related but in CPC's commercial interest that it be done to quality standards. This work would be done under the quality assurance program, but exempt from Staff regulation. (Staff Exhibit 22, pp. 15-18). The Staff did, however, reject CPC's proposal that soils work be placed in the "QA" category (Staff Exhibit 22, Appendix XII, p. 1).

attempted to obtain Staff agreement that dewatering for the site could be limited to two areas - the vicinity of the diesel generator building and the railroad bay area. Tr. 12,145, 12,148, 12,155, and 12,165. See also 12,169. Both Staff witnesses also testified that CPC stated that dewatering could be limited to those two areas on the basis of studies that had been performed by Becntel's Geotechnical Section under Dr. Afifi. Tr. 12,157-8.

148. Dr. Afifi was not present at the meeting and CPC was unable to answer Staff questions regarding details of the basis for his conclusions. Staff's prefiled testimony on loose sands, p. 3. The Staff requested CPC to submit copies of Bechtel's liquefaction analysis to see if the Staff agreed with Dr. Afifi's assessment. Staff's prefiled testimony on loose sands, p. 3.

149. On March 12, 1982, CPC advised the Staff (Mr. Kane) by telephone that, as a result of the Staff's request at the March 3, 1982 meeting, Dr. Afifi's evaluation of liquefaction had been sent to NRC's consultant. Attachment 1 to the Staff's prefiled testimony on loose sands. During this call CPC also advised the Staff, for the first time, that the results of Bechtel's study reflected the potential for liquefaction at locations other than at the Diesel Generator Building and the Railroad Bay area. Attachment 1 to the Staff's prefiled testimony on loose sands.

150. Testimony that the Staff learned only after the March 3, 1982 meeting that Dr. Afifi's study showed a third area with potential for liquefaction (Tr. 12,147) raised a question as to the information in CPC's possession on March 3, 1982: If, on March 3, 1982, Bechtel had developed information showing three areas with potential for

liquefaction, and CPC was relying on that information, why did CPC tell the NRC that there were two areas with potential for liquefaction?

151. CPC testimony on this question was presented by Dennis M. Budzik, section head for the Licensing Section of the Safety and Licensing Department for the Midland project. Tr. 12,184. (Mr. Budzik agreed with Mr. Hood's summary of the March 3, 1982 meeting. Tr. 12,186). Considering that Mr. Budzik was asked to give testimony on a limited and fairly well defined issue, we find his testimony less than clear. Mr. Budzik stated that he had not referred to any report or study or charts or other information prepared by or under Dr. Afifi with reference to dewatering at the site at the March 3, 1982 meeting. Tr. 12,200. Tr. 12,201. He then stated that he was aware that Dr. Afifi's group had made an evaluation of liquefaction and that information was provided "in some form." Tr. 12,201. Mr. Budzik stated that he remembered that at the meeting he indicated his understanding of what the potential for liquefaction was at the site and that he stated that that information came from Dr. Afifi. Tr. 12,202. He denied that he asked the Staff to approve dewatering on the basis of the existence of only two areas which had potential for liquefaction. Tr. 12,206-07. Later he agreed that he represented to the Staff at the March 3, 1982 meeting that there were only two areas that had potential for liquefaction and that those two areas were the vicinity of the diesel generator building and railroad bay area. Tr. 12,211.

152. In an attempt to clarify Mr. Budzik's testimony, we brought to his attention the following sentence in Mr. Hood's summary of the March 3, 1982 meeting: "the evaluation by Dr. Afifi's geotechnical

engineering group from which the Applicant concluded that no liquefaction concern exists for seismic category 1 structures other than the DGB and RBA, has not been presented to the Staff." Tr. 12,274. We asked Mr. Budzik if there was any mention at all at the March 3rd meeting of an evaluation by Dr. Afifi's geotechnical engineering group. Tr. 12,274. Mr. Budzik response was "no, I don't remember. I remember references that Dr. Afifi had done liquefaction evaluation of the site and that - but if you are asking about some kind of compiled report of that - no." Tr. 12,274. We asked Mr. Budzik how those words got in the meeting notes and he responded that he thought those words reflected what was said in the meeting. "We had a general understanding that Dr. Afifi had evaluated boring information for - potential for liquefaction." Tr. 12,274-75.

153. After considering all the evidence, we are satisfied that the testimony of Staff witnesses and Mr. Hood's meeting summary accurately represent what happened at the March 3, 1982 meeting. We have no doubt that CPC represented that there were only two areas with potential for liquefaction and that this information was reported to be based on Dr. Afifi's evaluation. In fact, these conclusions are consistent with findings proposed by both CPC (see ¶ 704) and the Staff.

154. Mr. Budzik was "certain" that the information developed by Dr. Afifi prior to the meeting of March 3, 1982 showed that there were three areas with potential for liquefaction. Tr. 12,214-15.

155. Mr. Budzik had discussed the information that was obtained from Dr. Afifi's section "half a dozen times" with other people, but stated that he never became aware that, in fact, there were three areas with

potential for liquefaction. Tr. 12,204. In retrospect, it was clear to him that Dr. Afifi did not clearly communicate the information to the rest of the project. Tr. 12,205.

156. Thus, the significant matter in controversy at the evidentiary hearing was the obvious discrepancy between the information on which CPC said they relied and the information CPC reported to the NRC at the March 3, 1982 meeting. No satisfactory reason for this discrepancy appears in the record.

157. In paragraph 708 of CPC's findings, we are told:

> Dennis Budzik, who was present at the March 3 meeting on behalf of the Applicant, testified that no written report from the Bechtel Geotechnical Engineering group concerning liquefaction potential at the site was in existence at the time of the meeting."

If the purpose of paragraph 708 is to justify CPC's failure to provide the Staff with accurate information on March 3, 1982, it fails. While taken at face value, the fact that "no written report . . . was in existence at the time of the meeting" would appear to provide that justification, the problem is that paragraph 708 is irrelevant. The uncontradicted record shows that the information showing three areas with potential for liquefaction was developed by Dr. Afifi's geotechnical section prior to the March 3, 1982 meeting. Mr. Budzik was "certain" that the information developed by Dr. Afifi prior to the meeting of March 3, 1982 showed that there were three areas with potential for liquefaction. Tr. 12,214-15. Mr. Hood's meeting notes (with which Mr. Budzik agreed, Tr. 12,186) show that the information supplied the Staff on March 3, 1982 came from Dr. Afifi's geotechnical group. On March 3, 1982, Mr. Budzik should have had accurate information -

regardless of the existence of "a written report." Mr. Budzik would apparently agree with that statement. He answered "yes" when asked by Intervenor Stamiris whether he believed he had failed in his responsibility to provide complete and accurate information to the NRC on March 3, 1982. Tr. 12,231.

158. During the evidentiary hearing, CPC attempted to attach significance to the absence of a written report. Tr. 12,171. We clearly expressed our view of the lack of significance of that fact. Tr. 12,171-72. Our views have not changed.

159. CPC counsel asked Staff witness Hood, the NRC Midland project manager, whether he believed there was a deliberate attempt by Mr. Budzik to deceive him (Mr. Hood) or the NRC staff with respect to the existence of loose sands north of the service water pump structure. Tr. 12,326. Mr. Hood responded that he did not claim it was a deliberate effort, but he was at a loss to explain the source of the information that was given to the NRC. Tr. 12,327.

160. This event also made Staff witness Hood more suspicious of information he receives from CPC. Tr. 12,328.

161. We think it was inappropriate to include the discussion of loose sands in Appendix A to CPC's proposed findings where they state:

> We have found no common thread running through these incidents which would be helpful to us in analyzing the soils quality assurance implementation or management attitude of Consumers Power Management. (CPC proposed finding, § 680).

Common thread or not, CPC should not view the handling of this matter as an acceptable means of dealing with the Commission. We

would hope their response to this incident would tend to decrease the likelihood of similar incidents occurring in the future.

B. Implementation of Quality Assurance with Respect to Remedial Soils Work

(i). Introduction

162. The "OM" session of these hearings was convened to assess, among other things, the adequacy of quality assurance implementation for remedial soils work. Accordingly, we examine with care both steps that CPC has taken to properly implement quality assurance for the remedial soils work and the quality of the work being performed. The latter is of greater consequence than the former. No matter how impressive a program may sound, the program amounts to nothing if it does not result in successful implementation of the work.

163. At the outset, we distinguish between difficulties of a technical nature and problems with quality assurance implementation. Unless they reflect deficiencies in quality assurance, we do not at this time weigh technical difficulties against CPC. Except for the Diesel Generator Building (DGB), we have already determined the remedial fixes to be technically sound. Hence, we would only consider technical concerns if they were of such significance that the record would have to be reopened on the adequacy of the remedial measures. Nothing we have heard has reached that level.[25/] As for the DGB, we have not yet made

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25/ Twice, Intervenor Barbara Stamiris requested that the record be reopened on the technical adequacy of the remedial fixes. Both motions were denied. Consumers Power Company (Midland Plant, Units 1 and 2), LBP-83-50, 18 NRC 242 (1983); Tr. 22,676.

findings. Since we heard testimony on the structural adequacy of the DGB, Brookhaven Laboratories, consultant to the Staff, re-examined the building. Pending before is the question of whether the record needs to be reopened to consider the Brookhaven Report. We are retaining jurisdiction over this matter and, when the Staff completes its review of the report, we will decide whether to reopen the record.

(ii). Implementation of Remedial Soils Work Through Approximately July 1982

a. Examples of improper implementation of remedial soils work

164. In the summer of 1981, Mr. Keppler testified that he had reasonable assurance that CPC would properly implement quality assurance for remedial soils work. It is undisputed however, that Mr. Keppler's expectations were not met. In April 1982 Mr. R. Cook expressed his view to Mr. Keppler that CPC's performance in remedial soils work had not risen above the "Category III" rating that SALP II had given. (Keppler October testimony pp. 1-2). Mr. J. Cook and Mr. Mooney concede that in the first half of 1982, CPC was encountering difficulties in implementing remedial soils work. (Mooney Testimony, p. 3, J. Cook Testimony, p. 4, see also Tr. 17,120-21).

165. The drilling incidents described below reflect difficulties CPC encountered in properly implementing quality assurance for remedial soils work. See also Keppler October 1982 testimony, Attachment B, p. 7 (¶ 15).

166. The record also shows various other difficulties with remedial soils work that CPC encountered in the first part of 1982. Since the

existence of such difficulties is undisputed, we only need to outline them.

167. One inspection report found that adequate procedures had not been developed for (1) work on the auxiliary building access shaft, (2) control of specification design changes, (3) permanent dewatering wells and (4) implementation of overinspection plans. (Inspection Report 82-05, Midland Section October testimony, Attachment 8, Notice of Violation, pp. 1-2, Details of Inspection Report, pp. 3-7).[26/]

168. Another report cited CPC with a Severity Level IV[27/] violation due to problems with slope layback at the auxiliary building access shaft. In particular, this violation consisted of two noncompliances. The slope layback was being constructed at a steeper degree than specified by the design drawing. That was the first noncompliance. When that noncompliance was discovered, a nonconformance report should have been written. Instead, a field change request was written. That was the second noncompliance. (Inspection Report 82-18, Midland Section October testimony, Attachment 5, Notice of Violation, Details of Inspection

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26/ Inspection Report 82-05 cited CPC with a deviation for failing to meet a prior commitment to have in place a qualified and QC staff prior to initiating remedial soils work. (Notice of Deviation, Details of Inspection Report pp. 2-3). The concerns prompting the issuance of this notice of deviation are discussed below.

27/ A violation is assigned a severity level ranging from "I" to "V" depending on the significance of the violation. For a description of the five levels of severity, see 10 C.F.R. Part 2, Appendix C, § III.

Report, pp. 4-5, Keppler October Testimony, Attachment B, ¶ 9, Bird Testimony pp. 1-3, Tr. 14,381-84, 19,193-96, 19,282-92, 19,310-13).[28/]

169. We also note that the SALP III report lists noncompliances, both Severity Levels IV and V, and deviations documented in Inspections Reports 82-03 and 82-11, also issued in the first half of 1982. (Staff Exhibit 24, pp. 5-6; See also Staff Exhibit 26, Attachment 11).[29/]

b. Alleged examples of poor soils work not weighed against CPC

170. Two alleged examples of poor implementation of soils work during the first part of 1982 we decline to weigh adversely against CPC.

171. The first involved a question as to the drilling method to be used on temporary construction dewatering well ME-55, located between the turbine and diesel generator buildings. In mid-June, 1982, CPC began setting up to drill the well. Mr. Wheeler testified that upon seeing this, Dr. Landsman informed CPC that the Staff had not approved the

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28/ Inspection Report 82-18 also cites CPC with a Severity Level IV violation for not using qualified procedures to calibrate crack grouting equipment used for the Borated Water Storage Tank. (Notice of Violation pp. 2-3, Details of Inspection Report pp. 5-6). Subsequently, upon receiving CPC's response explaining why proper procedures were in place, the Staff reclassified the noncompliance as an open item pending submission of further information. CPC has submitted the information, but the Staff had not at the time of the hearings reviewed it. (Bird testimony, pp. 4-5, Tr. 19,181-83, CPC Exhibit 50). That being so, we do not weigh this open item against CPC.

29/ Inspection Report 82-06 cites CPC with a Severity Level IV violation for failure to apply the quality assurance procedures to the installation of instrumentation to monitor the underpinning process. (Midland Section October 1982 testimony, p. 6, Attachment 10, pp. 3-4). This violation is directly related to the "cable-pulling incident" discussed in detail below.

rotary drilling method for the well. (Wheeler, p. 2). The Staff believed that had it not stopped CPC not from drilling, CPC would have been in violation of the April 30, 1982 Order. (Keppler October 1982 testimony, Attachment B, ¶ 11(c)).

172. Mr. Wheeler explained why CPC believed the rotary method was acceptable for drilling ME-55. In March 1982 CPC submitted and subsequently received approval for procedures for drilling temporary service water pump structure (SWPS) wells. In its submittal, CPC specified that the rotary drilling method would be used for the SWPS wells. Around that time, auxiliary building construction wells were being drilled. No specific method of drilling had been delineated for those wells, but seventy-two of seventy-six temporary auxiliary building wells had been drilled using the rotary method. (Tr. 18,788-89).

173. Furthermore, after the issuance of the April 30, 1982 Order, CPC and the Staff corresponded to assess the scope of work already approved by the Staff. On May 10, 1982 CPC submitted a letter to the Staff delineating what work they understood to have already been approved by the Staff. (Staff Exhibit 26, Attachment 3). On May 25, 1982, the Staff responded by indicating that drilling of dewatering wells was approved on a case by case basis. (Id., Enclosure 6). Neither the May 10 nor the May 25, 1982 letter discussed the drilling method to be used for dewatering wells.

174. On May 26, 1982, CPC asked the Staff for permission to drill additional auxiliary building dewatering wells, including ME-55. (Tr. 18,789-90). The Staff agreed. (Wheeler, pp. 2-3, Tr. 18,789-90, 18,810).

175. Based on the Staff's approval to drill ME-55 along with the Staff's approval of the rotary method for service water pump structure wells and the fact that previous temporary auxiliary building wells had been drilled using the rotary method, CPC believed it to be acceptable to use the rotary method for ME-55. (Wheeler, p.2, Tr. 18,789-90).

176. On or about June 10, 1982, Mr. Wheeler and Dr. Landsman reviewed the May 25, 1982 letter. They determined that the May 25, 1982 letter was unclear as to what drilling method should be utilized. (Tr. 18,791). To clear up the confusion, Mr. Kane was contacted. Mr. Kane stated that the cable tool method of drilling should be used. (Wheeler, p. 3). After talking with Mr. Kane, CPC issued a stop work order. (Id. Tr. 18,793).30/ On June 25, 1982 at an audit, the Staff confirmed that rotary drilling was acceptable for auxiliary building construction wells. (Id. Tr. 18,791).

177. We find that at the time of this incident it was not clear what the proper method was for drilling ME-55. Therefore, we do not weigh this incident against CPC.

178. Another issue which we decline to weigh against CPC concerns Applicant's determination to continue excavation in the vicinity of the FIVP prior to the resolution of concerns over adequacy of the supports for the FIVP.

30/ It seems clear that the stop work order was issued on June 11, 1982. (Tr. 18,791). The record, however, is confusing as to whether Dr. Landsman expressed his concern over the drilling method on June 10 or June 11, 1982. (Compare Wheeler p. 2, Tr. 18,791, 18,793, and 18,796). We do not consider this discrepancy to be of consequence. Similarly, it is unclear and also immaterial, precisely what day Mr. Kane was called.

179. The supports had originally been installed "non-Q" in 1971 and 1972. (Tr. 18,855-56). In mid-1982, however, the Staff requested CPC to produce documentation showing that the supports were built according to the drawings. Since CPC was unable to do so, it agreed to inspect the supports. Nineteen deficiencies were discovered, but were ultimately dispositioned use as is. (Staff Exhibit 26, Attachment 11, pp. 8-9, Wheeler pp. 4-5, Tr. 18,858-59, 18,900).

180. Since CPC's inspection of the support system revealed deficiencies, the Staff insisted that the FIVP be load tested and inspected once again. (Tr. 18,878-79).[31/]

181. Subsequently, CPC informed the Staff that the supports had to be further modified to increase the margin of safety. In particular, additional rock bolts, brackets and supports for the FIVP slabs were to be put in. (Staff Exhibit 26, Attachment 11, p. 9, Wheeler, p. 4, Tr. 18,900-01).

182. The Staff believed that CPC should not continue excavation in the vicinity of the FIVP before the additional modifications were completed and the supports were finally checked out. (Keppler October 1982 Testimony, Attachment B ¶ 14, Staff Exhibit 26, Attachment 11, p. 9, Tr. 18,878-89).

183. CPC indicated to the Staff that due to schedule pressures it was unwilling to halt excavation pending modification and assessment of the FIVP supports. (Keppler October 1982 Testimony, Attachment B, ¶14.)

31/ The FIVP had been load tested in 1981, but without Q procedures. (Tr. 18,880-81, 18,902-02). The load test being requested in mid-1982 was a second one.

We would be troubled by CPC's concern over schedule if it were shown that quality was being sacrificed for schedule.

184. In this case, CPC offered an acceptable explanation for continuing excavation before the assessment of the supports was complete. As long as an excavation did not go directly under the FIVPs, it could be safely done before the supports for the FIVPs were fully checked out. The Staff ultimately agreed. (Wheeler, p. 5).

c. Conclusion with respect to implementation of remedial soils work through approximately July 1982

185. While some instances discussed do not weigh against CPC, we find that during the first part of 1982, CPC was not successfully implementing quality assurance for remedial soils work.

(iii). Steps taken to improve remedial soils work, May through September 1982

186. In the spring and summer of 1982, CPC and the Staff, both together and separately, took steps to respond to problems CPC was having in implementing quality assurance. The steps taken had to do with both remedial soils work and balance of plant work. While there is overlap, this section focuses primarily on remedial soils work. Steps taken to deal with balance of plant work are discussed below.

187. In May 1982, the excavation permit system went into effect. (See discussion of non-conformance reports, infra).

188. Perhaps the most significant step taken is the Work Authorization Procedure, dated August 11, 1982. (Keppler October 1982 testimony, Attachment H). CPC and the Staff jointly developed the procedure after,

as discussed below, our April 30, 1982 Order was violated. (Mooney, p. 4, Tr. 14,614-15).

189. Pursuant to the procedure, CPC submits to the Staff monthly lists of soils work activities to be implemented in the next sixty days. The Staff then decides which work on the list is critical to safety and which is not. Non-critical work may proceed. Critical work may only proceed after the Staff gives CPC written authorization to do the work. (Keppler October 1982 testimony, Attachment H).

190. Around the same time, CPC reorganized itself in the hopes of being better able to implement the remedial soils work. Both MPQAD and the project divisions were reorganized.

191. The project divisions were reorganized into a unified project organization for remedial soils work. Mr Mooney is the single point of accountability for the soils work. Subgroups responsible for remedial groups all report to Mr. Mooney. Before, the various subgroups reported to different individuals, either in CPC or Bechtel. (Mooney, pp. 15-17).

192. Additionally, in August 1982, the soils section of MPQAD was reorganized to provide single point accountability for work covered by the April 30, 1982 Order. Of particular significance is the fact that CPC took over from Bechtel the QC function in the soils area. (Wells, pp. 3-4).

193. The Staff favors the MPQAD takeover of the QC soils function. In fact, the Midland section had specifically recommended that MPQAD take over the entire Bechtel QC function. (Keppler October 1982 testimony, Attachment D, Enclosure 3). Mr. Keppler viewed the takeover as positive (Tr. 15,579).

194. Also, in August 1982, James K. Meisenheimer became the head of the MPQAD soils section. Since October 1982, he reports directly to Roy Wells and his assistant is Donald Horn. (Wells, pp. 2-4). The soils section has three subdivisions; quality service, quality assurance engineering and quality control. (CPC Exhibit 46). Respectively, the three subsections are run by Mr. Horn, Mr. Oliver and Mr. Dewitt. (Wells, pp. 3-4).

195. The changes in both the project organization and in MPQAD were further designed to bring a higher level of management presence directly to the site. (Mooney, p. 17).

196. As part of its takeover of the QC function, CPC committed to retrain and recertify soils QC personnel. The certification involves three areas, (1) programmatic quality procedures (programmatic quality plans, nonconformance procedures, general quality procedures) (2) inspection plans (inspection requirements, inspection methodologies, testing methodology, hold points, etc.) and (3) on the job training followed by a performance demonstration. (Mooney, p. 15).

197. On August 26, 1982, Staff management called a meeting with CPC management. The purpose was for Mr. Eisenhut and Mr. Keppler to express to CPC the Staff's concern over the problems CPC was having in constructing the plant. (Tr. 15,197). Staff management did discuss with CPC various recommendations that the Staff had developed for setting CPC on the right track towards building the plant properly, e.g., third party reviews, augmented Staff inspections, MPQAD takeover of the QC function. However, the discussions of Staff recommendations was general.

(Tr. 15,190-911). Rather, Staff management directed CPC to come back with its own plan for improving its performance. (Tr. 15,197).

198. A week later, on September 2, 1982, CPC showed Mr. Keppler a draft of its program. Mr. Keppler however found the outline lacking in detail. (Tr. 15,202). On September 17, 1982, CPC came back with two letters containing proposals for improving quality assurance at Midland. One addressed balance of plant work and the other addressed remedial soils work. (Keppler October 1982 testimony, Attachments E & F, respectively.) The remedial soils letter is addressed below.

199. The remedial soils letter offered the following seven steps for improving CPC's performance of remedial soils work.[32/]

(1) Retaining a third party to independently assess the implementation of the auxiliary building underpinning work; [33/]

(2) Integrating the soils QA and QC function under the direction of MPQAD;

(3) Creating a "Soils" project organization with dedicated employees and single-point accountability to accomplish all work covered by the ASLB order;

(4) Establishing new and upgraded training activities, including a special quality indoctrination program, specific training in underpinning activities, and the use of a mock-up test pit for underpinning construction training;

32/ These steps had been in the making prior to the issuance of the September 17, 1982 letters. For example, CPC apparently decided in July 1982 to bring the soils QC function under the control of MPQAD. (Mooney, pp. 3-4). Additionally, CPC announced the creation of its new soils organization at the August 26, 1982 meeting discussed above. (Tr. 15,195). Also, Stone & Webster arrived onsite on September 20, 1982, three days after the remeidal soils letter was issued. (Tr. 17,247).

33/ In this section, we make specific findings on the first six items.

(5) Developing a quality improvement program (QIP), specifically for soils remedial work;

(6) Increasing senior management involvement in the soils remedial project through weekly, onsite management meetings wherein both work progress and quality activities are reviewed;

(7) Improving systems for tracking of and accounting for design commitments.

The Staff found the approach taken in the September 17 soils letter to be acceptable (Tr. 15,257).

(iv). Retraining Recertification of Soils QC inspectors; training of soils project personnel

200. In late September 1982, the Midland Section visited the site to witness the recertification necessary for the MPQAD takeover of the soils QC function. The Staff found the retraining/recertification process to be unacceptable. (Midland Section October Testimony, pp. 1-2). In particular, MPQAD examiners, during oral examination, repeated questions so as to give the examinee several attempts to correct wrong answers. Also, during the oral examination, examiners marked as "non-applicable", relevant, but incorrectly answered, questions. Furthermore, the oral examinations lacked the technical content necessary to properly measure the examinee's comprehension of the activity for which he or she was being tested. (Midland Section March 1983 testimony, Attachment 1b, Details Section pp. 2-3). Finally, the Project Quality Control Instructions (PQCI's) were not properly controlled. (Id. p. 3, Notice of Violation).

201. As a result of CPC's poor execution of retraining and recertification of soils QC inspectors, CPC committed to stop all remedial soils

work except for certain preventive maintenance activities, stop all examinations for soils requalifications, decertify all soils QC personnel previously certified, retrain QC personnel who fail the recertification examinations and develop a written examination for all remedial soils QC recertification. (Id. Details Section, p. 3, Midland Section October 1982 testimony, Attachment 1a).[34/]

202. Since that time, CPC has been retraining and recertifying soils QC personnel. They receive formal training and must pass closed book examinations on both the QC program and on specific inspection plans. Also, the inspectors must undergo field performance demonstrations for each inspection plan. (Wells, pp. 4-5).

203. As of April 1983, the Staff had not followed up on its September 1982 inspection of the retraining and recertification of soils QC inspectors. (Tr. 14,486). However, the Staff did find some problems with the retraining and recertification process for balance of plant QC inspectors. (See discussion in "Balance of Plant Section" infra). Since CPC took prompt action to address the problems, we do not weigh those balance of plant difficulties against CPC as we examine the retraining and recertification process for soils QC personnel.

204. In the fall of 1982, the Staff examined the training process for remedial soils project workers. The inspectors reviewed a quality assurance indoctrination session given by CPC. They found inadequate documentation of who had attended the session and who needed to do so.

34/ CPC's poor performance in retraining and recertifying QC soils inspectors led to concerns about, and actions taken with respect to, balance of plant work. See "Balance of Plant Section" infra.

Also reviewed were specific training procedures given by subcontractors Mergentine and Spencer, White and Prentis. Under these procedures, there was no documentation of training for craft foremen and craft workmen. Also, there was inadequate training in remedial soils emergency procedures. (Midland Section March 1983 testimony, Attachment 1a, Details, pp. 2-3) Finally, the prototype test pit was examined and found to need modification. (Id.)

205. In January 1983, the Staff returned to the site to follow up on its review of the training process. Except for the need to expand some of the training given by Mergentine, the Staff found that CPC had met the Staff's concerns. (Midland Section March 1983 testimony, Attachment 1c, Details Section, pp. 2-3).

(v). The DGB inspection as it relates to remedial soils work

206. In the fall of 1982, the Diesel Generator Building inspection took place. Since that inspection concentrated on balance of plant work we address it in greater detail below. We do note however that the DGB inspection revealed a significant breakdown in quality assurance for balance of plant work. In addition, the inspectors, during the DGB inspection, noted that armor stone for a perimeter dike had been neither purchased nor installed pursuant to "Q" requirements. Dr. Landsman explained that use of non-Q armor stone could damage the integrity of the dike and impact the ultimate heat sink. (Keppler March 1983 testimony, Attachment 4, Details Section, p. 28; Attachment 3, p. 6, Tr. 15,823-24).

(vi). Permitting actual excavation to begin

207. Despite the problems CPC had with properly implementing remedial soils work and the findings of the DGB inspection, the Staff

permitted CPC on December 9, 1982, to begin actual excavation work. In particular, the Staff authorized certain work relating to the drift, excavation and installation of piers W12 and E12 under the turbine building. (Keppler March 1983 testimony, p.3). Prior to that, only preliminary work had been authorized. As we discuss above, Mr. Keppler explained the rationale for permitting excavation to begin.

208. The Midland Section also believed that CPC's performance on its initial excavation was satisfactory. Except for a few concerns, Dr. Landsman found that CPC was adequately implementing the excavation. (Keppler March 1983 testimony, Attachment D to Attachment 1). Dr. Landsman further testified that there has been no problem with CPC's performance of underpinning work that warranted Staff halting of the work. (Midland Section March 1983 testimony, p. 5, Tr. 14,628). Yet, apparently due to certain problems discussed below, Dr. Landsman did feel that the situation may have been getting close to warranting a shutdown. (Tr. 16,551).35/

35/ At the time Dr. Landsman testified, he was concerned about the significance of a recent MPQAD audit of concrete work done by a subcontractor, U.S. Testing Company. (Tr. 16,557-59). Accordingly, when he testfied that the situation may have been getting close to warranting a shutdown, it appears that Dr. Landsman had in mind, among other things, that audit. A few days later, the Staff determined that the audit did not have the significance that it was originally thought to have. (Tr. 17,523). In assessing Dr. Landsman's opinion that the soils work was approaching the point where a shutdown was warranted, we recognize that one item leading him to that opinion turned out not to be of significant concern. As for the other items Dr. Landsman believed to be of concern, they are discussed and assessed below.

(vii). Problems with implementation of remedial soils work from the end of November 1982 through the first half of 1983

209. Although the Staff viewed CPC's performance in excavating for piers W12 and E12 as satisfactory and does not believe any difficulties encountered by CPC have warranted a halting of underpinning, there were problems from the end of December 1982 through the first half of 1983.

210. For instance, in late 1982, the Midland Section found that the packages CPC was sending to the Staff for approval pursuant to the Work Authorization Procedure showed CPC not to be ready to begin the work for which it was seeking authorization. In essence, CPC was asking the Staff to approve work on the premise that Staff concerns would be taken care of during the work itself (Midland Section March 1983 testimony, Attachment 1c, Details Section, pp. 3-4, Tr. 14,617). Since then, the problem has been resolved by requiring CPC to assert, upon submitting the package, that all work is ready to begin. (Tr. 14,617).

211. In the winter of 1983, Mr. R. Cook was dissatisfied with the manner in which Bechtel and its subcontractor, Wiss Janney, were recording data during the jacking of the FIVP. More specifically, they were intending to record the data only five minutes after release of the jacks and then stop recording. Mr. R. Cook believed that Wiss Janney should have waited at least an hour before taking the data. (Tr. 14,636-14,640). The procedures being used by Wiss Janney called for taking data within an hour after releasing the jacks. (Tr. 14,637). Accordingly, Bechtel and Wiss Janney were apparently not violating the procedures. Assuming the procedures were being followed, it is clear from Mr. R. Cook's testimony that he believed that taking data only five

minutes after releasing the jacks was not sound technical judgment. CPC apparently agreed with Mr. R. Cook. (Tr. 14,640). In any event, Bechtel did accommodate Mr. R. Cook's concerns by waiting another hour to take more data. Also, the procedures have been revised to present this problem from recurring. (Tr. 14,640-41).

212. In April, 1982, CPC encountered quality assurance difficulties as it did a load test on Pier 11 at the auxiliary building.[36/] During the week of April 18, 1982, CPC found a minor problem with the Project Quality Control Instruction (PQCI) for the pier. Two PQCI's, one for pouring the pier and the other for the Carlson meters, were written in such a way that neither PQCI could be closed out before the other one was closed out. The problem was to be rectified by modifying of the PQCI for the Carlson meters. In particular, the old PQCI had to be closed out and a new one issued. CPC determined the problem to be solved and informed the Staff that all quality assurance problems with respect to the load test had been resolved. Subsequently, CPC did a "top-to-bottom" review of all documentation associated with the pier. Finding no problems, it began the test. (Tr. 17,179-17,184).

213. Unfortunately, neither the review done by CPC before advising the Staff that there were no problems nor the review afterwards were wholly successful. Approximately ten days after the test began, a problem was found. In closing the old PQCI and issuing a new one, the

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36/ CPC also ran into problems of a technical nature, as discussed below. Additionally, in our "Communications" section, supra, we discuss the Staff's concern over a lack of communicativeness about potential problems with the load test.

information was improperly transferred by the QC inspector. The next level of review did not pick up the error. The Staff was advised promptly (Tr. 17,179-17,184, 17,355-56). The QC inspectors involved were suspended and retrained. (Tr. 17,181, 18,646-47).

214. Another quality assurance problem involved the bypassing of hold tags. Dr. Landsman explained that preserving the integrity of hold tags is of particular importance with respect to the underpinning process. Certain operations in the underpinning are so crucial that if they are not done correctly and the next step proceeds, the building may drop. (Tr. 16,696).

215. In early May, 1983, MPQAD placed hold tags on drifts used for access and excavation on tunnels under the turbine building. The hold tags were placed because of extensive gaps between the drifts and the plate attachment. Work, however, continued in the drift down from where the hold tags were placed. Upon discovering the violation, CPC stopped the work. The next day, work was able to resume. (Tr. 17,402-04, 18,641-43, Stamiris Exhibit 89).

216. Also in June and July 1983, CPC encountered further difficulties in drilling, as discussed in our section on non-conformance reports.

217. We find that in the first half of 1983, CPC ran into some difficulties in implementing remedial soils work. They do not rise to a level requiring stricter controls that are already in place, but do reinforce the need to retain present controls.

(viii). Technical matters which appear unrelated to quality assurance implementation

218. We also heard testimony about a number of other occurrences that arose as CPC began to implement the remedial soils fixes. However, the evidence does not indicate that these instances reflect poor quality assurance implementation. To the extent they are concerns at all, they are technical matters, which we believe can be worked out between CPC and the Staff. These instances are (1) anomalous readings of settlement data for the electrical penetration area at the auxiliary building (Tr. 14,671-75, 17,169, Sinclair Exhibit 5)[37/] (2) the appearance of Service Water Pump Structure cracks that reached the alert level (Tr. 14,370, 14,659-14,662, 17,154-17,156) (3) the appearance of cracks in the containment building (Stamiris Exhibit 50, Tr. 14,594-14,600)[38/] (4) cracking of the FIVP during jacking (Tr. 14,641-42, 14,647-14,658, 17,018-17,121, 17,145-17,149[39/] (5) inability during the pier load test to transfer the load down to the bottom of the pier. (Tr. 14,370-71,

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37/ Dr. Landsman was however critical of the fact that the resident structural engineer had not been reading the settlement data for the electrical penetration area. (Tr. 14,672-75).

38/ In fact, Ms. Stamiris moved to reopen the on record on the grounds that the cracks in the containment and the anomalous EPA readings called into question the technical adequacy at the remedial fixes. The parties were, of course, permitted to offer evidence in support or in opposition to the motion. We denied Ms. Stamiris' motion, indicating that there was no evidence that either of those occurrences gave rise to a significant concern about the remedial fixes. Consumers Power Company (Midland Plant, Units 1 and 2), LBP-83-50, 18 NRC 242 (1983).

39/ But see, above, our discussion concerning the Staff's belief that the time span for taking data during the jacking of the FIVP was too short.

14,664-14,670, 17,161-63, 17,170.[40] and (6) encountering of concrete backfill during excavation beneath the turbine building. (Tr. 14,628, 16,197-16,199, 17,134-17,138).

(ix). Stone & Webster

219. A significant step towards improving implementation of soils work is the retaining of Stone and Webster assisted by Parsons, Brinkerhoff, Quade and Douglas, Inc. to assess CPC's performance of the underpinning work.[41]

220. The selection of the Stone & Webster team is described in our discussion of Mr. Keppler's testimony and need not be repeated here. Rather, at this point, we will describe what the Stone & Webster overview entails.

221. The overview consists of assessing the adequacy of construction and quality assurance procedures themselves and evaluating the implementation of those procedures. Stone and Webster also reviews design work packages for adequacy and accuracy, evaluates the QC inspector requalification and recertification program, and assesses the training of remedial soils workers. (Mooney, pp. 10-11, Appendix 4).

222. Stone and Webster holds daily meetings with CPC and Bechtel personnel and the Staff is invited to attend. Weekly, Stone and Webster

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40/ We differentiate between this technical concern and the aspects of the load test which call into question quality assurance implementation. Also, after the load test did not work the way it should have, CPC and the Staff met. In doing so, the Staff raised some technical questions about the underpinning process. They are documented in Board Notification 83-174. We will be kept apprised of the resolution of these concerns. If appropriate, the record may be reopened.

41/ This third party team will be referred to as the "Stone and Webster" team.

submits reports summarizing the activities observed, meetings attended, quality documents and records reviewed and observations made. When the team observes an action that reflects an unsound practice, a "Nonconformance Identification Report" (NIR) is written. NIRs remain open until CPC provides an adequate resolution. Every three months a detailed report is submitted to the Staff. (Mooney, pp. 13-14).

223. The team will remain on site until it is satisfied that (1) the design intent of the remedial construction is being fully implemented and (2) the remedial soils work meets industry standards. (Mooney, prep. test. 11-12).

224. In April 1983, Stone and Webster submitted its first Ninety Day Report (CPC Exhibit 33). With a few exceptions, the team found that the work was being performed in accordance with good industry practices. The team was also satisfied with the ability of MPQAD soils personnel. (Id. at S-1 to S-2). Stone and Webster however acknowledged that the work that it observed had not been enough to permit a complete assessment of underpinning activities (Id. at S-3).

225. Intervenors attempted to show that the Stone & Webster team was not competent by pointing out that certain members of the Stone & Webster team did work at nuclear power plants heavily cited for quality assurance violations. (Tr. 17,259-17,273). However, there was no evidence that any of the individuals were directly responsible for poor quality assurance implementation. The mere fact that a team member happened to be on site at a time when a plant was heavily cited for noncompliances does not show that member to be unfit for the team. In fact, with respect to key supervisory personnel the evidence is to the contrary.

Mr. Shafer checked with utilities where those team members had been employed to determine that they had done acceptable work. (Tr. 16,110-16,111, 16,113, 16,123, 16,127-28). This was in addition to assessing that the individuals met the criteria for independence. (Tr. 16,110).

226. Intervenors also tried cast doubt on the competency of the Stone & Webster team by showing that Staff inspectors made findings which Stone and Webster did not make. (Tr. 16,132, 16,159, 17,240-17,249). However, Stone and Webster, cannot look at every area of soils work. Rather, the Stone and Webster team, as does the Staff, performs an audit function. (Tr. 16,144). Accordingly, the mere fact that the Staff found a violation not found by Stone and Webster does not cast aspersions on the competence of Stone and Webster. Furthermore, the examples given do not support the claim that Stone and Webster is not competent.[42/]

42/ One example given was the use of IPINs in soils work. (Tr. 16,132-16,136). IPINs however, were not abused in the soils area. (See discussion on IPINs, infra). Other instances offered were the dispute over the need to vibrate the concrete. (Tr. 16,137, 17,240-41) and the need to increase the jacking of the FIVP. (Tr. 17,248). Not having gone into an extensive and tangential discussion of the technical merits of the Staff's and CPC's respective positions, we do not find these instances to be reflective of poor implementation of quality assurance.

Another instance noted was the difficulty associated with the recertification of soils personnel. (Tr. 17,247). However, the problem was discovered only four days after Stone and Webster arrived on site. (Mooney, prep. test. p. 12, Midland Section, October 1982 testimony, Attachment 1a). Furthermore, review of the

(Footnote 42 continues on next page)

227. The evidence we have heard does not lead us to conclude that the Stone and Webster team is unfit to overview remedial soils work.

(x). Quality Improvement Program

228. We also heard testimony about the Quality Improvement Program (QIP). The QIP is a program whereby management attempts to instill in the employees the philosophy that work must be done right. (Tr. 17,078) The QIP encourages everyone to participate in attaining quality and to

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42/ (Footnote continued from page 79)

recertification process was not placed within the scope of Stone and Webster's contract until February 1983. (Mooney, prep. test., p. 11, Appendix 4, But see Tr. 17,248). Another example was the Staff's concern about training being given to craft personnel. (Tr. 17,240, 17,246-47). However, the concern was discovered prior to Stone and Webster's arrival on site (Midland Section March 1983 testimony, Attachment 1a, Details Section, p. 2) and with one exception, resolved by January 21, 1983, about a month prior to Stone and Webster assuming responsibility for observing the training program. (Attachment 1c, Details Section, p. 2-3, Mooney, prep. test., p. 11, Appendix 4).

Finally, a comparison was attempted between Stone and Webster's finding that MPQAD inspection plans were adequate (CPC Exhibit 33, p. 6-1) and the noncompliance cited in Inspection Report 83-03 that CPC's soils section was using an out of date drawing to review work at Pier 11. (Staff Exhibit 18, Notice of Violation, p. 1) The violation however, had nothing to do with inspection plans. (Tr. 16,141).

offer feedback. (Tr. 17,078-80). Individuals or groups who make a significant contribution to quality are rewarded with a picture in a brochure and a button. (Tr. 17,079). The QIP involves both soils and balance of plant work. (Tr. 18,113). It began as a Bechtel program in the fall of 1981, but in September 1982, was expanded to include all personnel involved in soils work. (Tr. 17,082). While Mr. Rutgers and Mr. Mooney both testified that they believed that the program led to improvements in quality, Mr. Shafer had doubts about the effectiveness of the program. (Tr. 16,830, 17,084-85, 18,113).

229. It is difficult to assess the extent to which the QIP contributed to better quality. Such an assessment is, however, not necessary. We encourage CPC to adopt programs such as the QIP. However, rather than attempt to calculate the input that the QIP has on quality, we will focus on the work itself and determine the extent to which CPC's performance of that work requires escalated regulatory action.

(xi). Greater Management Involvement

230. CPC also committed to having greater management involvement in remedial soils work. (Keppler October 1982 testimony, Attachment F, pp. 2,5). In particular, reporting chains to senior project personnel have been shortened. Mr. Mooney briefs Mr. J. Cook at least once a week. (Mooney, prep. test., p. 20). Every other week, Chief Executive Officer John Selby visits the site for about four hours and receives briefings on remedial soils work. (Tr. 17,313-14).

(xii). Conclusions

231. We have considered carefully CPC's performance of remedial soils work since the hearings that were held in July and August 1981. We

are mindful that it is inevitable that the workers will make mistakes, which should be picked up by quality control. We also recognize that quality control will miss deficiencies that a quality assurance audit should then pick up. Finally, it is to be expected tha the Staff during its inspections will find regulatory non-compliances not found by quality control and quality assurance. (Tr. 15,561-15,564, 16,223-16,228). See Pacific Gas and Electric Company (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-756, 18 NRC ___ (December 19, 1983) (Slip op. at 6-7). Even so, it is clear that before the work authorization procedure was instituted, CPC was having significant difficulty with implementing quality assurance for remedial soils work. The difficulties further manifested themselves in CPC's inability to carry out the retraining and recertification process.

232. Those difficulties justify the measures taken to assure that CPC will be able to properly carry out its remedial soils work. Of particular importance are the April 1982 Order and the Stone and Webster assessment. We find the Stone and Webster program to be an acceptable overview of remedial soils work. We are also satisfied with the manner in which the Staff has implemented the requirements of our April 30, 1982 Order. We find that the Staff has successfully kept the amount of soils work done to a level that CPC can manage. We also trust the Staff's judgment in both assessing if and when work can be approved in larger segments and for withholding approval should that be necessary.

233. We have examined the work done since the Staff in December 1982 gave CPC approval to begin excavation. Certainly, there have been some

difficulties. However, they do not rise to a level mandating us, at this time, to impose stricter requirements than are already in place.

234. It is the Staff's position that remedial soils work may proceed subject to the third party overview and the requirements of our April 30, 1982 Order. (Keppler October 1982 testimony, p. 6, March 1983 testimony, pp. 3-6, Tr. 14,685). We agree. However, should CPC prove itself unable to properly implement the remedial soils work, we expect the Staff to take appropriate action.

C. SALP-3 Report

235. On September 14, 1983, we held a conference call among the parties to discuss certain matters that were to be the subject of further evidentiary hearings. During the conference call, the NRC staff was requested to provide testimony concerning the U.S. Nuclear Regulatory Commission, Region III's third report on the Systematic Assessment of Licensee Performance (SALP-3 Report) for Consumers Power Company (Staff Ex. 24). Specifically, we were interested in (1) an explanation of why the NRC staff rated the licensee a Category 3 for the remedial soils area, (2) the factors considered by the NRC staff in arriving at a Category 3 rating and (3) a description of the SALP process.

236. On September 21, 1983, the NRC staff presented a panel of witnesses composed of Mr. John J. Harrison, Section Chief, Midland Section, NRC Region III, Mr. Ronald Gardner, Midland Project Inspector, NRC Region III, Mr. Ronald Cook, Senior Resident Inspector, Midland site, NRC Region III and Dr. Ross Landsman, Soil Inspector, Midland Project, NRC Region III. (Tr. 20,638-39). These witnesses were members of the SALP Board for the Midland Nuclear Power Station that conducted the

assessments for the SALP 3 appraisal (Staff Ex. 24, SALP-3 Report at 2). The licensee and intervenors did not present any witnesses, however, they did conduct cross examination of the NRC panel of witnesses.

237. The Systematic Assessment of Licensee Performance is a program established by the NRC. The SALP process is an integrated effort by NRC to collect periodically available observations and data and to evaluate licensee performance based on those observations. (Staff Ex. 24, SALP-3 Report at 1; Harrison, Tr. 20,642).

238. The SALP process is a function that supplements the normal NRC regulatory processes that are used to insure compliance with NRC rules and regulations. It is intended primarily as guidance for the NRC to allocate future resources and for the licensee to promote quality and safety of plant construction and operation. The SALP process is not the means of regulatory control for stopping or starting work on site. (Id.; Harrison, Tr. 20,662).

239. The SALP-3 report is an assessment of the licensee's safety performance at the Midland Nuclear Station from July 1, 1981 through March 31, 1983. (Staff Ex. 24, SALP-3 Report at 1).

240. In March and April of 1982, the NRC staff conducted followup inspections to evaluate the significance of quality control (QC) inspection deficiencies identified during May 1981. These followup inspections showed that licensee's QC inspections were not properly identifying deficiencies in the installation of equipment. (Id.) Because of these deficiencies and recurring problems in the licensee's remedial work activities, the NRC had increased its inspection efforts by forming a special Midland Section composed of inspectors dedicated solely

to the Midland plant. The NRC also obtained inspection assistance from a Department of Energy Laboratory. (Id.)

241. During the period of October 12 through November 25, 1982, the NRC conducted a special inspection of the Diesel Generator Building to aid in evaluating the as-built condition of the plant. (Staff Ex. 24, SALP-3 Report at 1). This inspection identified significant violations that demonstrated a breakdown in the licensee's implementation of its Quality Assurance (QA) program. As a consequence, the licensee decided to suspend some safety-related work activities (December 3, 1982) and to formulate a construction completion program. The purpose of the construction completion program was to assure that safety-related structures and systems were constructed as designed. (Id.)

242. The NRC imposed a civil penalty of $120,000 because of the significant violations identified during that inspection. (Id.)

243. Given the suspension of some safety-related work activities and the proposed construction completion program, the NRC's Region III Administrator determined that the SALP 3 appraisal for Midland would address those areas in which work continued. Remedial soils (soils and foundation) was one of the functional areas that was assessed. (Staff Ex. 24, SALP-3 Report at 1-2).

244. The SALP Board assessed the licensee's performance in the remedial soils area by using one or more of the following criteria: (1) management involvement in assuring quality; (2) approach to resolution of technical issues from a safety standpoint; (3) responsiveness to NRC initiatives; (4) enforcement history; (5) reporting and analysis of reportable events; (6) staffing (including management); and (7) training

effectiveness and qualification. (Harrison, Tr. 20,642-43; Staff Ex. 24, SALP-3 Report at 3).

245. Each functional area was evaluated by the SALP Board and given a rating in one of three performance categories. (Harrison, Tr. 20,643; Staff Ex. 24, SALP-3 Report at 3).

246. Category 1 is the highest rating and represents outstanding licensee performance in a given area. (Harrison, Tr. 20,643). It is characterized by aggressive licensee management attention and involvement that is oriented toward nuclear safety. The licensees' resources are ample and are used effectively in achieving a high level of performance for operational safety or construction. (Staff Ex. 24, SALP-3 Report at 3). Furthermore, Category 1 represents a situation where it may be appropriate for the NRC to reduce its attention to the plant. (Id.)

247. Category 2 is an average rating and represents normal licensee performance for a normal activity. (Harrison, Tr. 20,643). For Category 2, licensee management attention and involvement are apparent and there is concern for nuclear safety. The licensees' resources are adequate and are used in a reasonably effective manner in achieving satisfactory performance for operational safety or construction. (Staff Ex. 24, SALP-3 Report at 3). Category 2 is indicative of a situation where NRC's attention should be maintained at normal levels. (Id.)

248. Category 3 is a minimally acceptable rating. (Harrison, Tr. 20,643). For this category, licensee management attention or involvement is acceptable and considers nuclear safety. However, there are weaknesses evident in the licensees' program. (Staff Ex. 24, SALP-3 Report at 3). The licensees' resources appear to be either strained or

not effectively used such that only minimally satisfactory performance is being achieved for operational safety or construction. (Id.) Category 3 is a situation where both the NRC and licensee should increase their attention. (Id.)

249. During the SALP-3 period the licensee finalized the Remedial Soils program and took steps to implement those measures necessary to correct previously identified soils deficiencies. (Staff Ex. 24, SALP-3 Report at 5).

250. In developing this SALP report, the NRC did a document search of the enforcement history for the SALP period in question for each functional area being evaluated. The results of that search were a factor in the SALP Board's consideration of what category rating to assign to licensee's performance during the SALP period. (Gardner, Tr. 20,753, 20,759; Harrison, Tr. 20,757). In this case, the search revealed that the NRC staff had conducted thirteen inspections or portions of inspections in the remedial soils area and identified nine noncompliances and two deviations from NRC requirements. (Staff Ex. 24, SALP-3 Report at 5-7).

251. Normally, nine items of noncompliance and two deviations are not indicative of a Category 1 or 2 rating but are indicative of a problem. This type of enforcement history would be a strong indication that a Category 3 rating may be warranted. (Gardner, Tr. 20,753). However, the enforcement history standing alone may not be sufficient to justify a Category 3 rating. (Id. at 20,753-54).

252. The SALP Board found that these noncompliances, which were identified during the SALP-3 rating period, showed the licensee's

continued lack of attention to detail in assuring that the Midland QA program requirements were properly implemented. It also found that these noncompliances indicated a lack of management attention to quality in this area. (Harrison/Cook/Landsman/Gardner, Tr. 20,643-44; Cook, Tr. 20,688; Staff Ex. 24, SALP-3 Report at 7).

253. On April 30, 1982, during the SALP-3 rating period, we issued a Memorandum and Order that suspended all remedial soils activities on safety-related (Q) soils for which the licensee did not have prior explicit NRC approval. (Consumers Power Company (Midland Plant, Units 1 and 2), Memorandum and Order, LBP-82-35, 15 NRC 1060 (1982)). This action was taken based on, among other things, (1) the need to assure adequate QA/QC surveillance by the NRC staff of safety-related activities conducted onsite, and (2) our uncertainty about whether, in the absence of NRC staff review and approval, the licensee would implement certain remedial soils activities using appropriate QA procedures and principles. (Id. at 1068-69).

254. After the issuance of our Memorandum and Order, the licensee resumed certain remedial soils activities with NRC approval. Thereafter, a number of problems arose because of miscommunication and/or misunderstanding between the licensee and the NRC staff. (Staff Ex. 24, SALP-3 Report at 7). In order to resolve these concerns, a Work Authorization Procedure was established at the direction of the NRC that required the licensee to request and obtain written NRC authorization before beginning each remedial soils work activity. (Id. at 7-8). Furthermore, the Work Excavation Permit System was broadened at the direction of the NRC to include all remedial soils work including underpinning. (Id. at 8).

255. Because of NRC's concerns about the licensee's ability to properly implement the QA program for the remedial soils area, an independent third party overview of the licensee's remedial soils activities was established at the direction of the NRC. (Id.)

256. The fact that these actions were not taken based on the licensee's initiative was part of the reason for the SALP Board's rating in the soils and foundation area. (Cook, Tr. 20,779; Harrison, Tr. 20,779-80). Another factor considered by the SALP Board in its evaluation was the licensee's difficulties in using the work excavation permit system for the soils area. (Harrison, Tr. 20,780-81).

257. For the functional area identified as soils and foundations, the licensee was given a Category 3 rating by the SALP Board. (Harrison, Tr. 20,643; Staff Ex. 24, SALP-3 Report at 4). This is the same rating the licensee received for the previous SALP assessment period. (Harrison, Tr. 20,643; Staff Ex. 24, SALP-3 Report at 8). Nevertheless, the SALP Board concluded in its report that the licensee's overall performance in this functional area had continued to decline from the previous period. (Staff Ex. 24 SALP-3 Report at 8; Harrison, Tr. 20,643).

258. The SALP Board considered assigning the licensee a rating of less than minimally acceptable (Not Rated). (Gardner, Tr. 20,668, 20,673; Staff Ex. 24, SALP-3 Report at 8). However, such a rating in this case was not assigned to the licensee because it would not have met the NRC requirements for preparing SALP reports in that a "non-rated" category is assigned for those functional areas in which work has been stopped. (Gardner, Tr. 20,673-74; Landsman, Tr. 20,661).

259. For the soils area, there was not a significant concern reflected in earlier drafts of the SALP-3 Report that was not reflected

in the final SALP-3 Report. (Harrison/Gardner/Cook/Landsman/Hood, Tr. 20,905).

260. The SALP Board determined that a rating of Category 3 was appropriate because of the extraordinary measures in place to control the soils activities, i.e., the Work Authorization Procedure, the Work Excavation Permit System, the independent third party overview, and continued scrutiny by the NRC staff. (Harrison, Tr. 20,662-63, 20,781; Staff Ex. 24, SALP-3 Report at 8).

261. The SALP Board recommended that the licensee thoroughly review the performance of construction, engineering, and Quality Assurance managers in the Remedial Soils. (Staff Ex. 24, SALP-3 Report at 8). The SALP Board did not intend the review called for by this recommendation to be done by a third party. (Landsman, Tr. 20,699; Harrison, Tr. 20,706, 20,711-12; Cook, Tr. 20,706, 20,712; Gardner, Tr. 20,715). It wants the licensee to review the performance of its people and decide whether they are doing an adequate job since one of the problems in the remedial soils area is that it has not been properly managed. (Id.) At the time of the hearing on the SALP-3 Report, the licensee had not yet implemented this part of the recommendation. (Landsman, Tr. 20,770-71).

262. The SALP Board also recommended that the licensee implement measures providing (1) closer attention to detail in remedial soils work activities and (2) assurance that future remedial soils work will conform to Midland QA program requirements. (Staff Ex. 24, SALP-3 Report at 8).

263. After the SALP evaluation period the SALP Board was provided information that showed that the licensee continued to have performance problems in the remedial soils work area. (Staff Ex. 24, SALP-3 Report at 8). During April and May of 1983, these problems consisted of difficulties with placement of Carlson meters, improper installation, improper

inspections, and missed inspections while the licensee was conducting a load test on an underpinning pier. Another problem was that the licensee missed some hold points. (Harrison, Tr. 20,684). Subsequently, the NRC staff observed an increase in the responsiveness and resolution of problems. (Id.) In June and July of 1983, however, the licensee experienced further problems in the soils area by misdrilling some dewatering and piezometer wells. (Id.) Thus, the licensee's performance continued to decline during the time period between April and July of 1983. (Harrison, Tr. 20,685).

264. The problems experienced by the licensee between April and July of 1983 were not continuing in nature but sporadic, and were all addressed by licensee corrective actions. (Harrison, Tr. 20,684-85). The NRC staff had not detected problems of that magnitude in the licensee's performance since that time period. (Id.)

265. For this SALP-3 Report, the SALP Board considered the most recent soils events in evaluating the licensee's soils work even though these events were beyond the formal cutoff date of the SALP-3 Report. (Landsman, Tr. 20,681).

266. The NRC soils inspector for the Midland project testified that based on his discussions with third party reviewers, NRC consultants and the resident inspector on site, there has not been any major problems occurring in the remedial soils area in the last few months. (Landsman, Tr. 20,682). He explained that the licensee has been doing underpinning work and that they are in a good routine on doing the work under the auxiliary building. (Id.) He considered the work to be satisfactory. (Id. at 20,682-83).

267. The NRC staff has control over what remedial soils work the

licensee can accomplish on site. (Cook, Tr. 20,653, 20,657, 20,738; Landsman, Tr. 20,699; Gardner, Tr. 20,739). It evaluates each piece of work and allows the licensee to conduct remedial soils work in those areas that it is able. (Cook, Tr. 20,653).

268. The licensee is permitted to perform only remedial soils work that will not jeopardize safety. (Cook, Tr. 20,657, 20,738). The NRC staff will not allow the licensee to perform the most critical remedial soils work until the previously approved work is properly done. (Cook, Tr. 20,657). In the past, the NRC staff has stopped work that was previously authorized upon finding that such work had not been satisfactorily performed. (Gardner, Tr. 20,739).

269. During the last few months, there has been an improvement in the NRC staff's communications with the licensee concerning remedial soils issues. (Landsman, Tr. 20,881).

270. For the soils area, the technical submittals of the licensee have improved over the SALP-3 appraisal period in that the submittals became more specific and clear. (Hood, Tr. 20,883; Staff Ex. 24, SALP-3 Report at 12).

271. The NRC project manager for the Midland project testified that from a management standpoint the licensee's appointment of an executive manager fully dedicated to the remedial soils area was a distinct improvement. (Hood, Tr. 20,778; Staff Ex. 24, SALP-3 Report at 11).

272. In response to the SALP-3 Report, the licensee committed to accomplishing the improvements necessary to achieve the quality performance level called for by the NRC. (Staff Ex. 24, SALP-3 Report, Letter from James W. Cook to J. G. Keppler, dated September 6, 1983). For the remedial soils area, the licensee committed to devoting the management attention necessary to establish improved overall performance and to

focus its efforts on addressing NRC concerns about attention to detail and implementation of the QA program. (Id.)

273. The NRC staff was encouraged by these licensee commitments. (Harrison, Tr. 20,698; Staff Ex. 24, SALP-3 Report, Letter from James G. Keppler to James W. Cook, dated September 16, 1983). For the soils area, it believes that the licensee's response to the SALP-3 Report represents a more positive attitude on the part of the licensee since it is nonargumentative in nature as compared to its response to SALP-2, which was argumentative in nature. (Harrison, Tr. 20,692-93, 20,775). The Staff is of the view that this represents a positive step forward in resolving the issue. (Harrison, Tr. 20,775).

274. Until the licensee demonstrates improved performance, the NRC staff will continue to require strong oversight through third party inspections as well as its own inspections. (Staff Ex. 24, SALP-3 Report, Letter from James G. Keppler to James W. Cook, dated September 16, 1983). Also, the Staff's position is that it does not intend to seek relief from our April 30, 1982 Order which has resulted in it approving almost day-to-day activities in the remedial soils area until it has the needed confidence that work in that area will be conducted effectively. (Staff Ex. 24, SALP-3 Report, Letter from James G. Keppler to James W. Cook, dated September 16, 1983).

275. We find that the SALP-3 Board had adequate bases for its Category 3 rating of the licensee's performance in the soils area given the stringent measures that are in place to control the soils remedial work.

276. We find that the licensee's management attitude concerning soils remedial work has improved; however, the record clearly demonstrates that there is room for substantial improvement.

D. Non-Conformance Reports

277. In our July 7, 1982 Memorandum and Order reopening the record on QA and management attitude matters, we requested testimony with respect to the activities covered by five designated non-conformance reports.

278. The Staff responded to this Board request in question and answer 5 of the NRC staff testimony of R. J. Cook, R. B. Landsman, R. N. Gardner, and W. D. Shafer With Respect to Quality Assurance. (Tr. 11,391, Tr. 11,874). The Staff attached copies of each of the five designated non-conformance reports to its testimony identifying them as follows: (1) attachment 7A is NCR MO-1-4-2-008 Rev. 1 (February 25, 1982), (2) attachment 7B is NCR MO-1-9-2-038 (March 8, 1982), (3) attachment 7C is NCR MO-1-9-2-051 (April 21, 1982), (4) attachment 7D is Bechtel NCR 4245 (May 1982) and (5) attachment 7E is Bechtel NCR 4199 (April 29, 1982). (See also Tr. 11,409). For ease of reference, these non-conformance reports will be referred to here as NCR 7A, NCR 7B, etc.

279. Region III took no action regarding these five non-conformance reports. The Staff recognized that those reports represented instances where quality assurance requirements were either not established or not adequately implemented, but the Staff believed was that the work authorization procedure (Attachment H to the Testimony of James G. Keppler With Respect to Quality Assurance, ff. Tr. 15,111) and procedures implemented by Bechtel to control excavation on the site should insure that future work activities in the remedial soils area would be accomplished in accordance with quality requirements. (Landsman, Answer 5). Dr. Landsman testified at Tr. 11,890, that when he referred to "procedures implemented by Bechtel to control excavation on the site" in his direct testimony, he was

intending to refer to the types of procedures included in the Excavation Permit System which was implemented in May, 1982.

280. Both CPC witnesses testified that they had read Dr. Landsman's question and answer five relating to the non-conformance reports and agreed with his testimony. (Page 2, testimony of W. Bird and R. Wheeler ff. Tr. 11,408).

(i). NCR 7A

281. Mr. Bird described the events addressed in NCR 7A. A forty-two inch diameter by forty foot deep hole was drilled to provide a construction aid to assemble construction equipment. It was Bechtel's practice that control of such excavations was by field engineering and a field engineering administered excavation permit system was in place and used. The field engineering system involved checking to insure that no underground utilities would be contacted. The applicable Becthel specification required that backfilling of such excavations meet certain requirements including the involvement of the onsite geotechnical engineer. The drilling of the hole itself, however, was not required to be done under the supervision of the onsite geotechnical engineer. (Pages 2 and 3, testimony of W. Bird and R. Wheeler ff. Tr. 11,408).

282. As is shown in NCR 7A, this drilling was done contrary to the requirement in 10 C.F.R. 50, Appendix B, Section V, that "activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances . . . ."

283. Drilling incident NCR 7A involved "Q" soils. (Tr. 11,413-14). Lack of supervision by the onsite geotechnical engineer was the primary reason for CPC issuing the non-conformance report. (Tr. 11,415).

(ii). NCR 7B

284. NCR 7B concerned the drilling of two four-inch diameter by forty-eight foot deep test borings to obtain information on soil conditions in the vicinity of the freeze wall. One of the holes was in "Q" fill and one was not. The method used for drilling and soils stabilization was not specifically covered by instructions, procedures or drawings for the two borings, but was in accordance with current accepted construction practice. NCR 7B states that the onsite geotechnical engineer was not aware of the drillings or grouting of the hole in "Q" fill. Bechtel has since indicated that the onsite geotechnical engineer was present for the grouting of the hole in the "Q" fill. (Page 3, testimony of W. Bird and R. Wheeler, ff. Tr. 11,408, See also Tr. 11,425). NCR 7B shows that it this nonconformance was also a violation of Section V of 10 C.F.R. 50, Appendix B.

285. NCRs 7A and 7B were written because, contrary to the Applicant's position that there should be specific controls preestablished and documented for excavation in "Q" fill areas where such activities could effect the quality of the fill or damage "Q" listed utilities, specific controls and documentation were not provided. These requirements are now provided for by FIC-5.100, the excavation permit procedure. (Attachment 1 to the testimony of W. Bird and R. Wheeler).

(iii). NCR 7C

286. During the excavation or concrete removal of an existing electrical duct bank adjacent to the southwest corner of the borated water storage tank valve pit, a void was created beneath the southwest corner of the borated water storage tank valve pit. The void was approximately two feet in depth and extended approximately one and a half

feet horizontally beneath the foundation. The NCR itself shows the incident to be another violation of Section V of 10 C.F.R. 50, Appendix B. Applicant testified that NCR 7C also indicated the need to revise the field engineering administered excavation permit system to address stricter controls for the protection of structures or utilities encountered during excavation. This concern was addressed in the preparation of the new excavation permit procedure, FIC-5.100. The new excavation permit procedure, discussed below, requires the onsite geotechnical engineer to determine the influence of the proposed excavation on adjacent structures or utilities. (Pp. 6 and 7, testimony of W. Bird and R. Wheeler ff. Tr. 11,408).

287. Dr. Landsman was onsite at the time of this incident (April 14, 1982) and brought to the attention of CPC. Dr. Landsman issued a noncompliance which he would not have done if the incident had been discovered first by CPC or Bechtel (Tr. 11,876). Dr. Landsman was asked by the Board whether the work performed by CPC as described in NCR 7C could be said to be inadvertent, purposely done, or accidental. Tr. 11,928. He stated that it was closer to the words suggested by Intervenor Stamiris which were - lack of attention to detail or carelessness. (Tr. 11,929).

288. In response to Judge Harbour's request to describe the circumstances involved in NCR 7C, Dr. Landsman replied that there was an electrical duct bank next to and beneath the borated water storage tank valve pit. Part of the remedial work on the borated water storage tank was to place a new ring beam foundation around the old one. (Tr. 11,929). CPC had to remove the backfill and the duct bank in order to allow them to place the new ring beam. (Tr. 11,929). Since at that time there was no procedure

or requirments or controls with respect to excavating anything at the site, CPC merely proceeded with the removal. (Tr. 11,929-30). When CPC started to remove the concrete which was giving lateral support for the sand underneath the valve pit, the sand started sloughing into the void created by the removal of the concrete below the valve pit. (Tr. 11,930). Dr. Landsman stated that the lack of controls for excavation on the site demonstrated a lack of common sense. (Tr. 11,930).

(iv). NCR 7D

289. NCR 7D involved the penetration of a twelve-inch "non-Q" condenser drain line. (Tr. 11,874-5). Dr. Landsman was on the site the day it happened which the transcript indicates was either May 18th or May 19, 1982. (Tr. 11,875; see also Tr. 11,493). Dr. Landsman spoke to a number of CPC and Bechtel employees concerning the incident. For example, he spoke to the two drillers who were on the drilling rig, the quality control person who was there, Mr. Wheeler and various MPQAD people. (Tr. 11,875). The drillers told Dr. Landsman that they had informed either the QC inspector or the hydrogeologist at various times that they were hitting something very solid and that they thought they should stop but they were told to continue drilling until they finally broke through the pipe. (Tr. 11,877). We expressed an interest in hearing from Dr. Landsman with respect to why he felt the activities described in NCR 7D were not handled properly by MPQAD. Dr. Landsman indicated that more than MPQAD was involved. (Tr. 11,886). He said that it was also Bechtel site construction, Consumers Power site construction and its quality control group and its MPQAD management. (Tr. 11,886). Dr. Landsman responded that he did not think it properly handled when CPC allowed two experienced drillers to continue drilling for

four hours after stating that they were hitting something solid and to continue until they broke the pipe.

290. CPC witnesses testified that the review prior to drilling for utilities missed the condensate line because the drawing showing this line was not on the list of drawings requiring review. The new Excavation Permit System has attached to it a listing of drawings by discipline which represents the most complete information available on all underground utilities at the Midland site. (Page 5 testimony of W. Bird and R. Wheeler ff. Tr. 11,408).

(iv). NCR 7E

291. NCR 7E is the other Bechtel non-conformance report (4199). It involves damage to a deep "Q" electric duct bank on April 24, 1982 while drilling a well for the freeze wall monitoring pit. The drilling rig was mispositioned by several feet. When the obstruction was first encountered, field engineering apparently believed that they were hitting a concrete overpour around the duct bank rather than the duct bank itself, and drilling therefore continued. Eventually, drilling fluid was lost. When the fluid was observed in the auxiliary building it was ascertained that the drill had hit the duct bank. A stop work order by CPC was issued on April 28, 1982, but was subsequently lifted based on further training and implementation of the Excavation Permit Procedure (FIC-5.100). (Pages 4 and 5 of the testimony W. Bird and R. Wheeler ff. Tr. 11,408).

292. Dr. Landsman testified that management allowing the drilling rig to be positioned without controls so as to hit a duct bank on April 24th and not write the NCR until April 29th was an illustration of "not good controls on the site." (Tr. 11,886-7). Dr. Landsman thought it was inappropriate

that the Consumers Power site manager had to issue the stop work order - he felt that it should not have gotten to that level of management. (Tr. 11,887).

293. Procedures have been implemented to correct problems associated with drilling operations in order to protect existing buried installations. Bechtel procedure FIC-5.100 entitled "Excavation Permit System" dated May 24, 1982, covers all excavations in both "Q" and "non-Q" soils areas. All anticipated excavations are subject to the requirements of the procedure and before work commences it is required to obtain a permit with the signatures of (1) the Bechtel field engineer, (2) the Bechtel lead civil engineer, (3) the Bechtel onsite geotechnical engineer, (4) CPC construction and (5) MPQAD. (Pp. 7 and 8, testimony of W. Bird and R. Wheeler ff. Tr. 11,408).

294. In addition to the above described Excavation Permit System, CPC is also required to follow the work authorization procedure initiated by NRC and CPC on August 12, 1982. Written authorization from NRC is required to commence work. The work authorization procedure is Attachment H to the testimony of James G. Keppler dated October 29, 1982 (ff. Tr. 15,111).

295. Bechtel is also required to notify CPC of intent to initiate soils work under a separate administrative guideline entitled "Soils Work Permit System." (P. 9, testimony of W. Bird and R. Wheeler ff. Tr. 11,408).

296. Since the Excavation Permit System had been put into effect one utility had been contacted during drilling and that occurred on February 10, 1983. (Tr. 11,410). One of the operators of the drill was performing shallow probing in front of the service water building and accidently nicked the side of a duct bank. (Tr. 11,410). Mr. Wheeler testified that the

cause of this incident was that the person who was involved in the drilling "got a little bit careless and allowed the drill to wander a little bit and nick the side of the duct bank." (Tr. 11,411). Since May 24, 1982 through February 14, 1983, 137 excavation permits had been issued and the incident at the service water building was the only one involving an NCR. (Tr. 11,412-13).

297. Procedures have been implemented to correct problems associated with drilling operations in order to protect existing buried installations. Bechtel procedure FIC-5.100 entitled "Excavation Permit System" dated May 24, 1982, covers all excavations in both "Q" and "non-Q" soils areas. All anticipated excavations are subject to the requirements of the procedure and before work commences it is required to obtain a permit with the signatures of (1) the Bechtel field engineer, (2) the Bechtel lead civil engineer, (3) the Bechtel onsite geotechnical engineer, (4) CPC construction and (5) MPQAD. (Pp. 7-8, testimony of W. Bird and R. Wheeler, ff. Tr. 11,408).

298. In addition to the above described Excavation Permit System, CPC is also required to follow the work authorization procedure initiated by NRC and CPC on August 12, 1982. Written authorization from NRC is required to commence work. The work authorization procedure is Attachment H to the testimony of James G. Keppler dated October 29, 1982 (ff. Tr. 15.111).

299. Bechtel is also required to notify CPC of intent to intiate soils work under a separate administrative guideline entitled "Soils Work Permit System." (P. 9, testimony of W. Bird and R. Wheeler ff. Tr. 11,408).

300. Since the Excavation Permit system had been put into effect one utility had been contacted during drilling and that occurred on February 10, 1983. (Tr. 11,410). Mr. Wheeler testified that the cause of

this incident was that the person who was involved in the drilling "got a little bit careless and allowed the drill to wander a little bit and nick the side to the duct bank." (Tr. 11,411). Since May 24, 1982 thru February 14, 1983, 137 excavation permits had been issued and the incident at the service water building was the only one involving an NCR. (Tr. 11,412-13).

301. NRC witness Landsman referred to Mr. Wheeler's testimony as a gross mischaracterization. (Tr. 14,722). Dr. Landsman stated that a reading of the NCR showed that the duct bank was hit not only once but 13 more times. The incident was described in Stamiris Exhibit 54. See Tr. 14,724 (Stamiris Exhibit 54 was admitted at Tr. 14,749). Dr. Landsman testified that he did not consider the incident described in Exhibit 54 a significant one - it was just another example of CPC "hitting something". (Tr. 14,730-31). Dr. Landsman further testified that he believed that the root cause for this nonconformance was lack of attention to detail. (Tr. 14,731). He stated that the incident is an example of poor management on the part of both Consumers and Bechtel. (Tr. 14,732). Mr. Mooney did not consider this a drilling incident because a jackhammer was being used. (Tr. 20,375). Mr. Wheeler said a drill was being used. (Tr. 11,410). This incident should be considered along with the other drilling incidents.

302. Judge Bechhoefer inquired whether the five NCRs would have occurred if a geotechnical engineer had been present. (Tr. 11,428). CPC witness Bird responded that if the geotechnical engineer had been present he would have found it appropriate to have permitted the work to proceed. He testified that the issue was really the appropriateness of allowing the drilling of the hole in "Q" soil without an engineering drawing or without

approved engineering procedures. He further testified that the Excavation Permit System that went into place provided the controls which MPQAD was concerned about. (Tr. 11,428-29). Before the Excavation Permit System went into effect there were no formal quality controls applicable to excavations on site. (Tr. 11,429-30).

303. Judge Bechhoefer stated his assumption that any time an obstruction was hit in "Q" soil that that incident would be reported to the quality system under the new Excavation Permit Procedure. CPC witness Bird stated that that was not correct. CPC witness Wheeler testified that there is a lot of lean concrete backfill at the Midland site and it is not unusual for a driller to hit the concrete. The procedure calls for the driller to stop and if CPC cannot identify a utility, either "Q" or "non-Q", then the drilling would continue. (Tr. 11,440-41). The determination that a utility is not being hit is made by the onsite geotechnical engineer, the lead civil engineer and MPQAD. (Tr. 11,441).

304. At Tr. 16,294, CPC committed to apply the Excavation Permit System to the underpinning. This was in response to the concerns expressed by Dr. Landsman when he learned that, prior to the above committment, CPC did not plan to apply the Excavation Permit System to the underpinning. (Tr. 11,935, 11,939-40, 11,951).

305. Two drilling incidents occurred in July 1983 in the vicinity of the surface water pump structure (CPC Exhibit 58, p. 2).

306. In the first incident, an excavation permit was obtained and executed in accordance with applicable procedures before well drilling began. The location of the well was surveyed, verified and marked, as were the underground utilities in the vicinity of well #521. The drill rig was

set up on a stake marking an underground utility rather than the stake designated well #521. Spencer, White and Prentis and Bechtel field engineers verified this as the proper location. Quality control verified that the drilling rig was positioned within allowable tolerances relative to the stake. When drilling proceeded, an obstruction was encountered at approximately 619.5 feet. Drilling was stopped. (CPC Exhibit 58, p. 2) This drilling had gone through a concrete pipe and not into the bedding material as had been originally thought. (Tr. 20,313). Mr. Mooney clarified later that the drill went through one wall of the pipe and damaged the inside bottom of the pipe. (Tr. 20,3126).

307. The second incident involved piezometer LS-7, where drilling also occurred at a wrong location as a result of misinterpreting a field change request (FCR). Again, the excavation permit system procedures were followed prior to drilling. The field organization submitted a FCR to project engineering, asking for a change in the location of this piezometer to avoid interferences with underground utilities and soldier piles. Project engineering approved certain relocations, revised some proposed relocations, and added additional relocations. When the FCR came back from project engineering approved, the field engineers and QC inspector failed to notice the revised location for piezometer LS-7 made by project engineering. As a result the piezometer was drilled in an incorrect location. (Consumers Power Exhibit 58, page 2). We heard extensive testimony with respect to these two incidents. (Tr. 20,307-20,442).

308. On July 13, 1983, shortly after these two events where discovered, the Staff advised Consumers that it was considering stopping all soils remedial work. (Tr. 20,350-01). The Staff asked Consumers to explain in

writing why all soils work should not stop. Consumers Power exhibit 58 is CPC's response to that NRC request. (Tr. 20,351).

309. CPC witnesses believed that his opinion that the two drilling incidents discussed above were caused by human error. (Tr. 20,354-55).

310. The Board notes that these two incidents occurred approximately 5 months after this Board heard the opinion of the Staff and CPC that the work authorization procedure and the excavation permit system would ensure that future work activities in the remedial soils area would be accomplished in accordance with quality requirements. (See question and answer 5, NRC testimony of R. J. Cook, R. B. Landsman, R. N. Gardner, and W. D. Shafer with respect to quality assurance and page 2 of the testimony CPC's witnesses W. Bird and R. Wheeler which follows Tr. 11,408).

311. The Board is concerned that these types of problems occurred when they did. The history of QA problems at this site prior to December, 1979 is well known. CPC had participated in 4 weeks of contested evidentiary hearings in July and August of 1981. After all of this, it is disturbing to find (1) the absence of controls on excavation demonstrated by the five incidents in early 1982 and (2) the apparent inability to prevent the incident of February 10, 1983 and the two drilling incidents in July 1983.

312. The Applicant discusses NCR's 7A through 7E in Appendix A to proposed findings submitted by them on January 27, 1984. By way of introduction, in paragraph 680, Applicant states that it has found no common thread running through these incidents which would be helpful to them in analyzing the soils quality assurance implementation or management attitude of Consumers Power Company. In its conclusion for the portion of Appendix A which relates to soils related incidents, CPC states that they find very

little in the above litany of difficulties of common origin and that the only common problem pointed up by the latter problems has been a tendancy for Consumers Power and the Staff to miscommunicate.

313. On pp. 442-53 of its proposed findings, CPC set forth exhaustive details concerning NCRs 7A, 7B, 7C, 7D and 7E. What its findings provide in detail, they lack in perspective. The fact that there may not be any "common thread" running through these incidents provides no basis to ignore their significance in a document which has as its central theme soils quality assurance implementation and management attitude. This Board believes these incidents demonstrate a lack of control of site activities which does not reflect well on management.

E. Quality Plans

314. In paragraphs 392 through 398 of its January 27, 1984 proposed findings, CPC addresses two CPC quality plans designated MPQP-1 and MPQP-2. CPC accurately describes the content and purposes of the plans as they apply to soils remedial activities. There was no controversy concerning these plans between CPC and NRC - both found them adequate. NRC therefore, adopts CPC's proposed findings relating to quality plans.

F. Balance of Plant

(i). Introduction

315. We heard extensive testimony about CPC's quality assurance implementation of non-remedial soils, or "balance of plant", work. Such testimony is relevant to our assessment of the extent to which we need to impose controls on remedial soils work. Simply stated, poor performance of balance of plant work is evidence that CPC cannot, on its own, carry out the remedial soils work. By the same token, positive steps taken by CPC to

correct problems with balance of plant work are evidence that CPC will take initiative to properly implement remedial soils work.

(ii). Cables and Hangers

316. Problems with implementation of balance of plant work began to manifest themselves in 1981, as it was discovered that cables and pipe hangers had been misinstalled.

317. Turning first to hangers, during a May 1981 inspection, the Staff discovered that certain pipe supports placed in 1980 had been misinstalled. MPQAD then overinspected 123 pipe supports installed before 1981. Approximately 45% of the overinspected hangers had at least one nonconforming condition. As a result, the Staff required CPC to reinspect all hangers installed prior to January 1, 1981 and a sample of the hangers installed after that date. CPC has determined, however, that it is more practical to reinspect all hangers regardless of when they were installed. The reinspection is ongoing. (Midland Section October 1982 testimony. Attachment 1, Details Section pp. 4-5, Rutgers, pp. 5-7, Tr. 14,451, Tr. 18,056-80).

318. In addition to overinspecting the hangers, CPC plans to take steps to insure that the problems with hanger misinstallation do not recur. CPC will require crafts people, craft supervisors and field engineers to use installation checkoff lists. Specifications will be simplified so as to be more understandable, field initiated changes will be reduced through a space control program, and PQCIs will be rewritten (Rutgers, pp. 7-8, Tr. 18,081-84).

319. As for cables, the problems with their installation surfaced in May 1981 when the Staff observed that MPQAD was identifying many instances

of QC inspectors failing to catch improper installation of cables. (See, ¶ 428, NRC Staff's Supplemental Proposed Findings of Fact and Conclusions of Law). In response, CPC overinspected 1054 cables. Five percent were misinstalled. As a result, the Staff requested that all Class 1E cables be reinspected (Rutgers, pp. 2-4, Midland Section October 1982 testimony, Attachment 10, Details Section, p. 3, Tr. 14,451-52). The reinspection has been completed. Of 9200 cables inspected, approximately six percent of them had at least one nonconformance in their routings. (Tr. 18,626).

(iii). Qualifications of QC Inspectors, MPQAD Takeover of QC Function, Retraining and Recertification of QC Inspectors

a. Staff concerns over qualifications of QC inspectors and request for MPQAD takeover of QC function

320. Because of the high number of nonconforming conditions missed by QC inspections of hangers and cables, the Staff became concerned with the overall quality of QC inspections being performed on site. (Tr. 14,451).

321. As a result, the Staff urged CPC to take over the balance of plant QC function. (Tr. 14,452-53, See also Keppler October 1982 testimony, Attachment D, Enclosure 4).

322. In the September 17, 1982 "balance of plant letter", noted above, CPC committed to do so. (Keppler, October 1982 testimony, Attachment E). The takeover became effective January 17, 1983. (Wells, p. 5).

b. Further concern over quality of balance of plant work

323. Concerns over the quality of balance of plant work were compounded by the Staff's assessment, in late September, 1982, that CPC was doing a poor job of recertifying QC inspectors (See "Remedial Soils" section supra). The deficiencies in the certification of soils QC inspectors further

indicated that QC inspectors site wide might not be properly qualified. (Tr. 14,923-24).

324. On September 29, 1982, a public meeting was held to determine whether a stop work order needed to be imposed on the balance of plant work. (Tr. 14,924).

325. The Staff, however, determined that it did not have enough evidence to call for a shutdown of balance of plant work. (Tr. 14,934-35).[43/]

326. Although the Midland Section did not recommend a shutdown, it required CPC to develop a retraining and recertification program for balance of plant QC inspectors. In particular, an upgraded training program similar to that being developed for soils QC inspectors was expanded to balance of plant work. (Midland Section, October 1982 testimony, p. 2, Wells, pp. 4-5).

c. Retraining and Recertification

327. All QC personnel now receive formal training. To be certified they must undergo field performance demonstrations and pass written closed book examinations on both the QC program generally and on specific inspection plans. Additionally, QC inspectors are now being qualified to ANSI (American National Standards Institute, Inc.) N45.2.6 (1978). (Midland

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43/ After discovering that CPC was poorly implementing the recertification of soils QC inspectors, Dr. Landsman felt that a balance of plant shutdown was warranted (Tr. 14,940-41).

Section, October 1982 testimony, pp. 1-2, March 1983 testimony, p. 2, Wells, pp. 4-5, Tr. 16,981, 17,002).[44/]

328. When CPC first committed to develop a retraining and recertification program for balance of plant QC inspectors, it was recertifying QC inspectors to old PQCIs. In early 1983, MPQAD decided to revise almost all of the old PQCIs and recertify QC inspectors to the revised instructions. (CPC Exhibit 48, p.12).

329. The revisions to the PQCIs are designed to (1) make sure that there is accurate identification of attributes that must be inspected, (2) clearly identify acceptance/rejection criteria and (3) specify requisite skill levels. Also, the new PQCIs are reviewed and, if necessary, tested to see that they meet the goals of the revision. (CPC Exhibit 48, pp.12-13).

340. During the first quarter of 1983, the Midland Section observed the retraining and recertification programs for balance of plant QC inspectors. They felt that the pace of the program was too rushed. As a result, instructors were sometimes unprepared, trainees' questions could not always be answered and instructional materials were sometimes not available at the classes. (Midland Section March 1983, testimony, pp. 2-3). CPC promptly suspended the training program for a week and began taking steps to improve it. At the time the Midland Section testified, they had not yet re-examined the retraining/recertification process to assess whether CPC had adequately alleviated problems with the pace of the program. (Id., Tr. 16,256-57, 18,195-97).

341. Originally, CPC had intended to complete by April 1, 1983, the retraining and recertification process for QC inspectors. (Keppler March

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44/ This retraining and recertification program has now been incorporated into the Construction Completion Program which is discussed below.

1983 testimony, Attachment 6, p. 7). The Staff believed that the target date was too ambitious, and might lead to an inferior retraining/ recertification process. CPC therefore prudently agreed to relax the schedule (Tr. 16,796-97). No inspector will perform inspections until he or she is recertified. (Tr. 18,672).45/

342. We find that there is reasonable assurance that the retraining and recertification process will be carried out properly. Although there were problems with the pace of the program, CPC took prompt steps to correct the problem. In fact, the Staff commended CPC for doing so. We have not heard of any other difficulties with the retraining and recertification program that causes us concern.46/

d. Staff concern with request to MPQAD takeover of QC function

343. As previously discussed, the Staff urged CPC to takeover the QC function for balance of plant work. However, Mr. R.Cook and Mr. Shafer expressed a concern over the quality control hierarchy after the takeover. They disapproved of CPC permitting QC inspectors formerly on the Bechtel payroll to continue to report to QC supervisors who had been employed by

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46/ The Staff expressed concern over frequent changes in schedules for performance demonstrations. (Tr. 16,632-34, 16,641-43, Stamiris Exhibit 82). Mr. Wells, however, explained that schedule disruptions are inevitable due to the number of inspectors who need to be recertified, the slow process of revising PQCIs and the need to assure that inspectors receive the training they need. (Tr. 18,707-08). As long as the training itself is satisfactory and inspectors do not perform inspections until properly certified, the schedule disruptions are not of significant concern to us.

45/ As will be discussed below, balance of plant work is shut down and may not resume until work in place is reinspected. Ultimately, therefore, continuation of balance of plant work depends on proper certification of QC inspectors.

Bechtel. Mr. Shafer testified that he has made that point known since the day the Staff recommended that CPC assume the QC function. They took this position because, generally speaking, there had been difficulties with the performance of Bechtel QC supervisors. (Tr. 16,298-16,303).

344. CPC however preferred to screen the Bechtel QC supervisors and only use as supervisors qualified people (Tr. 16298-99). We perceive two reasons for not making an adverse finding based upon CPC's decision to permit qualified Bechtel QC supervisors to continue to oversee QC inspectors formerly on the Bechtel payroll. First, there is no regulatory requirement preventing former Bechtel QC supervisors from retaining their supervisory positions under the MPQAD takeover. Second, Mr. Keppler testified that the Staff does not object CPC retaining qualified Bechtel QC supervisors in their former positions. (Tr. 15,616).

(iv). The DGB Inspection

a. Introduction

345. As discussed above, the Staff believed in late September 1982, that it did not have sufficient information about the quality of balance of plant work to determine that a shutdown was necessary. Accordingly, the Staff felt it necessary to do an inspection of current work. Since work had been taking place in the Diesel Generator Building (DGB), the Midland Section decided to use the DGB as a focus for an inspection of balance of plant work. (Tr. 14,947-50).

346. From October 1982 through January 1983, the Staff did the inspection. (Keppler March 1983 testimony, Attachment 4). The inspection revealed a breakdown in implementation of quality assurance. Two severity

level III violations were found, each resulting in a civil penalty of $60,000. (Id., Attachment 3).47/

347. Both the Staff and CPC agree that the DGB inspection reflected a significant breakdown in quality assurance. (Keppler March 1983 testimony, p. 4, Tr. 14,394, Tr. 18,413).

b. The Two Violations

(1). IPINs

348. One violation was imposed for misuse of In-Process Inspection Notices ("IPINs"). An IPIN is a document that was used by quality control to document findings during inspections. (Keppler March 1983 testimony, Attachment 7, p. A1-2).48/

349. If part way through an inspection of an uncompleted item, a QC inspector found multiple nonconformances, he had the option of terminating the inspection, documenting the deficiencies on an IPIN and sending it back to construction. After construction corrected the deficiencies noted on the IPIN, the QC inspector had to come back and inspect all attributes of the item not previously inspected and found satisfactory. If these procedures

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47/ This inspection is referred to as the "diesel generator building" inspection. While the inspection concentrated on the DGB, it was not strictly limited to that building. If an inspector observed something unrelated to the DGB, but significant enough to be included in an inspection report, he documented that item. (Tr. 15,762).

48/ IPINs were instituted on site in June 1981. Prior to that, Deficiency Reports were used in a manner similar to IPINs. There is the potential that Decifiency Reports were misused in a manner similar to the way IPINs were misused (Keppler March 1983 testimony, Attachment 7, p. A1-2).

were followed, all attributes of an item would be checked by quality control. (Id., at A1-3). While QC inspectors could permit deficiencies to be corrected in process, they could not close out inspection reports until they (1) determined that all attributes to an item were clear of deficiencies or (2) documented all deficiencies on nonconformance reports (NCRs).

350. However, the procedures were misapplied. Some QC inspectors, upon reinspecting work that had been turned back to construction, only looked at deficiencies that had been noted on the IPIN. Furthermore, some QC inspectors were not even documenting all deficiencies identified before turning the item back to construction. Left unchecked were (1) attributes either not inspected before the item was sent back and (2) deficiencies noticed but not documented on the IPIN. (Keppler March, 1983 testimony, Attachment 4, pp. 7-9).

351. Besides being concerned that abuse of IPIN procedures led to nonconforming conditions being missed, the Staff also believed that not documenting all deficiencies diluted the information fed into the trending programs. (Id. at 8).

352. In exit meetings held in November and December, 1982, the Midland Section expressed its concern over the abuse of IPINs. (Wells, pp. 9-10). In mid November 1982, Bechtel took steps to make sure QC inspectors knew that they should thoroughly inspect all attributes released for inprocess inspection and document all deficiencies. (CPC Exhibit 36). The instructions, however, were not fully successful in reaching QC inspectors. On January 19 and 20, 1983, the Midland Section interviewed QC inspectors to assess their current understanding of how IPINs should be used. Some

inspectors still erroneously believed either that not all deficiencies observed had to be documented or that only deficiencies noted on the IPIN had to be reinspected. (Keppler March 1983 testimony, Attachment 4, pp. 8-9, Tr. 16,272-74).

353. IPINs have been discontinued at the Midland site. On December 13, 1982, Mr. Meisenheimer ordered that for remedial soils work, IPINs be discontinued and deficiencies be documented on NCRs (CPC Exhibit 52).[49/] On January 25, 1983, IPINs were discontinued for balance of plant work. (Wells, pp. 12-13, CPC Exhibit 38).[50/]

(2). Second Violation

354. The second violation consists of approximately thirty miscellaneous items of non-compliance. (Keppler March 1983 testimony, Attachments 3 and 4). Initially, CPC fully admitted all but three of the non-compliances. Of the three that were not fully admitted, two items, B1a and B1f, were admitted in part. CPC classified the third item, B2a, indeterminate, but as will be discussed below, ultimately admitted the violation. (Keppler March 1983 testimony, Attachment 7). It therefore suffices simply to note that the miscellaneous items of noncompliance reflect a significant breakdown in implementation of balance of plant work.

49/ The MPQAD soils section conducted an investigation of the use of IPINs in remedial soils work. The soils section concluded that IPINs had been properly utilized for remedial soils work. (Tr. 19,640-51, CPC Exhibit 53).

50/ Steps had been taken to discontinue IPINs as early as December 2, 1982 (CPC Exhibit 37).

However, we discuss below two matters with respect to the DGB inspection that were explored in some detail during the hearing.

355. Items of noncompliance, B.2.a, indicates that, contrary to the requirements of 10 C.F.R. Part 50 Appendix B, Criterion III, "measures were not established for the selection and review for suitability of application of "Q" materials associated with the diesel generator exhaust muffler in that design drawings and specifications did not indicate the material identity of the installed muffler saddle supports and plates." (Keppler March 1983 testimony, Attachment 3, p. 5). CPC's response to that item is included as attachment 2 to a letter dated March 10, 1983 from Vice President James W. Cook to the Director, Office of Inspection and Enforcement. (Peck attachment to prep. test). CPC stated "the violation is indeterminate at this time." (Id. A2-19). Staff witness R. Cook testified that he and other members of the Midland team felt that CPC's response was inappropriate because CPC had enough information to be more specific about the violation (Tr. 19,505). On July 12, 1983, CPC admitted the violation. (CPC Exhibit 51). In explanation for the delay in admitting the violation, CPC witness B. Peck testified that it took considerable research down through two levels of sub-suppliers for Consumers to complete their investigation of this matter. (Tr. 19,560).

356. We will not pursue this matter because (1) Bechtel's specification issued by Transamerica Delaval, Inc., for procurement of the DGB exhaust muffler system was issued in the second quarter of 1977, (Tr. 19,563), more than seven years ago; (2) most of the testimony was directed at Consumers' March 10, 1983 response to the notice of violation, and as stated above,

Consumers admitted the violation four months later. There is no clear evidence in the record to find that CPC is at fault for not admitting the violation sooner. Even if we ignored Mr. Peck's stated reason for the delay in admitting this violation, the most adverse finding we could make, is that CPC did not admit the violation as quickly as it might have. In the context of this entire proceeding, we would not consider this item significant.

357. In its Notice of Violation, the Staff criticized CPC for allowing a backlog of almost 16,000 inspections to develop (Keppler March 1983 testimony, Attachment 3). CPC however reviewed that concern and concluded that the 16,000 inspections referred to by the Staff were actually "open" inspections. Of those inspections, only 1200 were in backlog. The remaining inspections applied to items that for various reasons were not ready for further inspection. (Keppler March 1983 testimony, Attachment 7, p.A2-3). Mr. Bird testified that he did not believe a backlog of 1200 inspections to be unusual. (Tr. 19,019). He further noted that the breakdown of the 16,000 open inspections found in CPC's response to the Notice of Violation (NOV) was probably not available to the Staff at the time the NOV was issued. (Tr. 19,046-47).

(v). Shutdown of Balance of Plant Work

358. On November 23, 1982, a major exit meeting, between the Staff and CPC, was held to discuss the Staff's DGB inspection findings. (Tr. 15,074-75). By that time, there was strong sentiment among the Midland Section that safety-related balance of plant work would have to be shut down. (Tr. 15,080, 15,084-85, Stamiris Exhibit 66). At the meeting, Mr. Warnick advised CPC that the Midland section would probably recommend to

Mr. Keppler a shutdown (Tr. 18,296). In fact, as early as November 10, 1982, the Midland Section unanimously believed that a shutdown was warranted. (Tr. 15,071, 16,210). However, at the November 23 exit meeting, the Staff gave CPC the chance to take appropriate steps in response to the DGB inspection findings. The Staff's decision to do so apparently stemmed at least in part from the fact that a Staff-imposed shutdown would take time to initiate. (Tr. 15,081, 15,084-85, 16,003, Stamiris Exhibit 66). Mr. Gardner testified that he did not want to see balance of plant work continue during the time it would take for the Staff to process a shutdown order. (Tr. 15,084). If, however, CPC had failed to take meaningful action, the Midland section would have recommended a stop work order. (Tr. 15,304).

359. On December 2, 1982, CPC stopped all safety-related work except for the following (1) NSSS installation work performed by Babcock and Wilcox Company, (2) HVAC installation work performed by Zack Company, (3) post system turnover work, (4) hanger and cable reinspection, (5) design engineering, (6) system lay-up activities and (7) remedial soils work. (Keppler March 1983 testimony, p. 4, Attachment 5).

360. As will be discussed below, balance of plant work is now subject to a program, called the Construction Completion Program, intended to insure that all balance of plant work is properly done.

(vi). Inspection Report 83-03

361. Shortly after the DGB inspection, the Staff performed another inspection which documented another Severity Level III violation (Inspection Report 83-03, Staff Exhibit 18).

362. Of particular significance to Inspection Report 83-03 was the Staff's finding that was an uncontrolled form was being used to document quality related deficiencies observed during walkdowns prior to hydrostatic testing. The uncontrolled form was called an "Attachment 10" form (Staff Exhibit 18, Tr. 18,124).[51/] QC inspectors were using these forms to do a preliminary assessment of the work prior to formal inspection. (Tr. 18,124-25).

363. The use of an unofficial, non-quality form, such as the Attachment 10 form, to document Q-related inspection findings violates 10 C.F.R. Part 50, Appendix B, Criterion II. (Staff Exhibit 18, p.31.)

364. In August 1982, MPQAD auditors discovered that Attachment 10 forms were being used in violation of regulatory requirements. Accordingly, MPQAD ordered that use of Attachment 10 forms be discontinued. (Staff Exhibit 18, p.3, Tr. 15,955).

365. However, in its audit report, MPQAD failed to clearly discuss the problems it found with Attachment 10 forms. As a result, the Staff cited CPC with an item of noncompliance. (Staff Exhibit 18, p.3, Tr. 15,957).

366. Furthermore, although MPQAD discovered the improper use of Attachment 10 forms, CPC did not review all the forms to determine if the deficiencies noted were properly disposed. (Staff Exhibit 18, p.3,

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51/ A controlled document is "controlled" through numbering, logging and identifying the locations of copies. The purpose of controlling a document is to be sure that the document is not lost. (Tr. 18,627-28).

Tr. 15,955). This, too, amounted to an item of noncompliance. (Staff Exhibit 18).[52/]

367. Finally, during the inspection, Mr. Shafer noticed that a quality trend graph for the period from August 29 through October 2, 1982 had been revised, effective December 23, 1982. The original graph contained a notation that Bechtel QC and Bechtel construction had agreed to facilitate the hydrostatic testing program by not using IPINs. The revision did not mention the agreement. According to Mr. Shafer, Mr. Wells authorized the change. (Tr. 16,255). While the Staff did not believe there was any attempt at deception, Mr. Shafer believed that the trend graph should not have been changed. (Staff Exhibit 18, p.3, Tr. 16,255).

368. Mr. Wells testified that he ordered the change to the trend graph because the wording in question was unclear. However, he was unable to recollect how the wording was changed. (Tr. 18,278-79, 18,181).

369. We agree with the Staff that use of Attachment 10 forms was a serious enough item of noncompliance to be classified as a Severity Level III violation. Uncontrolled forms should not be used to document Q-related deficiencies. Similarly, we agree that the MPQAD audit report should have discussed the problems with Attachment 10 forms and that MPQAD should have promptly ordered a verification to assure that there had been proper disposition of all deficiencies noted on Attachment 10 forms. As for the change in the trend graph, we find no attempt to deceive the Staff.

52/ Mr. Wells ordered that a sample of Attachment 10 forms be examined to determine if any deficiencies cited were not properly dispositioned. The study found no case where an identified deficiency was not properly taken care of prior to formal inspection. (Tr. 18,123-24). However, this study was ordered as a result of the Staff inspection. (Id.). Accordingly, the study does not excuse the fact that, upon discovering that Attachment 10 forms were being used for Q-related inspections, MPQAD did not order an assessment of deficiencies noted in the forms.

Accordingly, we do not weigh against CPC the fact that the graph was changed.

370. Inspection Report 83-03 also cited CPC with another noncompliance with respect to "balance of plant work." In particular, the Staff found that field engineers were using "non-Q" procedures to calculate the loading of Q conduit hangers. (Staff Exhibit 18, pp.4-5).

(vii). Miscellaneous Concerns over Balance of Plant Work

a. Material Storage

371. The Staff has found continuous problems with material storage and maintenance at the Midland site. (Tr. 14,393. Keppler October 1982 testimony, Attachment B, ¶ 4). Mr. Rutgers acknowledged that there have been problems with material storage and maintenance, but believes that CPC and Bechtel have been properly responsive when the problem has arisen. (Rutgers, p.11). Mr. Rutgers described various steps, since 1980, that have been taken to resolve deficiencies in materials storage and maintenance. For example, in 1980, a special task force was formed to identify and resolve long term storage problems. MPQAD audits in 1981 and early 1982 identified several areas of concern with respect to Bechtel's outside storage and maintenance program. In response, Bechtel developed a computerized method of tracking storage controls. Ten months later, in November, 1982, weekly storage checks of the Poseyville laydown area were established. Finally, in response to two findings of the DGL inspection, quality control inspections of various jobsite laydown areas were changed from monthly to weekly and procurement personnel responsible for marking steel were retrained. (Id. at 11-13).

372. However, Mr. Shafer and Mr. R. Cook disagree that the site has been properly responsive to storage and maintenance difficulties. Rather, initiative is not taken to rectify storage and maintenance problems until the Staff or MPQAD identifies the deficiencies. (Tr. 14,390-94).

373. Unfortunately, there are indications that despite all of the steps taken to correct problems, CPC and Bechtel still have been unable to come to grips with the storage and maintenance problems on site. On April 14, 1983, the Staff issued an inspection report citing CPC with an item of noncompliance for inadequate storage and maintenance. In particular, mechanical snubbers were not being protected from physical damage. In May 1983 there was still a need for improvement in storage and maintenance on site. As a result, Bechtel organized another task force to develop a permanent storage and maintenance team. (Tr. 18,627-28, 18,677-18,680).

b. Support of Electrical Cables

374. The Staff also expressed concern about support of electrical cables being poorly supported while awaiting further routing or termination. (Keppler October 1982 testimony, Attachment B, ¶ 5). Mr. Rutgers responded by explaining that meeting inprocess requirements for cable installation is especially difficult. However, he believed that as deficiencies in cable support arose, prompt action has been taken to rectify them. Long standing field procedures have been in place to instruct workers as to how to properly support cables. Supervisors have also taken steps to assure that cables are correctly supported. Additionally, in August 1981, Bechtel instituted weekly inspections of selected plant areas for conformance to seven installation attributes, including coils supports. (Rutgers, pp.13-14, Tr. 18,097-18,101).

c. Photon Audit

375. In September 1982 MPQAD audited Photon Laboratories ("Photon"), a subcontractor to the Zack Company. Photon is located in Midland, Michigan, but off site. (Tr. 18,279, 18,703-05). Zack hired Photon to certify HVAC welding procedures and once the procedures were certified, to certify the welders to the procedures. (Tr. 18,222)

376. The audit identified errors in Photon's certification of welding procedures. (Tr. 18,221). As a result, in November 1982, safety related HVAC welding was shutdown. The work did not resume until June 1983. The length of the shutdown is due to the fact that the steps needed to properly correct the problems at Photon take time. (Tr. 18,226-28). CPC wished to be certain that the corrective action was done right. (Tr. 18,228). Similarly, the two month delay between the audit itself and the shutdown stems from the amount of time needed to analyze the audit findings to determine whether a problem did exist at Photon. The fact that work continued pending analysis of the audit findings is not of concern since the discovery of the deficiencies at Photon mandated that work done under improper procedures had to be justified. (Tr. 18,280).

377. Mr. J.Cook testified that while the Photon audit reflects poor quality assurance implementation at Photon, it does not reflect a failure on the part of MPQAD. Rather, the incident is an example of MPQAD discovering a problem and taking steps to correct it. (Tr. 18,348-49). We see nothing to contradict that assessment.

(viii). Conclusion with Respect to Implementation of Balance of Plant Work

378. Although not all of the examples put forth by the parties do so indicate, the evidence without doubt shows that there have been significant problems with quality assurance implementation of balance of plant work. The occurrence of those difficulties reinforces the need to keep in place our April 30, 1982 Order.

(iv). Steps to Assess and Improve Implementation of Balance of Plant Work

a. Introduction

379. We heard testimony on two programs taken to both assess the adequacy of and improve the implementation of balance of plant work; the Construction Completion Program ("CCP") and the Independent Design Verification Program/Independent Construction Verification Program ("IDVP/ICVP"). Neither program applies to remedial soils work. That being so, we do not believe it necessary to discuss these programs in exhaustive detail. However, steps taken to correct balance of plant work may reflect on CPC's managerial attitude.

b. Description of the CCP

380. The CCP is Consumers Power Company's plan to insure that balance of plant work is properly implemented. (See CPC Exhibit 48, p. 1). It was initiated on December 2, 1982 with the stop work described above (Keppler March 1983 testimony, Attachment 6, p. 3). On that date CPC committed to submit to the Staff the details of the CCP (Keppler March 1983 testimony,

Attachment 5, p. 2). On January 10, 1983, CPC did so. (Id., Attachment 6).[53/]

381. The CCP serves a number of functions. It consolidates previously proposed steps for improving balance of plant work, serves as part of CPC's response to the DGB inspection, sets forth plans for verifying whether work in place has been correctly installed and describes steps taken to assure that the remainder of the balance of plant work is done properly. (See CPC Exhibit 48, Keppler March 1983 testimony, Attachment 7, p. A2-1).

c. MPQAD Takeover of QC Function, Retraining & Recertification

382. MPQAD's absorption of the balance of plant QC function and the retraining/recertification process are now part of the CCP. Both the takeover and the retraining/recertification process were discussed previously and need not be repeated here.

d. Preparation

383. Before implementing Phase 1, the plant was prepared to allow access to systems and areas. Construction tools, equipment, temporary construction facilities and uninstalled materials have been removed and stored. Other necessary housekeeping has been performed. (CPC Exhibit 48, p. 10).

e. Phase 1

384. Phase 1 consists of two parts, "status assessment" and "quality verfication."

53/ A revision of the CPC dated June 10, 1983 was received into evidence (CPC Exhibit 48).

385. The first step of Phase 1 is to assess the installation and inspection status of Q-systems and other components within major safety-related structures. (J.Cook, p. 9, CPC Exhibit 48, pp. 18-25).

386. Status assessment will be done by teams which consist of a team supervisor and personnel from field engineering, craft supervisors, project engineering, MPQAD and CPC test and construction personnel. The teams will be augmented with other personnel as necessary. Before beginning the status assessment, appropriate training will take place. (J.Cook, pp.9-10).

387. A question arose as to whether the independence criteria of 10 C.F.R. Part 50, Appendix B are violated by the presence of MPQAD personnel on the status assessment terms. We find that Appendix B is not violated. Except for scheduling, the MPQAD team member takes no directives from the team supervisor. Rather, the MPQAD team member receives his instructions from MPQAD management (CPC Exhibit 48, p. 19, Tr. 16,074-75). Furthermore, the Staff has told CPC that a QC inspector may not audit the work he looked at as part of the status assessment team. (Tr. 16,074).

388. The Quality Verification Program (QVP) is the second part of Phase 1. It amounts to QC reinspections by MPQAD of all balance of plant work completed and inspected by quality control prior to December 2, 1982. (CPC Exhibit 48, Appendix 1, p. 1). It should be clarified, at the outset, that this verification is not done by the teams that perform the status assessment. Rather the verification is performed strictly by MPQAD. (Tr. 16,075, CPC Exhibit 48, Appendix 1, pp. 17-18).

389. CPC originally proposed to verify balance of plant work on a sampling bases. (Tr. 16,040). At the Staff's urging, CPC agreed to

reinspect 100% of all balance of plant work. If however the reinspections reveal that the work has been installed to a sufficiently high level of quality, CPC may then recommend to the Staff that subsequent verification be done on a sampling basis. (CPC Exhibit 48, p. 21, J. Cook, Attachment 4 to prep. test.) However, even if CPC should conclude that it may reduce the reinspections to a sampling, there will still be a 100% reinspection of all items or attributes covered by Inspection Records which include IPINs or Deficiency Reports. Similarly, there will be 100% verification of all hardware inspections documented on closed Inspection Reports falling within system boundaries identified on Attachment 10 forms. (CPC Exhibit 48, Appendix 1, pp. 11-12, Tr. 18,560-63).

390. The reverification process differs for accessible and inaccessible systems. If the system is accessible, the reverification will be both a complete review of requisite documentation and a visual recheck. (CPC Exhibit 48, Appendix 1, p. 6). For inaccessible attributes, verification will be by review of documentation, overinspection results, past corrective actions and if necessary non-destructive examination techniques or even destructive examination. (CPC Exhibit 48, p. 21). Questions arose as to whether review of records would provide assurance that an inaccessible item was properly constructed. Mr. Gardner explained that if the records indicate something is amiss, further examination might be required. (Tr. 16,753). Ultimately CPC must provide reasonable assurance that inaccessible work has been properly constructed. (See Tr. 16,753-16,758, 18,256-57).

f. Phase 2

391. "Phase 2" is simply completing the balance of plant work. CPC will use the team concept developed for the status assessment. There will

continue to be MPQAD representatives on the teams. However, as with the status assessment, MPQAD personnel will only take scheduling directives from the team supervisor. (J.Cook, pp. 6-7, CPC Exhibit 48, p. 22).

g. Relationship Between Phase 1 and Phase 2

392. In implementing the CCP, the plant is divided into modules. The CCP sequence is applied to each module. Hence, Phase 2 activities will at times be occurring adjacent to areas where Phase 1 activities are going on. (J.Cook p. 6).

393. Since Phase 1 activities may be carried out adjacent to Phase 2 work, the question arose as to whether currently accessible systems may become inaccessible before they are inspected under the QVP. That, however, should not pose a significant difficulty. First, phase 2 work may not begin on a particular system until Phase 1 work is completed. (Tr. 16,087). Second, through proper scheduling, CPC can avoid the problem. Finally, the Staff will monitor the interaction between Phase 1 and Phase 2. (Tr. 16,086).

h. Construction Implementation Overview (CIO)

394. There will be a third party overview of the implementation of the CCP. This review is called the Construction Implementation Overview (CIO). (J.Cook, pp. 24-25).[54/]

395. CPC has proposed Stone & Webster to perform the CIO. Mr. J. Cook testified that Stone & Webster has the experience, personnel and

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54/ Although the significant focus is on the CCP, the CIO will apparently also overview construction activities not necessarily within the scope of the CCP. However the CIO will not overview other third party evaluations. (CPC Exhibit 48, p. 32).

organizational resources necessary to conduct the CIO (J.Cook, pp. 25-27). Furthermore, Stone & Webster has confirmed that the members of the CIO meet the NRC requirements for independence from CPC. (J. Cook, p. 27, See also Keppler March 1983 testimony Attachment 2).

396. The CIO team will evaluate the following:

- Adequacy of controls and practices in the Quality Assurance Program to determine that design information is incorporated in installed hardware;
- Conformance of installed hardware to design information in specifications and drawings;
- Completeness of Consumers Power Company's and Bechtel's procedures regarding construction activities, personnel qualifications, training programs, and organizational practices;
- Compliance of Construction Completion Program Teams with prescribed procedures;
- Compliance of Quality Control personnel with applicable procedures;
- Compliance of construction activities with applicable procedures.

(J. Cook, p. 28).

397. In addition, the CIO team will audit CPC and Bechtel management review of the CCP (CPC Exhibit 48, p. 32). It has been established that the CIO team will audit all management reviews of Phase 1 activities and the management review prior to permitting the first system to enter into Phase 2. These audits are hold points. Work may not proceed until the CIO team is satisfied. Other such hold points may be established. (Tr. 18,333-18,339, CPC Exhibit 48, p. 32).

398. The CIO team will hold meetings with CPC, its contractors and the NRC Staff. At these meetings, the CIO team representatives will discuss the

team's activities and report the team's observations. In addition, the CIO team will submit monthly its observations to the Stone & Webster Senior Overview Committee (SOC). However, potentially serious observations of a programmatic nature will be submitted by the team immediately to the SOC. If the SOC agrees with the site team that the observations raise serious concerns, CPC and the Staff will then be notified. (J.Cook, p. 29).

399. After the CIO is in operation for six months, it will be evaluated. At that time, CPC will recommend to the Staff what modifications should be made to the CIO team's responsibilities. The CIO team will continue on site until CPC and the Staff have confidence in the adequacy of quality assurance implementation at Midland (J.Cook, pp. 29-30).

i. Continuing Activities

400. Certain activities which have been performed with proper implementation of quality assurance are exempt from the CCP. These activities include work installed by Babcock & Wilcox Construction Company, Zack HVAC installation work (which had its QC function taken over by CPC in 1981) and past system turnover work (also under the direct control of CPC). Since remedial soils work is subject to the Work Authorization Procedure and a separate third party review, it also is not part of CPC. Design engineering for the remaining installation work and engineering support of various other project activities will continue as needed. (J.Cook, p. 16). Similarly, cable and hanger reinspections were permitted to continue on a separate track from the CCP. (Id.)

j. Confirmatory Order

401. The Staff recommended that CPC be bound into the CCP by a confirmatory order. (Tr. 15,043-44, 15099). Mr. Keppler indicated that

such a confirmatory order would probably be issued. (Tr. 15,125-26). Although not part of the evidentiary record, we take official notice of the Staff's "Confirmatory Order for Modification of Construction Permits (Effective Immediately)" (October 6, 1983). By that Order, CPC's construction permits were amended to require the company to adhere to the CCP for the duration of construction. However, the Region III Administrator may in writing permit CPC to terminate the CIO if he finds it is no longer necessary to provide reasonable assurance that the facility can be properly constructed. Similarly, the Region III Administrator may permit changes to the CCP so long as the changes do not decrease the effectiveness of the program. (Id. at 4).

k. Staff Assessment of CCP

402. At the time Mr. Keppler and the Midland Section testified, the Staff had not completed its review of the CCP (Tr. 16,050). However, both the Midland Section and Mr. Keppler indicated that the CCP was one factor which gave them reasonable assurance that balance of plant work could continue. (Tr. 16,490-95, 15,607).

l. CCP as Reflective of Managerial Attitude

403. As we noted above, the CCP may be indicative of managerial attitude at the site. Given the problems discovered with balance of plant work, the nature of CPC actions and the circumstances under which those actions were initiated may reflect on CPC's ability or inability to come to grips with the difficulties it has encountered in implementing quality assurance.

404. As discussed above, the CCP is a composite of various actions taken by CPC to rectify the difficulties it was having with implementation

of quality assurance. The various steps of the CCP were taken either at the Staff's insistance or in the face of Staff enforcement action. For instance, the Staff recommended the MPQAD takeover of the QC function because of the discovery of a large number of cable and hanger misinstallations. (Keppler October 1982 testimony, Attachments C and D, Tr. 14,404-05, 14,935-36). CPC's commitment to develop an expanded retraining and recertification program was made in the face of Staff dissatisfaction with the soils QC recertification process and Staff concern that balance of plant work might have to be shut down. (Tr. 14,923-24, 14,929-30). As for the development of the rest of the CCP, the most significant impetus appeared to be the diesel generator building inspection. If CPC had not developed a meaningful plan to address the DGB inspection findings, balance of plant work would most likely have been shut down. (Tr. 15,081, 15,084-85, 15,304). The CCP was that proposal.

405. Finally, the CIO stemmed in part from a Staff August 26, 1982 meeting, discussed above, in which Staff management told CPC to come up with a program for improving its implementation of quality assurance. (Keppler October 1982 testimony, pp. 5-6). In partial response to that directive, as well as a June 8, 1982 request by the Advisory Committee on Reactor Safeguards that design and construction quality be verified, CPC suggested that the MAC Corporation do a broad assessment of the quality of current construction work[55/] and audit CPC's implementation of its

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55/ This assessment is termed a horizontal type review. (Keppler October 1982 testimony, Attachment G, "Midland Independent Plant Review" pp. 2, 8-12)

quality assurance program. (Keppler October 1982 testimony, Attachments E & G). The Staff did not accept the MAC horizontal review primarily because MAC was determined not to meet the NRC's criteria for independence. (Tr. 15,254-56, See also, Keppler March 1983 testimony, Attachment 2). However, the CIO largely embodies that concept and therefore, can be said to be an outgrowth from Staff and ACRS recommendations.

406. We find that the various actions of the CCP were taken primarily in response to the fact that the Staff was demanding that CPC take action to rectify the problems the Company was having in properly implementing quality assurance.56/

407. We do, however, note an exception to our finding that the aspects of the CCP were implemented generally in response to Staff directives. In late September, CPC and Bechtel began to consider adopting a team method for completing the rest of the work. (Tr. 18,298). The team concept had been implemented for the construction of WPPSS-2. Around late November, Bechtel and CPC management visited the WPPSS-2 site to view how the team system worked. (Tr. 18,298-299). Prior to that, CPC and Bechtel management met with people who had worked at WPPSS-2. (Tr. 18,299). That being so, we give credit to CPC for the development of the team concept.

56/ We recognize that CPC was also concerned about the state of the plant and wished to devise ways of resolving the problems it was encountering. (J.Cook pp. 3-4, Tr. 18,006, CPC Exhibit 48, p. 1). However, that does not alter the fact that the steps of the CCP were primarily responses to Staff calls for action. In fact, although he found it difficult to rank, Mr. J. Cook admits that Staff directives to rectify its quality assurance problems was the main impetus for CPC to implement the CCP. (Tr. 18,287).

408. Even though the Staff requested CPC to take action to correct the difficulties the Company was encountering, it was CPC's responsibility to develop the programs itself. Hence, the content of the programs may offer indications of CPC's initiative in turning the plant around.

409. We find the comprehensiveness of the CCP to be impressive. The steps taken appear to be detailed and the subject of much thought. Of course, time will tell whether or not the CCP works. Even so, we believe that the contents of the plan reflect a degree of initiative.

m. Conclusion with Respect to CCP

410. Since the CCP does not apply to remedial soils work and, at the time of the hearings, Staff review of the CCP was incomplete, we do not scrutinize the CCP. Rather, we examine the CCP to see if it is reflective of CPC's management attitude. We agree with Mr. Keppler that the CCP is a positive step. To a degree, it shows initiative. However, what will ultimately matter is how well CPC implements the program. We have not at this time heard testimony about CPC's implementation of the plan. Such evidence, if we had it, would be more probative than evidence about the plan itself. Even so, with respect to remedial soils work, the creation of the plan is an indication that the restrictions in place are sufficient.

n. IDVP/ICVP

411. CPC has retained the TERA Corporation to conduct the Independent Design and Verification Program (IDVP/ICVP). (J.Cook, p. 19).

412. As will be discussed in more detail below, an IDVP/ICVP is an examination of a system or structure from its original design to its construction. (See J.Cook, pp. 22-23). This review has been termed a "vertical slice". (J.Cook, p. 19).

413. The IDVP/ICVP stems from the ACRS request, noted above, that there be "a broader assessment of Midland's design adequacy and construction quality with emphasis on installed electrical, control, and mechanical equipment as well as piping and foundations." (Keppler October 1982 testimony, Attachment G, "Midland Plant Independent Review, p. 2"). On July 9, 1982, the Staff formally requested such a report. CPC therefore formulated the IDVP/ICVP in response to the ACRS and Staff requests. (Id.) CPC, however, had anticipated that the NRC would require a third party independent review. Accordingly, in the summer of 1982 but prior to the Staff formally requesting it, CPC had begun making plans for an independent third party review. (J. Cook, pp. 17-18).

414. The TERA Corporation is qualified to carry out the IDVP/ICVP. TERA was selected based upon the strength of its technical competence, quality assurance program and experience with IDVPs at other nuclear construction projects. Furthermore, TERA meets the NRC criteria for independence. (J.Cook, pp. 20-21. See also Keppler March 1983 testimony, Attachment 2).

415. Originally, CPC proposed that only the auxiliary feedwater system be subject to the IDVP/ICVP. (Keppler October 1982 testimony, Attachment G). Subsequently, the Staff recommended that two more systems be reviewed under the IDVP/ICVP (J.Cook, Attachment 8). As a result, the diesel generator electric power system and the HVAC system for control room habitability were added. (Id., J.Cook, p. 22).

416. The design portion of the IDVP/ICVP will consist of the following:

- Review of design criteria and commitments

- Review of implementation documents
- Review of calculations and evaluations
- Combination of calculations or evaluations
- Evaluation of drawings and specifications

(J.Cook, p. 22)

417. The construction portion of the IDVP/ICVP will consist of the following:

- Review of supplier documents
- Review of storage and maintenance documents
- Review of construction installation documents
- Review of selected verification activities
- Verification of physical configuration

(J. Cook, p. 22-23).

418. The scope of the IDVP/ICVP may be expanded to include additional areas of other systems to accommodate design review findings with generic implications. Similarly, construction review findings with generic implications will be provided to the CIO team which will factor such findings into the performance of its responsibilities. (J. Cook, pp. 22-23).

419. The IDVP/ICVP is another factor which gives the Staff reasonable assurance that the Midland Plant work can be implemented without posing a threat to the health and safety of the public. (Keppler March 1983 testimony pp. 5-6, Tr. 16,490-95).

420. We find that the IDVP/ICVP is a step in assuring that the Midland plant will not pose a threat to public health and safety.[57/]

n. Phase IV Trending

421. Both the Staff and an independent auditor have expressed concern that CPC's trend program needs to be updated so as to be more statistically orientated. (Keppler October 1982 testimony, Attachment B, p.7, Bird p.6, Tr. 19,295, 19,298). In response, CPC is developing Phase IV of its trending program. Where Phase III simply plots nonconformances against broad commodities such as piping, electrical and civil, Phase IV will track commodities and breakdown the categories into attributes. (Tr. 19,186-87, 19,205). While Phase III is not computerized, Phase IV will be. (Tr. 19,277-78). Under Phase IV, control limits will be calculated and if any two weeks' consecutive data exceeds the upper control limit, an investigation will be required. (Bird pp. 6-7). Under Phase IV, through the computer, all nonconformances will receive an analyses that under Phase III, is only undertaken if a certain number of nonconformances are generated within a specific time frame. (Tr. 19,299-300).

57/ TERA's first two reports, dated May 27, 1983 and July 15, 1983, were received into evidence. (Stamiris Exhibit 101, Sinclair Exhibit 8). A number of items of potential concern were documented. There was cross examination on CPC's response to the first TERA report. However CPC had only done an initial, cursory review of the items. (Tr. 18,359-18,364). Since the review process was not near completion as of the time we heard testimony on the report, we make no findings about the report. However, we note that CPC submitted a 10 C.F.R. § 50.55(e) report based on TERA's observation that a lack of DC backed power for FOGG interlock relays may impede the auxiliary feedwater system from functioning during station blackout. (Tr. 19,227, Stamiris Exhibit 10). Furthermore, in the second report, TERA confirmed this problem to be of concern (Sinclair Exhibit 8, p. 13, Attachment 4). As for the second TERA report, there was little discussion of it. In fact, it had only been issued two weeks before it was introduced into evidence. (Tr. 19,262-64). As with the first report, we make no findings on the second one.

G. QA Organization and Qualifications of QA Supervisors

422. As discussed in other sections of our decision, MPQAD has taken over the QC function for soils and balance of plant work. In addition, there has been other changes to MPQAD and realignments of management. These changes, as they apply specifically to remedial soils work, are described above. At this point, we outline some of the other changes to MPQAD and its management.

423. As of October 1982, Roy Wells became the Executive Manager of MPQAD and hence now has single point accountability for all of MPQAD activities. (Wells, pp. 2-3, Tr. 18,688). Mr. Wells reports directly to Mr. J. Cook (Wells, p. 3). Marvin Curland formerly site quality assurance superintendent, is now Mr. Wells' principal technical advisor. (CPC Exhibit 46, See ¶¶ 408, 413 Staff March 30 proposed findings of fact), Walter Bird, formerly Manager of MPQAD, now heads up the quality services and audit section. (CPC Exhibit 46). The balance of plant quality control division is now separate from the plant assurance division. The former division is responsible for conducting quality control inspections and the latter is essentially responsible for creating inspection plans and establishing programmatic requirements. (Tr. 18,016-18,017). The quality control branch is headed by Mr. Leonard, with Mr. Christy as his assistant. The plant assurance division is run by Mr. Fredrich. (Tr. 18,017-18,019, CPC Exhibit 46). Finally, there is an administrative and training section which was created to support the retraining and recertification process (Tr. 18,018, CPC Exhibit 46). That section is headed by Mr. Ewert. (Wells, p. 7). Finally the Quality Services and Audit Division, mentioned above, coordinates the engineering aspects of the quality assurance function. As head of this

group, Mr. Bird coordinates Jackson and Ann Arbor quality assurance activities and supervises the site audit section. (Tr. 18,018).

424. Dr. Landsman stated that with respect to quality assurance overview of remedial soils work, CPC's QA staff was not "commensurate with the complexity of the task," (Midland Section October 1982 testimony p. 2). In his testimony presented on April 27, 1983, Dr. Landsman was still of the same opinion. (Midland Section March 1983 testimony, pp. 3-5). He was concerned about the lack of previous QA experience of MPQAD supervisory personnel responsible for overviewing remedial soils work. (Id). However, no problem with CPC's performance of underpinning activities had been so significant as to warrant a recommendation that the work be halted. (Id. p. 5). Dr. Landsman also noted that his responses were his personal opinion and that he was not expressing the Staff opinion. (Id).

425. The Board asked the NRC staff panel whether there were CPC people who have managerial responsibilities with respect to QA that anyone on the panel would prefer not to see occupying the position that he occupied. (Tr. 16,529). Dr. Landsman responded that there were such people in the remedial soils group. (Tr. 16,529). He expressed concern about Mr. Wells management attitude with respect to quality assurance. (Tr. 16,530). Dr. Landsman also mentioned that the resume of Mr. Meisenheimer, who is in charge of the remedial soils quality assurance groups (Tr. 14,535), doesn't show a quality assurance background. Tr. 14,536. He further testified that Mr. Oliver, head of quality assurance engineers in the remedial soils group (Tr. 14,535) similarly does not have a background in quality assurance according to his resume. (Tr. 16,530).

426. Staff witness Darl Hood stated that he was not aware of any individuals that NRR felt should not be in their QA management position. (Tr. 16,536).

427. Dr. Landsman had never expressed an opinion to Mr. Keppler that Mr. Meisenheimer was not qualified for the position that he holds. (Tr. 15,587). If the Staff felt that someone holding a position relating to soils quality assurance was not qualified, Mr. Keppler would expect that matter to be brought to his attention. No such statements had been brought to his attention with respect to Mr. Meisenheimer. (Tr. 15,588).

428. When Mr. Wells took over, by his own admission he did not have any quality assurance experience. (Tr. 14,536). Staff witness Shafer testified that he believed Mr. Wells was qualified to occupy the position of Executive Manager of the Midland quality assurance department. (Tr. 16,448). Staff witness Cook believed Mr. Wells was qualified to hold his position as Executive Manager of MQPAD as long as he is surrounded by people with more experience. (Tr. 16,448).

429. Staff witness Shafer had no reason to believe that Mr. Meisenheimer was not qualified to hold the position of Superintendent of QA for soils. Staff witness Cook stated that Mr. Meisenheimer has the technical credentials but was lacking in quality assurance experience. (Tr. 16,451).

430. CPC witness Wells believed that Mr. Meisenheimer was qualified to carry out his quality assurance and quality control responsibilities in the soils area. (Tr. 18,199, 18,205). Mr. Meisenheimer testified as to the quality control responsibilities he had held in his experiences beginning

with his employment after completing graduate work in 1969 through the date of his testimony in July 1983. (Tr. 19,613-33).

431. Various witnesses testified that other supervisory persons who had managerial responsibilities with respect to QA were qualified for the positions they held: (1) Mr. Curland, assistant to Mr. Wells Tr. 16,449, 18,197, (2) Mr. Dewitt, who is in charge of the quality control group Tr. 14,535-37, 16,455; (3) Mr. Leonard, General Superintendent of QA, Tr. 16,451-52; (4) Mr. Friedich, Superintendent of the quality control operation at MPQAD, Tr. 16,452-53, 18,205; (5) Mr. Horn, Section Head for Quality Services in the soils area, Tr. 16,454, and 18,205.

432. There are no regulatory requirements which dictate the level of experience for QA managers. (Id at p. 5; see also Tr. 16,446.) The Staff will monitor the activities of all individuals in QA managerial positions until the Staff is satisfied with their performance. (Id. at p. 5; Tr. 16,446-7).

432. The Board has in mind Dr. Landsman's critical comments, especially with respect to Mr. Wells and Mr. Meisenhiemer. The record shows, however, that as of the date of his testimony no problem relating to CPC's performance of underpinning activities had been so significant as to warrant a recommendation that the work be halted. In light of the lack of regulatory requirements in this area we are satisfied that there is sufficient NRC review and third party review being pursued in the soils area so that any deficiencies which could result from a lack of experience of QA supervisors will be detected.

H. New Management Organization

(i). Introduction

433. On September 13, 1983, we issued a memorandum and order requiring further hearings on a managerial reorganization affecting the Midland Nuclear Project that had been announced by Applicant in a press release. In the Matter of Consumers Power Company (Midland Plant, Units 1 and 2), Memorandum and Order (Requiring Further Hearings On New Management Organization (September 13, 1983).

434. We stated that it appeared that the new organizational structure paralleled at upper management levels the organization in effect from March to October, 1980. Id. at 1. As a consequence, we invited testimony to be presented on several problems that are potentially created by the new organization. These problems are:

1. The circumstance that the new executive vice president (Mr. Howell) had extensive project QA responsibilities (the QA manager reported to him) during a period to time when the Applicant had a "QA breakdown" in the soils area.

2. The possible compromise of "single point accountability" which Mr. Howell previously testified was an important consideration in effective management organization (Tr. 2969). In that connection, Mr. Howell appears to have responsibility for "all projects, engineering and construction," while Mr. Cook, still vice president for projects, engineering and construction, has responsibility for "engineering, construction, testing and licensing" of the Midland facility.

3. The importance previously assigned by the Applicant (and the NRC staff as well) to the reorganization which occurred in October 1980.

4. The organizational status of MPQAD under the new reorganization, and whether the addition of one more supervisory level over MPQAD (assuming that to be the case) compromises compliance with 10 C.F.R. Part 50, App. B, Criterion I.

5. The tendency of management prior to October 1980 to expend an inordinate amount of effort attempting to blame

either the NRC or intervenors for delays in the project (e.g., Tr. 1723-24, 2859-61, 2947-49).

6. The philosophy (and mechanics) by which the new organization will interact with the NRC staff.

7. Mr. Howell's seeming lack of relationship to the nuclear project from October 1980 to date. In that connection, the record does not appear to reflect whether Mr. Howell has acquired additional training or experience in nuclear-related subjects since 1980 and, in particular, whether he has attended the Crosby school (upon which the Applicant and Staff have each placed considerable reliance).

Id. at 1-3.

435. Evidentiary hearing sessions on these matters were conducted from September 21, 1983 through September 23, 1983. The Applicant presented the following two witnesses: Mr. Stephen H. Howell and Mr. James Cook. Mr. Howell is Executive Vice President, Consumers Power Company. (Tr. 20,919). Mr. Cook is Vice President, Consumers Power Company. (Tr. 20,920). These witnesses gave testimony concerning the areas related to the new organization that were of concern to this Board. The Intervenors did not present any direct testimony about these matters but they did conduct extensive cross-examination. The NRC staff presented a panel of witnesses composed of Mr. John J. Harrison, Section Chief, Midland Section, NRC Region III, Mr. Ronald Gardner, Midland Project Inspector, NRC Region III, Mr. Ronald Cook, Senior Resident Inspector, Midland site, NRC Region III, and Dr. Ross Landsman, Soil Inspector, Midland Project, NRC Region III. (Tr. 20,638-39).

(ii). QA Breakdown

436. With respect to the upper management level of the new organizational structure, it is the licensee's judgment that the new structure parallels the structure in place during March to October of 1980 only

insofar as Mr. J. Cook reports to Mr. Howell. (Howell, Tr. 20,929-A). However, the new structure at the upper management level does not parallel the situation that existed in March to October of 1980 for several reasons. (Howell, Tr. 20,929-A - 20,930). First, Mr. Howell is in a different position now than in the March to October 1980 time period since his current position looks at the broader picture and represents an expansion of the senior management level as an extension of Mr. Selby's ability to participate in the Midland project. (Id.) Secondly, the period of March to October 1980 was essentially a phase-out period for Mr. Howell since he remained in his position to assist the phasing in of Mr. J. Cook, who had become Vice President in charge of the Midland project in March of 1980. (Howell, Tr. 20,930, 20,933). During that time period, the licensee finished an 800 megawatt fossil-fueled generating plant for which Mr. Howell was responsible and it decided not to go forward with a smaller generation project in effect at that time. (Howell, Tr. 20,930).

437. From 1971 to March 1980, Mr. Howell was in charge of all aspects of the Midland plant. (Howell, Tr. 20,958-59).

438. In 1970 Mr. Howell was appointed Executive Manager with the responsibility for construction of the Midland plant. (Howell, Tr. 20,947).

439. There was an organizational change in 1971 that resulted in Mr. Howell becoming responsible for project management, which included the engineering and construction of the Midland plant. (Howell, Tr. 20,948).

440. In 1980 Mr. Howell became Senior Vice President in charge of projects, engineering and construction at the Midland project. (Id.)

441. Before 1980 Mr. Keeley was project manager for the Midland project, which included engineering and construction. (Howell, Tr. 20,948).

During this time period, the Bechtel Corporation was employed as the licensee's contractor for the performance of engineering and construction on the Midland project, including the geotechnical engineering for the soils area. (Id.)

442. Prior to March 1980, the quality assurance function was under a manager of quality assurance to whom the quality assurance organization reported. (Howell, Tr. 20,931). That quality manager reported directly to Mr. Howell. (Id.)

443. Although Mr. Keeley informed Mr. Howell in 1977, of the administration building settlement, Mr. Howell was not familiar with the day-to-day details of the soils settlement problems on site during the 1977 to 1979 time period. (Howell, Tr. 20,961, 20,967).

444. The QA breakdown in the soils area at the Midland site led to the December 1979 order of the NRC staff to stop the soils work on site. (Howell, Tr. 20,959). While he was not there making every decision, Mr. Howell was ultimately responsible for the QA breakdown in the soils area since the quality assurance manager reported to him. (Howell, Tr. 20,831).

445. Because of the current controls being utilized in the soils area, which include the construction completion program and third party overview, it is the NRC staff's judgement that the fact that Mr. Howell had QA responsibilities during the QA soils breakdown does not create a problem under the recent reorganization. (Harrison/Cook, Tr. 21,162-63). There are a different set of controls in place now than at the time the QA soils breakdown occurred. (Cook, Tr. 21,171).

(iii). Single-Point Accountability

446. Under the managerial reorganization that took place in August 1983, Mr. Howell became Executive Vice President of Consumers Power Company. (Howell, Tr. 20,922). The Chairman and President of Consumers Power Company, Mr. Selby, requested Mr. Howell to assume this new responsibility in order to bring additional senior management attention and involvement to the Midland construction process. (Howell, Tr. 20,924).

447. At the time Mr. Howell was placed in his new position, Mr. Selby discussed with him the potential for Mr. J. Cook being overloaded with work and needing relief because of the growing complexities of the Midland project. (Howell, Tr. 21,135).

448. The recent reorganization was not intended to insulate senior top management from the Midland project but to expand the attention that can be given to it. (Howell, Tr. 21,135-36).

449. As Executive Vice President, Mr. Howell's duties and responsibilities will include: (1) looking at those matters related to the Midland project that affect the company and assuring that they are properly integrated and that they receive appropriate attention and resources; (2) giving overall advice, direction, counsel and supervision to Mr. J. Cook as necessary for the Midland project; and (3) assuming the responsibility for certain construction and engineering functions not directly related to Midland, which will now report to him instead of to Mr. J. Cook. (Howell, Tr. 20,922-23).

450. In his new position, Mr. Howell plans to spend as much time as he deems necessary at the Midland site to accomplish those tasks he thinks need to be accomplished. He will spend more time with the Midland project than Mr. Selby has spent in the past. (Howell, Tr. 20,925-26).

451. Mr. Howell expects that about ten percent of this time will be allocated to managing responsibilities for non-Midland project construction activities, which were formerly under Mr. J. Cook's area of responsibility. (Howell, Tr. 21,149-50).

452. Mr. Howells' appointment represents a recognition on the part of the licensee that there is a need for more senior management time and involvement of the Midland project. (Howell, Tr. 20,926). Because of the appointment to his new position, there will be more senior management attention given to the Midland project. (Howell, Tr. 21,136).

453. Mr. Howell intends Mr. J. Cook to be fully informed about various matters on the Midland site related to construction. (Howell, Tr. 21,146).

454. Mr. J. Cook is Vice President of Consumers Power Company under the managerial reorganization that occurred in August 1983. (Cook, Tr. 20,920; Howell, Tr. 20,924). He will be in charge of and responsible for the Midland construction project, which will include engineering, construction, testing, licensing and quality assurance related to the Midland project. (Howell, Tr. 20,924).

455. Under the new organization, Mr. J. Cook's reporting relationship has changed so that he now reports directly and solely to Mr. Howell instead of reporting to Mr. Selby. (Howell, Tr. 20,924; Cook, Tr. 20,925). This new reporting relationship does not diminish Mr. J. Cook's responsibilities but will give him more access on a full-time basis to senior management. (Cook, Tr. 20,924-25).

456. The new arrangement should provide Mr. J. Cook more support in assuring that his primary objective, successful completion of the Midland project, is not diluted by activities unrelated to that objective such as

corporate administrative requirements, a pending rate case and involvement in Dow litigation. (Cook, Tr. 20,925).

457. Mr. J. Cook does not plan to spend less time at the Midland project site because Mr. Howell has assumed these new responsibilities. However, the time he spends at the site will depend on what activities are taking place. (Cook, Tr. 20,926). He has recently been spending on the average of 2 plus days a week at the Midland project site. (Id.)

458. In the areas which Mr. J. Cook has responsibility for at the Midland project, Mr. Howell can set priorities since Mr. Cook is responsible to Mr. Howell. (Howell, Tr. 20,979).

459. An individual's status in a corporation's hierarchy is to some extent determined by access to top management. (Howell, Tr. 20,977-78). In this case, Mr. J. Cook has more access to top management since Mr. Howell has more time to involve himself in the project than did Mr. Selby. (Howell, Tr. 20,978).

460. Under the new reorganization, it is Mr. J. Cook's understanding that he has increased access to top management. (Cook, Tr. 20,978).

461. "Single-point accountability" is recognized by Mr. Howell as an important consideration in effectively managing an organization. (Howell, Tr. 20,931).

462. In Mr. Howell's view, his new duties and responsibilities do not involve a compromise of the "single-point accountability" management approach since Mr. J. Cook merely reports to him while retaining responsibility for the Midland project. (Howell, Tr. 20,932-33).

463. Mr. Cook believes he is now even more accountable for his activities at the Midland project because under the recent reorganization he

works on the Midland project one hundred percent of the time. (Cook, Tr. 20,933).

464. In terms of the activities for which he is responsible, it is Mr. Cook's view that he is the single point of accountability for the Midland project. (Cook, Tr. 21,131).

465. QA for the Midland project is Mr. Cook's responsibility and he has the authority to initiate changes in QA policies. (Howell, Tr. 21,139). Mr. Howell also has the authority to suggest changes in QA policy. (Id.)

466. Mr. Marguglio, who is in charge of environmental activities and is responsible for QA activities on plants other than Midland, has program review responsibility on a company-wide basis for construction activities. (Howell, Tr. 21,138-39). He will now be reporting directly to Mr. Howell and will no longer either report to or be supervised by Mr. J. Cook. (Id.)

467. Mr. Marguglio has the responsibility for reviewing from a programmatic standpoint the overall QA program policy of the licensee. (Howell, Tr. 21,140). However, the policy direction and decisions about quality for the Midland project are the responsibility of Mr. Roy Wells of the Midland Project Quality Assurance Department ("MPQAD") who reports to Mr. J. Cook. (Howell, Tr. 21,140; Cook, Tr. 21,140-41).

468. In the NRC staff's view, placing a senior management executive more directly into the management chain will allow increased upper management attention to problems at the Midland project. (Harrison, Tr. 21,198). It appears to the NRC staff that Mr. Howell will be quite involved. (Id.)

469. Based on its understanding of the new organizational structure for the Midland project, the NRC staff is of the view that "single point

accountability" still remains with Mr. J. Cook. Thus, the NRC staff does not see single point accountability being compromised. (Harrison/Cook, Tr. 21,164).

(iv). Reorganization of October 1980

470. Mr. Howell initiated the idea and study that led to the reorganization in October of 1980. (Howell, Tr. 20,934).

471. The reorganization that occurred in October 1980 began in March of 1980 when the licensee reorganized the various division of functions. (Howell, Tr. 20,933).

472. The first significant action that was taken was the appointment of Mr. J. Cook in March 1980 as the Vice President in charge of the Midland project. (Howell, Tr. 20,933; Cook, Tr. 20,955).

473. As part of the reorganization, there were some changes made to strengthen and improve the quality assurance organization. (Howell, Tr. 20,971, 20,933-34). These changes did not take place until the summer of 1980 because of the need to change procedures and obtain appropriate approvals. (Id. at 20,933-34).

474. The integration of the Bechtel QA function into MPQAD was part of the 1980 reorganization. (Howell, Tr. 21,012). It took several months to get the procedural changes made and approved to implement the integration of the Bechtel QA function into MPQAD. (Id.)

475. An essential part of the 1980 reorganization was placing Mr. J. Cook and Mr. Rutgers in their positions. (Howell, Tr. 21,012).

476. At that time, Mr. Howell considered these changes adequate to create a good and strong QA organization at the Midland project. (Howell, Tr. 21,013). These actions did not cure all of the problems in the QA

program. (Id.) There were QA problems site-wide at the Midland project between 1980 and September of 1983. (Howell, Tr. 21,014).

477. From October 1980 until September 1983, Mr. J. Cook was responsible for all of construction and engineering not just the Midland project. (Cook, Tr. 20,956).

478. One of the reasons Mr. J. Cook was brought in during the reorganization of 1980 was to deal with the NRC on the Midland project. (Howell, Tr. 20,970).

479. A primary reason Mr. J. Cook was brought in was to resolve some major problems which the licensee faced in 1980. (Cook, Tr. 21,028). These problems concerned soils activities, ZACK issues, historical problems that were still unresolved, and overall completion of the Midland project. (Cook, Tr. 21,028-29).

480. Mr. J. Cook believes he has not yet fully succeeded because (1) a portion of the plant is under the construction completion program, and (2) the above-ground plant has not been fully inspected, certified and completed. (Cook, Tr. 21,029). The reason for this is that the licensee was not fully aware last year of its lack of attention to detail, rigor, discipline and full procedural compliance. (Id.)

481. Mr. Howell explained that his current position under the recent reorganization is not going to affect the reorganization of October 1980 as it has evolved. (Howell, Tr. 20,934). However, he will maintain some flexibility to respond to future problems which may arise. (Id.)

482. The NRC staff had expected that Mr. J. Cook would bring about an improved QA program at the Midland site when he was brought to Consumers Power Company in 1980. (Cook, Tr. 21,179). However, that expectation has

not been fulfilled since there were still QA and soils problems at the Midland site subsequent to Mr. J. Cook joining the licensee's organization. (Cook, Tr. 21,180, 21,183). Some of these problems were built into the Midland plant itself. (Id. at 21,183).

483. The NRC staff did not see any significant overall improvement in QA performance at the Midland site since 1981. (Harrison, Tr. 21,185). However, as long as NRC controls are in place, the NRC staff has confidence that work accomplished onsite will be of high enough quality to protect the safety of the public. (Cook, Tr. 21,186). Without these controls, the NRC staff does not have sufficient confidence that the licensee can implement an adequate QA program at Midland. (Cook, Tr. 21,187; Harrison, Tr. 21,188).

(v). Status of MPQAD--Compliance With 10 C.F.R. Part 50, Appendix B, Criterion I

484. The Midland Project Quality Assurance Department (MPQAD) was the organization that resulted from the reorganization that occurred from March to October of 1980. (Howell, Tr. 20,935).

485. There has not been any change in the organizational status of MPQAD since Mr. Howell has assumed his position of Executive Vice President under the recent reorganization (August 1983). (Howell, Tr. 20,936, 20,984).

486. Mr. Howell will not exclude Bechtel QA activities from MPQAD. Howell, Tr. 21,143-44).

487. Prior to September 1983, Mr. J. Cook had the overall responsibility for the cost and scheduling of the Midland project. (Cook, Tr. 20,937). Under the recent reorganization, Mr. Cook will continue to have this responsibility. (Id.)

488. There are presently two senior management line officers in the reporting chain between the executive director or manager of QA (MPQAD) and the president of Consumers Power Company. (Howell, Tr. 20,984-85). These two senior management officers have cost responsibilities as well as quality responsibilities. (Howell, Tr. 20,985).

489. Currently, MPQAD reports to Mr. J. Cook who reports to Mr. Howell who in turn reports to Mr. Selby. (Howell, Tr. 20,984).

490. The licensee's new organizational structure, with Mr. J. Cook reporting to a senior officer, Mr. Howell, is more typical of current organizational structures of utilities in the nuclear business. (Howell, Tr. 20,985; Harrison, Tr. 21,165). Some utilities have many other executive positions between the QA program manager and the chairman of the board and president. (Harrison, Tr. 21,165).

491. Although Mr. Selby is somewhat isolated from QA under the new structure, Mr. Howell expects to have Mr. Selby involved and informed about what is happening in the QA area. (Howell, Tr. 20,986-87).

492. Mr. Selby would have ultimate responsibility for any significant change or decision that has to be made in the QA area. (Howell, Tr. 20,988).

493. It is Mr. Howell's view that the addition of his position to the organizational hierarchy for the Midland project does not compromise compliance with 10 C.F.R. Part 50, Appendix B, Criterion I. (Howell, Tr. 20,936).

494. The NRC staff expressed the view that putting Mr. Howell into a supervisory level over MPQAD does not compromise compliance with 10 C.F.R. Part 50, Appendix B, Criterion I. (Harrison, Tr. 21,165). This action it

believes might bring more management attention to the Midland project and assist in resolving those issues that have given both the NRC and the licensee a lot of problems. (Id.)

(vi). Assigning Blame For Delays in Midland Project

495. Prior to October of 1980, Mr. Howell spent very little time and effort in attempting to assess blame for any delays in the Midland project. (Howell, Tr. 20,937-38).

496. In 1980 Mr. Howell expressed the view that if there had not been the citizens intervention in the early stages of the Midland project that the Midland plant would have been built and operating before 1980. (Howell, Tr. 20,993-95; 21,083-84). He believes today that that was an appropriate statement at the time it was made. (Id.)

497. The bases for his statement was (1) that the intervention and delay caused a chain effect, and (2) a study he made of comparable plants in comparable time frames. (Howell, Tr. 20,933-95, 21,090-92). However, he acknowledged that his bases was more statistical in nature as opposed to looking at the specific facts of the Midland project. (Howell, Tr. 21,146-47).

498. Mr. Howell does not know either when the notice of hearing was issued for the Midland plant or when the petition for intervention was filed. (Howell, Tr. 21,080).

499. Mr. Howell is unaware of whether construction had even been halted at the Midland project because of citizens intervention. (Howell, Tr. 21,103). He was also unable to estimate how much time, if any, the conduct of hearing has delayed the Midland plant or its construction. (Howell, Tr. 21,080).

500. In August of 1980, Mr. Howell attended a meeting, which was also attended by Mr. Denton and others from NRC, where he urged the NRC staff to resume its review of the licensee's FSAR. He indicated that if the NRC staff did not do so that that would impact the projected fuel level date and delay the Midland project. (Howell, Tr. 20,990-93).

501. In August of 1981, Mr. Howell stated that after the TMI accident the NRC was chasing some issues to the detriment of the licensing process, which is a statement he continues to believe. (Howell, Tr. 20,988-89).

502. Mr. Howell acknowledged that the reason for some of the delay of the Midland project is due to actions or decisions of Consumers Power Company. (Howell, Tr. 20,940, 21,022). One of those decisions was the licensee's decision in the middle of the 1970's to delay construction of the plant because of the licensee's financial difficulties in funding future construction. (Howell, Tr. 21,022, 21,098-99). He notes that none of that delay was due to the intervenors. (Id.)

503. Mr. Howell does not believe that either the NRC or the intervenors is solely responsible for delays in the Midland project. (Howell, Tr. 20,939).

504. Mr. Howell does not presently believe that the intervenors are largely responsible for the various cost increases and delays at the Midland project. (Howell, Tr. 21,087).

505. Mr. Howell has no plans for determining what the cause of delay is for the Midland project. (Howell, Tr. 20,940).

506. At this time and in the foreseeable future, Mr. Howell does not believe it would be productive to spend time and effort attempting to build

a case to assign blame for delays in the Midland project. (Howell, Tr. 21,147).

507. With the 15 year history of thi[illegible], Mr. Howell believes it has gotten too complex to unravel and as[illegible]us his approach will be to go forward and satisfactorily comp[illegible]. (Howell, Tr. 21,147-48).

508. Mr. Howell would be w[illegible]sten to any reasonable and sensible suggestions by the interve[illegible]s for improving the Midland project. (Howell, Tr. 21,148).

509. At the time of the hearing, the NRC staff had no reason to believe that the licensee's management under the new organizational structure will expend any effort blaming the NRC for delays in the Midland project. (Cook, Tr. 21,166). It noted that the licensee's responses to SALP-3 show a decrease in their argumentative attitude, and the licensee's responsiveness to items of noncompliance has been a lot more favorable in tone. (Id.)

(vii). Interaction With The NRC Staff

510. In his new position under the recent reorganization, Mr. Howell's role is to examine the interactions between the licensee and the NRC staff regarding the Midland project. (Howell, Tr. 20,940). One of the reasons Mr. Howell assumed his new position was to create better relations between the licensee and the NRC. (Howell, Tr. 21,011).

511. From the standpoint of identifying difficulties or problems in communications with the NRC staff, Mr. Howell wants to interact with the NRC staff if they find it useful. (Howell, Tr. 20,940).

512. Since assuming his new position Mr. Howell has met with the NRC Senior Resident Inspector for the Midland site and the Regional Administrator for Region III of the U.S.N.R.C.. (Howell, Tr. 20,941). In

those meetings, the NRC staff expressed concern about the relationship with the licensee including the operations under Mr. J. Cook's supervision. (Howell, Tr. 21,002). The NRC staff also expressed the belief that there were certain things that were expressed in the licensee's response to the SALP-2 Report that should not have been said in that manner. (Howell, Tr. 21,003).

513. Mr. J. Cook contributed to the problems in the relationships between the licensee and the NRC staff because of the licensee's response to the SALP-2 Report and the attempt on his part to set up a meeting in the summer of 1983 with Mr. Dircks, Executive Director for Operations, NRC, which the Region III Administrator, Mr. Keppler, perceived as an attempt to go around him. (Howell, Tr. 21,006-07; Cook, Tr. 21,008-10).

514. There are some problems with the licensee's interaction with the NRC staff which include some negative tone in communications. (Howell, Tr. 20,941-42).

515. The mechanics of Mr. J. Cook's interaction with the NRC staff will remain essentially the same under the new organization. (Howell, Tr. 20,941),

516. Mr. Howell would be willing to communicate with any of the various levels or organizational units of the NRC. (Howell, Tr. 20,941). He recognizes that an important and necessary management attitude is to keep the NRC informed of all material facts. (Howell, Tr. 21,039).

517. With respect to the schedule for completion of the Midland plant, Mr. Howell expressed the view that the NRC staff should be informed of the licensee's best opinion and judgement. (Howell, Tr. 21,047). However, he does not think that all workpapers and recommendations should be routinely

submitted to the NRC unless there is some major concern or uncertainty (Howell, Tr. 21,047-48).

518. In the past several months, the NRC staff found that communications between the licensee and the NRC have improved. (Harrison, Tr. 21,166). The NRC staff expects that Mr. Howell's contacts with it will be greater in number than was the case with Mr. Selby. (Cook/Harrison, Tr. 21,200).

(viii). Howell's Relationship to Midland Project From October 1980 To Date

519. Mr. Howell's direct responsibilities for the Midland project ended in October of 1980. (Howell, Tr. 20,943).

520. From October 1980 to September 1983, Mr. Howell held the position of Executive vice President, Energy Distribution and General Services. (Howell, Tr. 20,920-21). In this position, he was responsible for one of the two main operating areas of Consumers Power Company, i.e. energy distribution. This covered the whole process of getting gas and electricity from the transmission lines to customers. (Id.) He was also responsible for bill collection, implementation of conservation programs, and general services which included such company wide matters as buildings, transportation, materials and purchasing. (Howell, Tr. 20,922).

521. As a member of senior management committees from October 1980 to September 1983, Mr. Howell was aware of actions and approved budgets for the Midland project. (Howell, Tr. 20,943), Although he did not have direct responsibility for Midland during that period, he was present at meetings where various status reports were given concerning the overall status of the Midland project. (Howell, Tr. 20,943, 20,979-80).

522. During the period of October 1980 to August 1983 Mr. Howell had no responsibility in the nuclear safety area for either the Midland plant or any other Consumers Power Company nuclear plant. (Howell, Tr. 20,980).

523. From 1979 to June 1981, Mr. Howell was active in the Atomic Industrial Forum (AIF). He chaired the Design, Construction and Operations Committee, which was one of the three standing AIF Committees, and received an award for his Chairmanship. (Howell, Tr. 20,944).

524. In his position as chairman of the AIF's Design, Construction and Operations Committee Mr. Howell reviewed the work of a major subcommittee on quality assurance. (Howell, Tr. 21,132-33).

525. In order to familiarize himself with the status and activities at the Midland project, Mr. Howell has discussed the Midland project with many individuals, including one-on-one meetings with everyone who reports to Mr. J. Cook, State and Federal regulatory personnel, contractors and attorneys. (Howell, Tr. 20,926). Also, he has selectively reviewed what he has been told are significant documents and reports related to the Midland project and will continue to do so. (Howell, Tr. 20,928-29). Further, as Executive Vice President, he will review past decisions to become knowledgeable about what has happened but not to second guess the soundness of those decisions. (Howell, Tr. 20,929). But he will not be systematically reviewing all past decisions. (Id.)

526. Mr. Howell plans on pursuing an identification of past problems that are beneficial to managing the Midland project. (Howell, Tr. 21,134).

527. In simple terms, the Crosby approach or philosophy is that one should do the job correctly the first time rather than incur the cost of rework. (Howell, Tr. 21,032). The Crosby approach has been more fully

described in earlier testimony. (Tr. 3713-15, 3800-01, 5219, 5228, 5231, 5234, 5237-39).

528. During the period of October 1980 to September 1983, some of the licensee's management personnel took the Crosby course. (Howell, Tr. 21,032).

529. Mr. Howell is familiar with Mr. Crosby's philosophies since he has read his book and adapted some of Mr. Crosby's philosophies to his prior operations. (Howell, Tr. 20,945).

530. The Crosby approach is a good approach to quality (Howell, Tr. 20,945).

531. Mr. Howell has not yet decided whether to attend any training courses that Mr. Crosby might offer since he is in the earlier stages of getting up to speed in his current position, (Howell, Tr. 20,945).

532. The NRC staff does not have a problem with the recent organizational changes the licensee has made; however, it believes that Mr. Howell should have some sessions dealing with the Crosby approach. (Harrison, Tr. 21,168; Cook, Tr. 21,197).

533. We find that the fact that Mr. Howell had extensive QA responsibilities during a time when the licensee had a QA breakdown in the soils area will not be a significant problem under the new reorganization given the NRC controls for soils activities that are in place.

534. Based on our understanding of the duties and responsibilities of Mr. Howell and Mr. J. Cook under the recent reorganization and the interrelationship of those responsibilities, we find that appointment of Mr. Howell as Executive Vice President to whom Mr. J. Cook reports will not compromise "single point accountability."

535. We find that the organizational status of MPQAD under the recent reorganization has not been changed. Although Mr. Howell and Mr. J. Cook have responsibility for costs, we find that the manager of MPQAD and Mr. J. Cook have sufficient authority and freedom to identify and resolve quality assurance problems that the addition of Mr. Howell, who will be functioning almost as an extension of Mr. Selby, does not compromise compliance with 10 C.F.R. Part 50, Appendix B, Criterion I.

536. Although the licensee has spent some time in the past attempting to blame either the intervenors or NRC for delays in the Midland project, we find that nothing in this record that shows that the licensee had done so recently. We also find that it does not intend to do so in the future.

537. While there have been problems in the past with the licensee's interaction with the NRC staff, particularly in the area of communications, we find that Mr. Howell's willingness to meet at all levels of NRC and to keep the NRC informed of all material facts is a good approach for interacting with the NRC staff.

538. While we commend Mr. Howell's efforts to familiarize himself with what has happened at the Midland project and recognize that he is familiar with the Crosby approach, we find that Mr. Howell should have some Crosby sessions given the history of QA problems at the Midland site.

I. Design Deficiencies

539. Staff witness Dr. Landsman testified that certain "obvious design deficiencies" showed the inability of the engineers to design the plant adequately. Tr. 15,059-60. As examples he referred to the design of the control tower and the electrical penetration areas which are cantilevered off the main auxiliary building and placed on compacted fill. Tr. 15,060.

Another example was the design of the service water pump structure, the back which is cantilevered onto compacted fill. (Tr. 15,060). The third example was the design of the diesel generator building on spread footing. (Tr. 15,060). Dr. Landsman later referred to the design of the borated water storage tank as another example of an inadequate design. (Tr. 16,589).

540. We do not consider Dr. Landsman's comments to reflect on the current technical adequacy of the named structures. Dr. Landsman repeatedly stated that he was referring not to the structures in their present condition or to the condition they will be in when remedial actions are taken, but only to their original design. He stated that the reason he was bringing his comments out in the hearing was that there was no place in the record to his knowledge that it was stated that the original designs of the borated water storage tank, service water pump structure, diesel generator building and auxiliary building were inadequate. (Tr. 16,591).

541. Dr. Landsman testified that, with respect to design deficiencies of the service water pump structure and the auxiliary building, his comments were referring to the original designs. (Tr. 16,810). He was asked by us whether the service water pump structure and the auxiliary building would have been licensable if they had been built as originally designed and if the soil had been properly compacted. (Tr. 16,816). Dr. Landsman testified that they would have been licensable but he believes there would have been settlement problems during the operating life of the structures. (Tr. 16,816).

542. Mr. Hood was referred to a discussion of the spread footing feature of the diesel generator building foundation design, in Supplement 2 to the SER. (Tr. 16,431). He testified that if there had been an obvious design deficiency one would expect to find discussion of that in the SER sections noted and that there is no such discussion. (Tr. 16,432). Dr. Landsman also stated that his present concern regarding the diesel generator building is with the cracks. (Tr. 16,186-17). The Staff has been excused from addressing the structural adequacy of the diesel generator building in findings pending our ruling on reopening the record with respect to this structure. (Tr. 22,687).

543. We find that Dr. Landsman's comments were addressed to the original designs of structures as they existed many years ago. We have litigated the structural adequacy of each of those structures as modified by remedial actions. Our conclusions as to the current structural adequacy of these structures are discussed in separate findings.

J. Alleged Violation Of ASLB Order Of April 30, 1982

(i). Introduction

544. On December 6, 1979, the Director of the Office of Inspection and Enforcement and the Director of the Office of Nuclear Reactor Regulation issued jointly an Order Modifying Construction permits for the Midland plant. (45 Fed. Reg. 35950 (May 28, 1980)). This order was based in part on a breakdown in quality assurance related to soil construction activities under and around safety-related structures and systems at the Midland site. (Id.; Joint Exhibit 1, Tr. 1175).

545. The licensee petitioned for a hearing on that order, and the proceeding on that order was eventually consolidated with the proceeding on

the licensee's application for operating licenses for the Midland plant. During the course of the consolidated proceeding, we issued a memorandum and order that authorized the Director of the Office of Nuclear Reactor Regulation to amend the Midland construction permits to incorporate certain conditions on the conduct of remedial soils work at the Midland site. (See Consumers Power Co. (Midland Plant, Units 1 and 2), LBP-82-35, 15 NRC 1060, 1072-73 (April 30, 1982)).

546. In accordance with the Board's memorandum and order, the construction permits were amended on May 26, 1982 to include the conditions imposed by our order. (47 Fed. Reg. 23999 (June 2, 1982)).

547. Among the restrictions imposed by our order of April 30, 1982 was a condition that the licensee shall obtain explicit prior approval from the NRC staff before proceeding with the following soils-related activities, with the exception of those already approved by the NRC staff and those the NRC staff agrees are not critical: (a) any placing, compacting, excavating, or drilling soil materials around safety-related structures and systems, and (b) construction work in soil materials under or around safety-related structures and systems such as field installation, or rebedding, of conduits and piping. (LBP-82-35, supra, 15 NRC at 1072-73).

548. On May 7, 1982, we issued an order which clarified some aspects of our April 30, 1982 order. Consumers Power Co. (Midland Plant, Units 1 and 2), Memorandum and Order (Telephone Conference Call of May 5, 1982), slip op., (May 7, 1982). The May 7, 1982 order made clear that "verbal approval before proceeding with soils-related activities is acceptable for activities which are routine and/or relatively small in scope". (Id. at 5). That order also noted that such approvals should be documented by the NRC

staff and that either the Office of Inspection (IE) or the Office of Nuclear Reactor Regulation (NRR) can give approvals as appropriate to the activity and practice of the respective office. (Id. at 6).

549. In late July 1982 Dr. Ross B. Landsman, NRC Region III Soils Inspector, was at the Midland Nuclear Power Plant site to conduct an inspection of the remedial soils work. (Staff Ex. 26, Office of Investigations (OI), Report of Investigation dated June 2, 1983 ("First OI Report") at 2, 3). On July 28, 1982, while at the Midland site, he inspected the electrical deep "Q" duct bank, and found that the licensee had excavated approximately twelve feet beneath the duct bank. (Id. at 3; Landsman, Tr. 21,549-50). He alleged that the licensee had conducted this excavation without prior NRC (NRR) approval as required by the Board's April 30, 1982 order. (Staff Ex. 26, First OI Report at 2 and Attachment 2).

550. During Dr. Landsman's next inspection, on August 4, 1982 he discovered that the licensee had conducted another excavation in "Q" soils by relocating a fire line along side the service water pump structure. (Id.; Landsman, Tr. 21,551, 21,556-57). He alleged that this excavation was also conducted by the licensee without receiving the required NRC approval. (Id.).

551. The Regional Administrator, Region III, requested the Commission's Office of Investigations (OI) to conduct an investigation to determine the circumstances of the licensee's alleged violations of our April 30, 1982 order. (Staff Ex. 26, First OI Report at 2). On June 2, 1983, OI issued a report of its investigation into the alleged violations of the Board's April 30, 1982 order. (Staff Ex. 26, First OI Report).

552. Subsequently, at the request of the Regional Administrator, Region III, OI reopened its investigation of the alleged violations of the April 30, 1982 Board order to conduct additional interviews in determining the circumstances surrounding the alleged violations. (Staff Ex. 27, Office of Investigations, Report of Investigation dated September 12, 1983 ("Second OI Report"), Summary).

553. We scheduled and held evidentiary hearings concerning these allegations on November 1, 2, 3, 4, 7, 8 and 9, 1983 in Midland, Michigan. We also held one evidentiary hearing session on December 3, 1983 in Bethesda, Maryland in order to permit a subpoenaed witness to testify. The NRC staff presented a panel of NRC witnesses consisting of the following persons: (1) Mr. Harold Walker, Investigator, Office of Investigations, Region III; (2) Mr. Charles Weil, Compliance Specialist, Region III: (3) Mr. Darl Hood, Project Manager, Office of Nuclear Reactor Regulation (NRR); (4) Mr. Joseph Kane, Geotechnical Engineer, NRR; (5) Mr. Ronald Cook, Senior Resident Inspector, Midland site, Region III; and (6) Dr. Ross Landsman, Reactor Inspector, Region III. (Tr. 21,330-31). These witnesses presented testimony concerning their involvement in matters associated with the licensee's alleged violation of our April 30, 1982 memorandum and order. The licensee presented a panel of witnesses consisting of Mr. James A. Mooney, Executive Manager, Consumers Power Company and Mr. Robert M. Wheeler, Soils Section Head, Consumers Power Company. (Tr. 21,953). At the request of the Board and parties, the licensee presented Mr. John Schaub, Assistant Project Manager for the Midland project. (Tr. 22,489, 22,491). Mr. John L. Donnell, who was a former Babock & Wilcox soils inspector at the Midland site, testified in response to a subpoena. (Tr. 22,571).

(ii). May 20, 1982 Meeting/Landsman Prohibition

554. The deep "Q" electrical duct bank is a safety-related electrical duct bank located quite deep in the ground. (Staff Ex. 27, Second OI Report at 13, Attachment 12 at 7; Hood, Tr. 21,693-94). In the licensee's January 6, 1982 submittal, the deep "Q" duct bank location is depicted as crossing number 3. (Kane, Tr. 21,706; Staff Ex. 26, First OI Report, Attachment 14).

555. Mr. Mooney testified that initially the licensee intended to insert freeze elements in a manner that would have frozen the soil directly beneath the deep "Q" duct bank. (Id.) The licensee proposed to protect the deep "Q" duct bank from any heaving which would have been caused by the freezewall by excavating the soil directly below the duct bank. (Id.) However, the licensee abandoned this plan when it discovered that the duct bank was deeper than they previously expected. (Id.)

556. On May 20, 1982, Mr. Hood and Mr. Kane were at the Midland site participating in an ACRS subcommittee tour of the site. (Hood, Tr. 21,723; Kane, Tr. 21,725). During a lull in that site tour, Dr. Landsman approached Mr. Hood and Mr. Kane and requested that they attend a meeting with him along with the licensee because he had become aware that the licensee intended to excavate below the deep "Q" duct bank, which he did not want them to do. (Hood, Tr. 21,723-24; Kane, Tr. 21,725; Landsman, Tr. 21,549, 21,754; Staff Ex. 27, Second OI Report at 13).

557. At the May 20 meeting, the licensee informed the NRC staff that the deep "Q" duct bank was deeper than the licensee expected and proposed an alternative method, involving excavating the soils below the deep "Q" duct bank and installing a plug of either clay or concrete. (Staff Ex. 27,

Second OI Report, Attachment 12 at 7, 8). At the time of the May 20, 1982 meeting, the excavation was not below the deep "Q" duct bank. (Kane, Tr. 21,720, 21,728).

558. Mr. Hood testified that at the May 20, 1982 meeting during the course of the licensee's presentation, Mr. Schaub indicated that a view should be taken that the excavation itself could proceed and that at a later point in time after the excavation a decision could be made on the technical issue of the backfill material and the technique of placing the backfill. (Hood, Tr. 21,559). The NRC staff did not accept that view because it had certain technical concerns. (Hood, Tr. 21,559; Staff Ex. 26, First OI Report at 13; Kane, Tr. 21,563-64).

559. Mr. Kane explained the NRC staff's technical concern at the May 20, 1982 meeting. (Staff Ex. 26, First OI Report at 12, 13; Kane, Tr. 21,563-64; Hood, Tr. 21,559).

560. The extent of the gap below the deep "Q" duct bank that the licensee had originally proposed (January 6, 1982 submittal) to excavate was 12 inches. (Mooney, Tr. 22,351-52). The licensee's January 6, 1982 submittal depicting the location of the deep "Q" duct bank shows a vertical scale where 1 inch is equal to 10 feet. (Kane, Tr. 21,707; Staff Ex. 26, Attachment 14, Figure 7). The reasons for the gap was to assure that if soil beneath the duct bank froze and caused heaving it would not raise the duct bank. (Kane, Tr. 21,710, 21,563).

561. Based on a series of meetings with the licensee, the licensee and the NRC staff reached an understanding that the licensee intended the excavation below the deep "Q" duct bank to be a 6-inch gap or space. (Kane, Tr. 21,563, 21,709-10, 21,845).

562. Mr. Kane testified that at the May 20, 1982 meeting the licensee proposed for the first time doing something significantly different; namely, removing all of the fill below the deep "Q" duct bank down to the natural clay material and replacing it with a concrete plug to create an impervious barrier, which involved an approximately 11 foot excavation. (Kane, Tr. 21,564, Staff Ex. 26, First OI Report at 13). Mr. Kane explained at the meeting that the NRC staff's concern was that this proposal might create the problem of differential settlement because a hard spot would be created beneath the conduit that could cause differences in settlement and the possibility of voids. (Kane, Tr. 21,564, 21,763). He testified that a good engineering approach would not be to separate this work into two phases since the excavation phase creates the problem and the backfill phase would be faced with the problem created by the excavation. (Id.)

563. Mr. Kane told the licensee at the May 20, 1982 meeting that it should stop now and not get into this problem without thinking through what is to be done once the excavation is completed. (Kane, Tr. 21,564-65, 21,763; Staff Ex. 26, First OI Report at 13).

564. Mr. Kane testified that it was his understanding of the May 20, 1982 meeting that the licensee was not to excavate below the deep "Q" duct bank until the problem was thought through, addressed, a solution developed, and NRC approval obtained. (Kane, Tr. 21,565, 21,763; Staff Ex. 26, First OI Report at 13). Mr. Kane's understanding of the May 20, 1982 meeting was confirmed by Mr. Hood. (Hood, Tr. 21,556; Staff Ex. 26, First OI Report at 12).

565. Mr. Mooney's testimony about the nature of NRC staff's technical concerns as expressed at the May 20 meeting regarding the nature of the

permanent backfill for the deep "Q" duct bank is consistent with Mr. Kane's testimony. (Staff Ex. 27, Second OI Report, Attachment 12 at 8). However, Mr. Mooney testified that none of the licensee's personnel understood that the NRC staff's concern at the May 20 meeting also related to excavation below the deep "Q" duct bank. (Id.) In his interview with OI investigators, Mr. Mooney also stated that he did not remember anything being said about excavation beneath the deep "Q" duct bank during the May 20, 1982 meeting. (Staff Ex. 27, Second OI Report at 13). Mr. Mooney explained that this statement meant that he did not recall any prohibition against excavating below the deep "Q" duct bank. (Mooney, Tr. 22,355).

566. During the May 20, 1982 meeting Dr. Landsman told Mr. Mooney and Mr. Schaub explicitly not to excavate beneath the deep "Q" duct bank without NRC approval. (Landsman, Tr. 21,610, 21,653, 21,764; Kane, Tr. 21,563-65; Hood, Tr. 21,761-62). Dr. Landsman testified that he looked them in the eye and that he believed that either Mr. Mooney or Mr. Schaub nodded his head in agreement with Dr. Landsman's prohibition against further excavation. (Landsman, Tr. 21,653, 21,763-64).

567. Mr. Kane and Mr. Hood both corroborated Dr. Landsman's testimony that during the May 20, 1982 meeting, the licensee was told by the NRC not to dig beneath the deep "Q" duct bank without NRC approval. (Hood, Tr. 21,761-62; Kane, Tr. 21,762-63).

568. Mr. John F. Fisher, a Bechtel Underpinning Contracts Manager, attended the May 20, 1982 meeting and prepared handwritten notes of that meeting. (Staff Ex. 27, Second OI Report at 6 and Attachment 12 at 8). His handwritten notes directly support and corroborate Dr. Landsman, Mr. Kane and Mr. Hood's understanding that the licensee was not to excavate below the

deep "Q" duct bank without NRC approval. The notes state: "We will proceed w/exposing utility and not proceed with excavating the pit below deep "Q" until NRC approval." (Staff Ex. 26, First OI Report, Attachment 8). Mr. Mooney testified that after becoming aware of Mr. Fisher's notes he did not dispute that the statement was apparently made at the May 20, 1982 meeting although he did not remember such a commitment being made. (Staff Ex. 27, Second OI Report, Attachment 12 at 8).

569. Robert E. Sevo, a Bechtel Superintendent of Underpinning Verification, had a set of notes that reflected the NRC staff's prohibition against excavating beneath the deep "Q" duct bank. (Staff Ex. 27, Second OI Report at 22 and Attachment 17). Mr. Sevo's notes state: "No further deepening of the deep duct bank until NRR concurrence after [sic]". (Staff Ex. 27, Second OI Report, Attachment 17). We find that this entry corroborates Mr. Fisher's notes. Mr. Sevo's notes contains another entry that states: "Deep duct bank opened up to allow freeze to start-then finish excavation to till." (Id.) Contrary to the licensee's unexplained statement in its findings that this contradicts Mr. Fisher's earlier entry noted above, this entry can be read as Intervenor Stamiris' findings suggest, namely, that Mr. Sevo probably believed that the excavation as originally proposed by the license and approved by the NRC could proceed and that at some later time the additional excavation could be done, which is consistent with much of the evidence adduced in the record. More importantly, we observe that of the 11 entries made in his notes, Mr. Sevo was careful to record in several other instances whether a particular activity had to be reviewed or approved by the NRC. (Staff Ex. 27, Second

OI Report, Attachment 17 at 1-4). Consequently, we find that the entry on its face does not necessarily contradict Mr. Fischer's notes.

570. At an exit meeting on May 21, 1982, Dr. Landsman warned the licensee again not to excavate the additional depth below the deep "Q" duct bank without getting prior NRC approval. (Staff Ex. 26, First OI Report, Attachment 2 and 9; Landsman, Tr. 21,610). The licensee prepared minutes of this exit meeting that corroborate Dr. Landsman's testimony that during that meeting he prohibited the licensee from conducting additional excavation below the deep "Q" duct bank. Those minutes state: "Dr. Landsman confirmed his understanding that this pit [deep "Q" duct bank pit] would terminate a relatively short distance below the duct, and not be extended lower, as originally intended." (Staff Ex. 27, Second OI Report, Attachment 8; Staff Ex. 26, First OI Report Attachment 9).

571. During an exit meeting on May 28, 1982, the licensee was again told by Dr. Landsman not to excavate beneath the deep "Q" duct bank until they obtained NRC approval. (Landsman, Tr. 21,610). Dr. Landsman documented this NRC hold point in an inspection report. (Staff Ex. 26, Attachment 11; Landsman, Tr. 21,580, 21,768-69).

572. Mr. Weil testified that Mr. Horn, who was head of the civil section for MPQAD, informed him during an interview that Mr. Horn's group recognized a commitment made to Dr. Landsman in May of 1982 that excavation would not take place below the deep "Q" duct bank without Dr. Landsman's approval. (Weil, Tr. 21,529-31).

573. Mr. Schaub, who attended the May 20, 1982 meeting, testified that he was listening to a conversation during that meeting involving several other people and Mr. Kane, and that Mr. Kane said that the licensee could

proceed at its own commercial risk to place a temporary backfill in the deep "Q" duct bank. (Schaub, Tr. 22,504-506). However, Mr. Schaub did not participate in that conversation. (Id., at 22,505). Mr. Kane testified that the discussions at the May 20, 1982 meeting were not limited to either the type of the backfill or the method of placing the backfill. (Kane, Tr. 21,845-47). He also testified that he did not make a statement to either Mr. Schaub or anyone else at the May 20, 1982 meeting which would lead that person to believe that Mr. Kane approved the use of concrete at the licensee's commercial risk. (Kane, Tr. 21,852).

574. Mr. Kane explained that it was his understanding of the May 20, 1982 meeting that the licensee's plans for the deep "Q" duct bank, which involved an 11 foot excavation, were to be submitted for review by NRC prior to the excavation being initiated. (Staff Ex. 26, First OI Report at 13). Mr. Kane's understanding was corroborated by Mr. Hood statements in his interview during the OI investigation. (Staff Ex. 26, First OI Report at 12). He also stated in his interview during the OI investigation that he neither personally stated nor implied any permission for the licensee to initiate any excavation work concerning either the deep "Q" duct bank or the relocation of the fire line without obtaining prior approval from the NRC. (Id.)

575. Mr. Hood also explained that he did not approve either the excavation beneath the deep "Q" duct bank or the excavation for relocation of the fire line. (Staff Ex. 26, First OI Report at 12).

576. Mr. Hood testified that the May 20, 1982 meeting was not an official NRC meeting because no official notice had been given of it and he requested that no minutes be published. Because this meeting was informal

in nature, he explained that information the licensee provides is not of the type which the Staff should rely on as a basis for its safety conclusion. (Hood, Tr. 21,726). Such information is not proper in an informal meeting; consequently, Mr. Hood stated the NRC staff had granted no approvals during the May 20, 1982 meeting. (Hood, Tr. 21,726-27).

577. Mr. Hood and Mr. Kane testified that to date the licensee has not submitted its proposal for conducting the additional excavation below the deep "Q" duct bank. (Kane, Tr. 21,691, 21,695; Hood, Tr. 22,313).

578. Dr. Landsman testified that there was some disagreement at the May 20, 1982 meeting about what are either major or minor design changes. (Landsman, Tr. 21,558). The licensee thought the excavation below the deep "Q" duct bank was a minor design change; however, the NRC staff thought it was a major design change. (Id.) Thus, Dr. Landsman stated that a decision was made that from then on he would decide whether it was a major or minor design change, and he then would decide whether to have NRR approve the change. (Landsman, Tr. 21,558; Staff Ex. 27, Second OI Report, Attachment 5 at 2). Mr. Kane and Mr. Hood corroborated Dr. Landsman's testimony that at the May 20 meeting it was decided that the procedure for handling design modifications was to first have Dr. Landsman evaluate the significance of the design modification, and if he decided it was significant then he would involve NRR. (Kane, Tr. 21,770; Hood, Tr. 21,771). In response to the licensee's request for clarification at the meeting about whether approval would come from NRR or Region III, Mr. Hood stated that approval would come from Dr. Landsman in Region III. (Hood, Tr. 21,559, 21,771).

579. Mr. Fischer's notes directly corroborate the testimony of Dr. Landsman, Mr. Kane and Mr. Hood regarding the procedure for the licensee to obtain NRC staff approvals. The notes state:

> D. Question on what is significant change - They have to be or should be submitted for approval. Agreed procedure - all items will be discussed with Landsman (Region 3). If R. Landsman thinks it is significant, CPCo will submit.

(Staff Ex. 26, First OI Report Attachment 8 at 2).

580. After weighing the evidence, we find that the licensee was told at the May 20, 1982 meeting not to excavate below the deep "Q" duct without prior NRC staff approval. We also find that the licensee was required to submit additional information to the NRC staff showing its proposal for the additional excavation below the deep "Q" duct bank.

581. We find that Mr. Mooney's testimony that he doesn't recall the excavation below the deep "Q" bank being discussed at the May 20, 1982 meeting is not credible in view of the other evidence. Moreover, we find that Mr. Schaub's testimony that Mr. Kane authorized the licensee to proceed with the excavation below the deep "Q" duct bank at its commercial risk during the May 20, 1982 meeting is unsubstantiated by the evidentiary record and thus is not credible.

(iii). May 25, 1982 Letter

582. Mr. Mooney testified that the NRC staff gave explicit approval for the additional excavation beneath the deep "Q" duct bank in an NRC staff letter dated May 25, 1982 (Staff Ex. 27, Attachment 12 at 9).

583. The NRC staff's May 25, 1982 letter was responding to the licensee's letter of May 10, 1983, which addressed certain soils construction

work the licensee believed had staff approval prior to our April 30, 1982 order. (Staff Ex. 26, First OI Report, Attachment 4 at 1).

584. The NRC staff's response to which soils construction work had NRC staff approval prior to April 30, 1982 is contained in paragraphs I and II of Enclosure 4 of the May 25, 1982 letter. (Id.; Hood, Tr. 22,309). Paragraph numbered I.c. of Enclosure 4 of the NRC staff's May 25, 1982 letter is the NRC staff's response to paragraph I.c. of the licensee's May 10, 1982 letter. (Hood, Tr. 22,309-10; Staff Ex. 26, First OI Report, Attachment 3 at 1, 2 and Attachment 4, Enclosure 4 at 1). Paragraph I.c. of the licensees' May 10, 1982 letter defines the following scope of work previously approved by the NRC: "freezewall installation, underground utility protection, soil removal cribbing and related work in support of the freezewall installation, freezewall monitoring and freezewall activation." (Staff Ex. 26, First OI Report, Attachment 3 at 1, 2; Hood, Tr. 22,309-10). The NRC staff's response in paragraph I.c. of Enclosure 4 of the May 25, 1982 letter states that "References 5 and 7 provide staff concurrences for freezewall installation and activation, respectively". (Staff Ex. 26, First OI Report, Attachment 4, Enclosure 4 at 1). This paragraph also identifies the licensee's letter of January 6, 1982 as an NRC staff basis of approval. (Id.; Hood, Tr. 22,310). Reference 7 is the NRC staff letter of February 12, 1982 which Mr. Mooney testified provided the specific NRC approval of the additional excavation below the deep "Q" duct bank. (Staff Ex. 26, Attachment 4; Mooney, Tr. 22,350, 22,362). He also testified that the NRC staff's February 12, 1982 letter is documenting the NRC staff's approval for excavating below the deep "Q" duct bank as described in the licensee's January 6, 1982 submittal. The testimony of Mr. Hood and

Mr. Mooney both show that the basis for the NRC staff's approval for excavating below the deep "Q" duct bank is set forth in the licensee's submittal of January 6, 1982. (Hood, Tr. 22,310-11; Mooney, Tr. 22,351).

585. However, Mr. Mooney testified that the design presented in the licensee's submittal of January 6, 1982 does not show any limit to the proposed excavation below the deep "Q" duct bank even though he acknowledged it was drawn to scale. (Mooney, Tr. 22,353). We do not find Mr. Mooney's testimony about the design concept credible. Mr. Hood testified, and the licensee's January 6, 1982 letter shows, that the deep "Q" duct bank is 22 feet deep and is the only safety-related utility line in the freeze zone, and it will be excavated as shown in Figure 6 and 7. (Hood, Tr. 22,311; Staff Ex. 26, Attachment 14). After looking at the licensee's proposal for excavating below the deep "Q" duct bank, Mr. Wheeler, who was on the panel with Mr. Mooney, testified that the proposed excavation below the deep "Q" duct bank as described in the licensee's January 6, 1982 submittal was different by 12 or 13 feet than the excavation which took place below the deep "Q" duct bank. (Wheeler, Tr. 22,340-44). This is consistent with Mr. Kane's description of the vertical scale of the drawing contained in the licensee's January 6, 1982 submittal, which is that one inch equals 10 feet. (Kane, Tr. 21,707). Mr. Kane, a geotechnical engineer, testified that the licensee's proposal at the May 20, 1982 meeting, which involved an approximately 11 foot excavation, was significantly different than its original proposal of 6 inches. (Kane, Tr. 21,564-65, 21,709, Staff Ex. 26, First OI Report at 13). After hearing this other testimony, Mr. Mooney acknowledged that the licensee's January 6, 1982 submittal proposed

excavating a proposed "gap" below the deep Q duct bank of about 1 foot. (Mooney, Tr. 22,239-72, 22,374).

586. Mr. Mooney testified that in the May 25 letter the NRC staff concurred that related work in support of freezewall activation had been previously approved. (Mooney, Tr. 22,361). However, we find that Mr. Mooney's testimony is not corroborated by the evidence.

587. The licensee's May 10, 1982 letter states, in relevant part, that:

> Remedial soils work previously approved by the NRC is continuing. Concurrence as to the scope of this work was obtained from Mr. Darl Hood, and is as defined below:
>
> * * * *
>
> I.c. freezewall installation, underground utility, protection, soil removal cribbing and related work in support of the freezewall installation, freezewall and monitoring freezewall activation . (emphasis supplied)

(Staff Ex. 26, First OI Report, Attachment 3 at 1, 2).

588. The NRC staff's May 25 letter, in response to the licensee's May 10 letter, quotes all of item I.c., and goes on to state:

> . . . the staff agrees that prior explicit concurrence for the activities listed in paragraph I.c. of CPCo's letter, May 10, 1982 had been obtained by the staff prior to the April 30, 1982 Order, except for the ambiguous ph[r]ase you included "and related work in support of . . .". Therefore, the staff did not approve "related work" in its letter of concurrence or other records.

(Staff Ex. 26, First OI Report, Attachment 4, Enclosure 4 at 1). Mr. Hood, who prepared the May 25th letter, explicitly confirms that this is where the NRC staff addressed paragraph I.c. of the licensee's May 10th letter. (Hood, Tr. 21,699, 22,310).

589. Enclosure 4 to the NRC staff's May 25, 1982 letter goes on to state:

> In summary, ambiguity associated with CPCo's use of the terms "Phase I work" and "related [freezewall] work" preclude confirmation of specific prior approval of these activities . . . . Consequently, continuation of these activities in conformance with the foregoing staff comments will be in accordance with the Board Memorandum and Order of April 30, 1982. Any deviations must be reported and approved by the staff.

(Id., at 2). The last sentence was intended as a warning to the licensee not to excavate below the deep "Q" duct bank because its proposed modification at the May 20, 1982 meeting had not been approved. (Hood, Tr. 21,798-800).

590. Mr. Hood testified that the May 25th letter in no way approves a modification to the licensee's originally proposed design and excavation that was presented to him for the first time on May 20, 1982. (Hood, Tr. 22,312, 21,799-800). Mr. Kane corroborated this testimony. (Kane, Tr. 21,657-58). Furthermore, Mr. Kane testified that his input to the May 25th letter occurred long before the May 20th meeting and thus his input did not address approving the licensee's proposed excavation, which was first offered at the May 20, 1982 meeting. (Kane, Tr. 21,657-58).

591. We find Mr. Mooney's testimony that the NRC staff's May 25, 1982 letter gave the licensee explicit NRC approval for the additional excavation below the deep "Q" duct bank is unconvincing based on the and not credible evidence presented.

592. After considering all the evidence, we find that the NRC staff's May 25, 1982 letter did not authorize either implicitly or explicitly the

licensee to conduct the further excavation below the deep "Q" duct bank without prior NRC approval.

(iv). Design Audit Meeting

593. During a Midland site visit on July 28, 1982, Dr. Landsman inspected the deep "Q" duct bank and discovered that the licensee had excavated approximately 12 feet below the deep "Q" duct bank. (Staff Ex. 26, First OI Report, Attachment 2 at 2; Landsman, Tr. 21,550). Dr. Landsman voiced his concern to the licensee that the excavation below the deep "Q" duct bank was in violation of the Board's April 30, 1982 order. (Id.) However, the licensee did not stop excavating below the deep "Q" duct bank until the next day, July 29, 1982. (Id.; Wheeler, Tr. 22,088). The licensee did not issue the stop work order until it had completed excavating to the clay. (Staff Ex. 26, First OI Report, Attachment 2 at 2; Wheeler, Tr. 22,084-97).

594. During the time period from July 27 to July 30, 1982, the NRC staff and its consultants met in Ann Arbor, Michigan with the licensee, Bechtel and their consultants to audit analyses, designs and preparations for remedial measures to correct the foundations and utilities on inadequately compacted fill at the Midland site. (Hood, Tr. 21,812; Staff Ex. 26, Attachment 16 at 1). Mr. Hood and Mr. Kane attended that design audit meeting. (Id.)

595. While the design audit meeting in Ann Arbor, Michigan was in progress, Dr. Landsman attended an exit meeting with the licensee at the Midland site on July 30, 1982. (Staff Ex. 26, First OI Report at 3 and Attachment 2 at 2). At that meeting, Dr. Landsman informed the licensee that it was in direct violation of the April 30, 1982 order and its

construction permit. (Id.) The licensee told Dr. Landsman that earlier that morning it had discussed and received approval from Mr. Hood and Mr. Kane in Ann Arbor for the technical adequacy of what they were doing. (Id.)

596. After receiving a call from the Midland site, Mr. Schaub stated in his interview during the OI investigation that he spoke with Mr. Kane at the design audit meeting on July 29, 1982 about using concrete as a backfill in the deep "Q" duct bank recognizing that this would be done at the licensee's commercial risk. (Staff Ex. 26, First OI Report, Attachment 15). Mr. Kane testified that that statement is incorrect, because he did not talk to Mr. Schaub at all during the design audit meeting about the deep "Q" duct bank. (Kane, Tr. 21,853). At the time of the July audit, the only conversation about the deep "Q" duct bank that Mr. Kane could recall was that the deep "Q" duct bank was an outstanding issue on which the NRC was waiting to receive further information from the licensee. (Kane, Tr. 21,566-67, 21,853; Staff Ex. 26, First OI Report at 13). Mr. Hood also testified that the only discussion about the deep "Q" duct bank as an agenda item was the licensee's acknowledgement that it would provide a report to the NRC staff; but, it was not discussed in terms of resolving an issue as a formal agenda item. (Hood, Tr. 21,567, 21,815-16; Staff Ex. 26, First OI Report at 12). In the latter stages of the audit, Mr. Hood recalled a brief discussion with either Mr. Mooney or Mr. Schaub about Dr. Landsman's dissatisfaction that excavation had occurred at the deep "Q" duct bank. (Hood, Tr. 21,568) Mr. Hood replied that the licensee would have to resolve that matter with Region III. (Id.)

597. There was some discrepancy in the NRC staff's testimony about whether the deep "Q" duct bank was properly classified as either an open item or confirmatory item in the final version of the agenda of the July audit meeting and the SSER. (Tr. 21,815-25). The licensee prepared an agenda, which was based on a draft SSER, that had designated whether an item was "confirmatory" or open. That agenda formed the primary basis of the main agenda used during the design audit meeting. (Staff Ex. 26, First OI Report, Attachment 16 at 1; Hood, 21,816). The licensee was informed that the draft SSER designations can not be relied on as approval for any work. (Staff Ex. 30). Leaving aside the question of the nomenclature in the agenda and draft SSER, the NRC staff consistently testified, which the final agenda and SSER-2 show, that the licensee still had to provide the NRC staff information about the additional excavation below the deep "Q" duct bank. (Staff Ex. 26, First OI Report, Attachment 16; Kane, Tr. 21,566-67, 21,570, 21,853; Hood, Tr. 21,567, 21,815-16, 21,874; Staff Ex. 26, First OI Report at 12, 13).

599. Based on our consideration of the evidence presented, we find that Mr. Schaub's statement that Mr. Kane indicated that the licensee could proceed to backfill the excavation at its own commercial risk is not credible. Further, given the time frame in which Mr. Schaub alleges Mr. Kane made the statement, the alleged statement could not have formed the basis for a belief by the licensee that it had explicit prior NRC staff approval before conducting the additional excavation below the deep "Q" duct bank.

600. We find that the agenda of the July audit meeting did not provide the licensee explicit prior NRC staff approval to further excavate beneath the deep "Q" duct bank.

C. Wheeler/Landsman Agreement

601. On August 4, 1982 during a site visit, Dr. Landsman discovered that the licensee had conducted an excavation that involved the relocation of a fire line along side the service water pump structure, which was in "Q" soils. (Staff Ex. 26, First OI Report, Attachment 2 at 2; Landsman, Tr. 21,553-54, 22,220). Based on Dr. Landsman's measurements, this excavation was approximately 7 to 8 feet deep . (Landsman, Tr. 21,553-54). Dr. Landsman informed the licensee on August 4, 1982 that the NRC had not authorized the excavation for relocation of the fire line. (Landsman, Tr. 22,220). The fire line relocation took place between June 30, 1982 and August 4, 1982. (Landsman, Tr. 21,551-52). This excavation was not stopped until either August 9 or 10, 1982. (Staff Ex. 26, First OI Report Attachment 7 and 17; Landsman Tr. 22,220-21). Dr. Landsman stated unequivocally that the NRC staff had not authorized the licensee to continue the excavation the fire line relocation until that work was completed. (Landsman, Tr. 22,223; Staff Ex. 26, First OI Report, Attachment 2 at 2).

602. Mr. Wheeler testified that on June 11, 1982 he reached an agreement with Dr. Landsman that minor excavations did not need prior approval from Dr. Landsman before beginning the work. (Staff Ex. 27, Second OI Report, Attachment 12 at 3). For major excavations, such as the excavation for the service water underpinning, he testified that the understanding was that Dr. Landsman would review prior to starting the work. (Id.) Mr. Wheeler documented his understanding of the agreement in a

personal handwritten note dated June 11, 1982, which states: "Excavation permit procedure is OK. will review signed off permits from site visit to site visit. He is only concerned with major excavations such as SWS underpinning." (Staff Ex. 26, First OI Report Attachment 10). Mr. Wheeler testified that both the additional excavation below the deep Q duct bank and the relocation of the fire line were minor excavations that were covered by this agreement. (Id.)

603. Dr. Landsman testified that his understanding of the June 11, 1982 agreement with Mr. Wheeler was that he did not need to review before work began those excavation permits for minor excavations that had prior NRC approval. (Landsman, Tr. 21,933-34). For major excavations involving prior approved work, Dr. Landsman wanted to review before the licensee began the work. (Id. at 21,934). Dr. Landsman testified further that for work that was not previously approved, he had to review those permits to authorize the work. (Landsman, Tr. 21,911). Since the only work the licensee was doing on site at this time was work that prior NRC approval, he saw no need to document the agreement. (Landsman, Tr. 21,929, 21,932).

604. We find that Mr. Wheeler's testimony that the June 11, 1982 agreement with Dr. Landsman covered the additional excavation below the deep Q duct bank and the relocation of the fire line to be unconvincing. Mr. Wheeler's explanations of what items of work required Dr. Landsman's prior approval were contradictory and inconsistent. (Wheeler, Tr. 22,359-76). He was uncertain about precisely what work activities fell within the scope of his alleged June 11, 1982 agreement with Dr. Landsman. (Id.)

605. Dr. Landsman documented the NRC staff's hold point for the additional excavation below the deep Q bank, which arose out of the May 20, 1982 meeting, in an inspection report that he prepared after July 2, 1982. (Landsman, Tr. 21,768; Staff Ex. 26, Attachment 11). Such an action by Dr. Landsman, which continues to show the significance that he attached to this matter, is totally inconsistent with Mr. Wheeler's testimony that the agreement he reached with Dr. Landsman covered the excavation below the deep Q duct bank. Moreover, as we noted earlier, the NRC staff was in total agreement at the May 20, 1982 meeting that the licensee was not to excavate beneath the deep Q duct bank without prior NRC approval. The NRC staff, as we noted above, has consistently testified that the licensee was to provide additional information before it could proceed with the excavation below the deep "Q" duct bank.

606. Contrary to Mr. Wheeler's testimony that the excavation for relocation of the fire line was covered by the June 11, 1982 agreement and thus did not require NRC approval, the licensee's Soils Progress Schedule Status Reports for June 23, 1982 and June 30, 1982 show that for those dates that NRC approval was required. (Staff Ex. 32 at 2). Mr. Schaub was responsible for making that determination. (Id.)

607. For the additional excavation below the deep "Q" duct bank, Mr. Schaub apparently approved the excavation. (Stamiris Ex. 123; Wheeler, Tr. 21986-88, 21990). Mr. Wheeler stated that he does not recall whether he ever told Mr. Schaub about his June 11, 1982 agreement with Dr. Landsman. (Staff Ex. 27, Second OI report at 30; Wheeler, Tr. 22007). Mr. Schaub himself stated he did not know when he first learned of Mr. Wheeler's agreement with Dr. Landsman. (Staff Ex. 27, Second OI Report at 33). There

is evidence based on a licensee prepared document that Mr. Schaub was reponsible for confirming that NRC approval was given for these two excavations in question. (Stamiris Ex. 123; Wheeler, Tr. 21992). Further, the record contains no credible evidence that Mr. Schaub was aware of the agreement between Mr. Wheeler and Dr. Landsman. This record hardly suggest that the licensee was relying on the Wheeler/Landsman agreement for approval of these excavations.

608. Given the existence of our April 30, 1982 Order and the other measures on site to control the approval and initiation of soils related activities, we find that Dr. Landsman's understanding of his agreement with Mr. Wheeler is much more consistent with the evidence that was adduced during the hearing.

609. After weighing the evidence, we find that neither the excavation below the deep "Q" duct bank nor the relocation of the fire line was covered by the June 11, 1982 agreement as understood by Mr. Wheeler. We find that the Wheeler/Landsman agreement as understood by Mr. Wheeler does not constitute explicit prior NRC staff approval to conduct the excavations in question.

(v). Conclusion

610. At least two of the NRC staff witnesses testified that they believed at a minimum that the licensee's actions regarding these excavations constituted a careless disregard of NRC requirements. (Cook, Tr. 21642; Landsman, Tr. 21642). Both of these witnesses testified that in their view there was an element of deliberateness in the licensee's actions (Id.)

611. Based on the whole record regarding the issue of whether the licensee violated our April 30, 1982 Order, we find that the licensee did violate our April 30, 1982 Order in not obtaining explicit prior NRC staff approval before conducting either the additional excavation below the deep "Q" duct bank or the excavation necessary to relocate the fire line. Because of the conflicting testimony about who in the licensee's organization was knowledgeable about the precise status of NRC approvals at any point in time, we are unable to find that the licensee intentionally violated our April 30, 1982 Order.

IV. CONCLUSIONS OF LAW

612. We have reviewed the evidence in this proceeding and the proposed findings of fact and conclusions of law prepared by the parties. Based on the preponderance of the reliable, probative and substantial evidence of record, we make the following conclusions of law:

a. The soils-related quality assurance deficiencies set forth in Part II of the December 6, 1979 "Order Modifying Construction Permits" were an adequate basis for the issuance of that Order.

b. An unintentional, but materially false, statement was made in the FSAR in that the FSAR falsely stated that "all fill and backfill were placed according to Table 2.5-9." This material false statement, described in Appendix B of the December 6, 1979 "Order Modifying Construction Permits," was an adequate basis for issuance of that Order.[58/]

58/ See Joint Exhibit No. 6. Consumers Power Company, in a joint stipulation with the NRC staff, agreed not to contest that the material false statement was made and that it constituted an adequate basis for issuance of the December 6, 1979 Order. Applicant and Staff agreed that this false statement was unintentional.

c. The December 6, 1979 "Order Modifying Construction Permits" is sustained to the extent of continuing in effect our April 30, 1982 "Memorandum and Order (Imposing Certain Interim Conditions Pending Issuance of Partial Initial Decision)".

d. Consumers Power Company's quality assurance program complies with the requirements set forth in 10 C.F.R. Part 50, Appendix B.

e. With continuation of our April 30, 1982 Order and with the commitments made by Consumers Power Company to third-party reviews and the Construction Completion Program, there is reasonable assurance that proper implementation of quality assurance requirements will continue throughout the remedial work associated with soils settlement.

f. Further rulings with respect to the December 6, 1979 Order are not being made at this time because of (1) our May 7, 1984 Memorandum and Order admitting new contentions OM 6 and OM 7 and (2) the possibility that the record will be reopened on the issue of the structural adequacy of the diesel generator building (Tr. 22,687).

V. ORDER

613. In accordance with the Atomic Energy Act, as amended, and 10 C.F.R. §§ 2.760, 2.762, 2.764, 2.785, and 2.786, it is hereby ORDERED: that the Board's April 30, 1982 "Memorandum and Order (Imposing Certain

Interim Conditions Pending Issuance of Partial Initial Decision)" is continued in effect. It is further ORDERED that this Partial Initial Decision shall be immediately effective as of the date of issuance and shall constitute the final action of the Commission thirty (30) days after issuance thereof, subject to any review pursuant to the above-cited Rules of Practice.

614. Within ten (10) days after service of this Partial Initial Decision, any party may take an appeal to the Commission by filing a notice of appeal. A brief in support of the appeal should be filed within thirty (30) days thereafter [forty (40) days in the case of the Staff]. Within thirty (30) days of the filing and service of the brief [forty (40) days in the case of the Staff], any party may file a brief in support of, or in opposition to, the appeal.

THE ATOMIC SAFETY AND
LICENSING BOARD

Charles Bechhoefer, Chairman
Administrative Judge

Frederick P. Cowan
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Jerry Harbour
Administrative Judge

Respectfully submitted,

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Dated in Bethesda, Maryland
this 25th day of May 1984

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
CONSUMERS POWER COMPANY	)	Docket Nos. 50-329 OM & OL
	)	50-330 OM & OL
(Midland Plant, Units 1 and 2)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF FURTHER SUPPLEMENTAL FINDINGS OF FACT AND CONCLUSIONS OF LAW CONCERNING QUALITY ASSURANCE" in the above-captioned proceeding have been served on the following by deposit in the United States mail, first class, or as indicated by an asterisk through deposit in the Nuclear Regulatory Commission's internal mail system, this 25th day of May, 1984:

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