UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges
Gary L. Milhollin, Chairman
Dr. David R. Schink
Dr. Peter A. Morris

In the Matter of	
THE DETROIT EDISON COMPANY	Docket No. 50-341 (Operating License)
(Enrico Fermi Atomic Power Plant, Unit 2)	October 29, 1982

INITIAL DECISION

Appearances

Applicant, Detroit Edison Company, et al.
Harry H. Voight and L. Charles Landgraf, Esquires
LeBoeuf, Lamb, Leiby & MacRae

Citizens for Employment and Energy
David E. Howell and Kim Arthur Siegfried, Esquires

Nuclear Regulatory Commission Staff
Colleen P. Woodhead and Daniel T. Swanson, Esquires

TABLE OF CONTENTS

I. INTRODUCTION AND SUMMARY

1. This is an initial decision on an application to operate a nuclear power reactor. The Applicants are the Detroit Edison Company, Northern Michigan Electric Cooperative, Inc., and Wolverine Electric Cooperative, Inc. The reactor, Enrico Fermi Atomic Power Plant, Unit 2, is located on the western shore of Lake Erie in Frenchtown Township, Monroe County, Michigan. A permit to construct the reactor was granted in 1972.

2. The parties to this case are: a) the Applicants; b) the Staff of the United States Nuclear Regulatory Commission; and c) Citizens for Employment and Energy (CEE), which contests the application and was admitted as an intervening party on January 2, 1979. As a result of CEE's intervention, this Atomic Safety and Licensing Board was appointed by the Nuclear Regulatory Commission to conduct a hearing. CEE advanced several contentions when it intervened. However, it withdrew all but three at a prehearing conference held in July of 1981. Of those three, one was dismissed later on summary disposition. An evidentiary hearing on the two remaining contentions was held from March 31, 1982 to April 2, 1982 in Monroe, Michigan. Those two contentions alleged that security at the site was inadequate during construction, that the quality assurance program was inadequate, that quality assurance records were destroyed or lost, that a prime contractor was improperly replaced, that there were flaws in construction, and that, in the event of an accident at Fermi 2, the residents of a small community near the reactor would not have a feasible evacuation route. After the hearing, the Applicants and the NRC Staff filed proposed findings of fact and conclusions of law. CEE did

not file proposed findings. After considering the record, we find, for the reasons set forth below, that neither of the contentions has merit. Therefore, we rule in favor of the Applicants.

3. By a motion dated August 27, 1982, the County of Monroe, Michigan filed a late petition to intervene in this proceeding. That petition is denied for the reasons set forth in ¶¶ 58-78, below.

II. CEE'S CONTENTION 4: INADEQUACIES DURING CONSTRUCTION

4. CEE's Contention 4 was the first of the two contentions litigated. Its language, stipulated by the parties, reads as follows:

> (a) There has been an appalling lack of physical security at the construction site since the inception of construction. Given the need for extremely close quality control in the erection of a nuclear plant, this failing could well lead to flaws in the structure, through deliberate sabotage or unintentional injury to components.
>
> (b) The Applicant's Quality Assurance Inspection Program has not been executed in conformance with Criterion X of Appendix B to 10 CFR Part 50. Recent reinspections of various materials and workmanship indicate that quality control was inadequate during construction prior to the 1974 shutdown of construction activities at the site. Specifically, CEE identifies:
>
> (1) large and small bore pipe hangers, and
> (2) welds of safety related components.
>
> (c) The Applicant has not maintained sufficient quality assurance records to furnish evidence of activities affecting quality to comply with Criterion XVII of Appendix B to 10 CFR Part 50 in that records have been destroyed or lost during the course of construction.
>
> (d) Detroit Edison twice replaced the team of supervisors from the first general contractor, Ralph M. Parsons Co., then terminated its contract with Parsons and hired a second firm,

because Parsons' employees refused to sacrifice quality control in order to expedite the construction schedule.

(e) Specific flaws in construction can be identified, among them:

(1) Excessive water in the reactor hole which caused the concrete base to crack severely, a problem purportedly remedied by patching.
(2) Hairline cracks in structural steel surrounding the dry well.

5. The allegations in this Contention will be discussed separately under the following headings: first, whether there was a lack of physical security at the site during construction; second, whether quality assurance was adequate during construction; third, whether Applicants maintained adequate quality assurance records during construction; fourth, whether the Applicants replaced the Ralph M. Parsons Company because Parsons' employees refused to sacrifice quality control; and fifth, whether there were specific flaws in construction. Each of these headings will be taken up in order.

A. Physical Security at the Site During Construction

6. Contention 4(a) alleges that physical security at the site was inadequate during construction. CEE's testimony on this point was provided by Mr. Frank Kuron, who was employed as an ironworker at the Fermi 2 construction site. Kuron, ff. Tr. 367 at 1. His testimony on physical security consisted of the following statements: First, he stated that "there was a general lack of security personnel present at the site during construction"; second, he stated that the general lack of

security was "indicated by several fires which occurred," which "may not have been accidental"; third, he stated that there was a great deal of theft at the site; fourth, he stated that there was one incident in which several hundred gallons of fuel oil were spilled; and fifth, he concluded that there was a general lack of interest in security at the site. Id. at 3. This was the extent of his testimony on physical security at the site during construction.

7. The Applicants' witnesses on this point were Stuart H. Leach and Donald Bluhm. Mr. Leach is Senior Administrator - Security, at Detroit Edison. Leach, ff. Tr. 259 at 1. Mr. Leach was accompanied on the witness stand by Mr. Bluhm, who is Director - Security Department, at Detroit Edison. Mr. Leach described the security measures which the Applicants have employed at the site during construction. He stated that when construction began at Fermi 2, the site was guarded by personnel from the adjacent facility at Fermi 1. Leach, supra, at 3. When the turbine generator and other complex components arrived at the site in 1976, security was increased. Id. During this general period a perimeter fence was installed, lighting was improved, personnel identification was required, the patrol checkpoint system was improved, a new communications system was installed, and "no trespassing" signs were added. Id. at 3-4.

8. Mr. Leach admitted that "like any construction site, Fermi 2 has experienced tool thefts and vandalism...." Id. at 6. However, he stated that he knew of no incident in which any person had attempted to circumvent site security with the intention of damaging the Fermi 2 reactor. Id. at 7. He also stated that he knew of no intrusion which

would compromise the integrity of any structure or safety component at the site. Id. at 6. He said most trespasssers were rock collectors, bird watchers, hunters, and fisherman, who simply wandered into the site. Id. at 10.

9. The Nuclear Regulatory Commission Staff also presented testimony on this point. The Staff's witness was Mr. Bruce Little, Senior Resident Inspector for Fermi 2. Mr. Little stated that the Applicant has had a physical security program in effect at the site since the beginning of construction, that the program controls the access and egress of personnel and materials, and provides fire and security patrols 24 hours a day. Little, ff. Tr. 270 at 15. He stated that he did not know of any incident of sabotage which might affect quality control at the site. Id.

10. Mr. Little also testified that the NRC Staff does not require any specific security precautions for reactor construction sites because there is no nuclear fuel at the site and thus "no perceived threat to the public health and safety by exposure to radiation." Id. at 14-15. However, Mr. Little also stated that before the Fermi 2 reactor may be operated, the Applicant will conduct a comprehensive test program and the Staff will review that program and its results to assure that the reactor meets NRC requirements. Id. at 15. One goal of this testing and inspection program is to detect any discrepancy which might be due to vandalism or sabotage. Id. at 15-16. Obviously, there can never be absolute assurance that no deficiency will have occurred during construction. The extensive pre-operational and startup testing program is

designed with this fact in mind and will, we assume, be carried out so as to realize maximum benefit. We believe this to be especially important at Fermi 2 because of a) the long construction period; b) the change in construction contractors, and c) the Applicants' lack of experience in operating a boiling water nuclear power plant.

11. When one compares Mr. Kuron's testimony with that of Mr. Leach and Mr. Little, it is clear that Contention 4(a) must fail. Mr. Kuron's testimony consists simply of his general statements that there were inadequate personnel at the site, that there were suspicious fires, that there were thefts of tools, and that fuel oil was spilled. None of these statements relates to the reactor in its present condition. Whether, in the past, there were too few guards, suspicious fires, thefts of tools, and spilled oil is of little importance unless one links those matters to the present condition of the reactor as it might affect public health and safety. There is no evidence supplying such a link. Neither Mr. Kuron nor CEE tendered any evidence showing how many guards there were, how many or what kind of fires there were, how many thefts of tools there were, or any significant facts about the oil spill. The only detailed testimony describing site security was that of Messrs. Leach and Little. They testified that site security was adequate. In view of this latter testimony, which we accept as accurate and convincing, we must find that the allegations in Contention 4(a) are not supported by the evidence. Also, we find that none of the allegations was linked to

the present condition of the reactor. For these reasons, Contention 4(a) must fail.

B. The Quality Assurance Program

12. Contention 4(b) alleges inadequacies in the Applicants' quality assurance inspection program. Specifically, Contention 4(b) alleges that quality control was inadequate before 1974 with respect to pipe hangers, and with respect to welds of safety-related components.

13. Mr. Kuron testified that a series of pipe hangers were improperly installed in the turbine building. Kuron, ff. Tr. 367 at 4. However, he admitted that NRC had identified that deficiency some time ago, and that NRC had directed the Applicants to correct it. Id. Mr. H. M. Wescott, who is a project inspector, testified on behalf of the NRC Staff. He stated that on February 15, 1979, an investigation was begun at the Fermi 2 site as a result of statements Mr. Kuron made at a prehearing conference. Wescott, ff. Tr. 270 at 17. On February 8 and 9, 1979, Mr. Kuron was interviewed by Messrs. Robert Marsh (NRC Investigator, Region III) and Harry Shannon Phillips (NRC Reactor Inspector, Region III). Id. Mr. Kuron provided information on twelve subjects which he considered to be important, but he indicated that much of the information was second or third hand. Id. On February 20, 1979, Mr. Kuron visited the Fermi 2 site, at the request of the NRC, where he further defined his allegations during a walking tour of the facility. Id. at 17-18. He was accompanied on the tour only by NRC inspectors; none of the Applicants' employees was present. Tr. 369. The NRC staff

then expanded the list of Mr. Kuron's allegations to 20 and investigated each item on the list. Wescott, supra, at 18. The results of that investigation are contained in Report No. 50-341/79-04, United States Nuclear Regulatory Commission, Office of Inspection and Enforcement, Region III (July 27, 1979). Id. at Appendix A. With respect to the pipe hangers, the investigators found that the allegation concerning improper installation was valid. Id. at 19. However, the NRC Staff had already identified that deficiency nearly a year before the investigation, and corrective measures to eliminate the deficiency had been ordered and had already begun. Id. Mr. Tullio A. Alessi, who is Director, Project Quality Assurance for the Enrico Fermi 2 Project, testified for the Applicants. Mr. Alessi stated that when construction resumed after the halt in 1974, the Applicants set up a shop to refurbish hangers which had shown signs of deterioration. Tr. 291. The hangers were sandblasted, inspected, repainted, and reassembled. Id. Any which were judged below acceptable standards were scrapped. Tr. 304. In view of the uncontroverted evidence that the deficiencies in pipe hangers had been detected by NRC before Mr. Kuron made his allegations, that the deficiencies had been ordered to be remedied, and were and are being remedied, there is no merit to the contention that quality control of pipe hangers is still a matter of concern at Fermi 2.

14. With respect to welds of safety-related components, Mr. Kuron testified that the following deficiencies existed: a) nozzles located in the main condenser in the turbine building were welded with the wrong weld material; b) there was improper welding of the inlet of

the main steam isolation valve; c) improper weld material was used in the chemical cleaning and flushing system; and d) improper weld material was used to weld pipe whip restaints. Kuron, ff. Tr. 367 at 4-5. On cross-examination, Mr. Kuron admitted that he had reported all these matters to the NRC investigators at the time of the investigation in February of 1979. Tr. 369-370. Mr. Wescott confirmed, on behalf of the NRC Staff, that all of these allegations were investigated at that time. Wescott, ff. Tr. 270 at 19. In the case of the nozzles in the main condensor, the investigators were unable to discover from Mr. Kuron which welds he thought were deficient. Report No. 50-341/79-04, supra, ff. Tr. 270 at Appendix A, p. 17. There were so many pipes in the condenser area that Mr. Kuron could not be sure which contained the deficient weld. Id. The inspector, therefore, examined the drawings showing all the pipes in that area; but he discovered that none of the drawings showed safety-related piping. Id. Thus, the investigator determined that the alleged deficiency did not raise an issue of public health and safety. Id.

15. In the case of the main steam isolation valve, the investigators identified the weld which was alleged to be defective. Id. at 18. The investigators reviewed the weld records in detail and discovered that although a special welding procedure had been used to enable a spool piece to be fitted more accurately to the main steam isolation valve, the welds had been examined and accepted by the appropriate personnel. Id. at 19. The investigators did not find any deviation from applicable requirements. Id.

16. In the case of the chemical cleaning and flushing system, Mr. Kuron could not inform the investigators of any specific weld where improper materials might have been used. Id. at 20. The investigators nevertheless looked at that system, and determined that it was not safety related. Id. Thus, the investigators did not find any deviation from applicable requirements. Id.

17. In the case of the pipe whip restraints, the investigators identified the particular weld. Id. They identified the filler material which was specified, identified the filler material which was indicated to have been used, and determined that they were the same material. Id. They also determined from records that a "1 inch linear indication was discovered adjacent to [the weld in question]...." Id. at 21. The Applicants' response to the "linear indication" was to "excavate the indication [to] its full depth and reweld." Id. The inspectors also asked the Applicants to analyze a sample of this weld to insure that no stainless steel was present. Id. The investigators found no deviation from applicable requirements. Id.

18. The above evidence shows that there is no basis for concern about the welds of the safety-related components listed in Mr. Kuron's testimony. All of those welds were investigated thoroughly by the NRC Staff. Neither the nozzles in the main condenser nor the chemical cleaning and flushing system was found to be safety-related. The weld at the main steam isolation valve was inspected and found adequate,

and the same was true of the weld identified in the pipe whip restraints. We accept that evidence as accurate and convincing and we find that it shows that the allegations in Contention 4(b) concerning welds of safety-related components are without merit.

19. When he testified, Mr. Kuron also mentioned several other allegations which he had presented to the NRC investigators in 1979. He said that a globe valve and its piping could not be installed because of interference with a concrete wall; he said that the drywell area contained dirt and debris; he said that when a crew installed reflective shielding they left screws out and left gaps between the shielding panels; he said that stop valves for the turbine generators had been improperly stored; he said that certain concrete anchors were improperly installed; and he said that there were large voids in the grouting of the wall of the sacrificial shield. Kuron, ff. Tr. 367 at 5-6. These items were not specifically mentioned in CEE's Contention 4. However, they could fall within a broad interpretation of part (b) of that Contention. Part (b) alleges generally that the Applicant's quality assurance program was inadequate. Mr. Kuron admitted that all of these additional allegations were brought to the attention of the NRC investigators in 1979. Id. at 5; Tr. 370. The investigators found that the globe valve did require a design change in order to be installed, but that the change was properly made. Report No. 50-341/79-04, supra, ff. Tr. 270 at Appendix A, p. 14. They found that the drywell contained some dust produced by a sandblasting operation, but they did not find the overall cleaniness of the drywell to be below acceptable standards. Id. at 15.

They found that gaps did exist between the panels of the reflective shielding, but they also found that the shielding was not related to safety, so no violation of standards was involved. Id. They also determined that the stop valves for the turbine generators were not related to safety. Id. at 17. With respect to concrete anchors, Mr. Kuron could not point out any specific ones which were defective, so the investigators reviewed numerous reports describing tests of these anchors. Id. at 21. The investigators also observed the actual testing of four anchors at a particular installation. Id. The investigators could not find anything wrong with the anchors. Id. at 22. In 1979, in response to Bulletin 7902 from NRC's Office of Inspection and Enforcement, the Applicants reinspected all of the Class 1 pipe hangers at Fermi 2 which used the type of anchor about which Mr. Kuron had expressed concern. Tr. 508-510. The failure rate of these anchors was low. Tr. 509-510. Finally, the investigators examined the grouting program for the wall of the sacrificial shield. They identified areas which had not been filled with grout. Report No. 50-341/79-04, supra, at 23. The investigators determined that Mr. Kuron's allegations on this point were valid and they cited the voids as an item of noncompliance with NRC regulations. Id. at 4, 24. Mr. Alessi testified that the voids were not detected in Edison's original inspection of the sacrificial shield because the inspector had not verified two locations which were difficult to reach. Tr. 333. As a result of this discovery, the Applicants stated to the investigators that the Applicants intended to reinspect the wall to insure that all of the shield's compartments had

been completely filled with grout. Report No. 50-341/79-04, supra, at 24. Mr. Walter M. Street, Applicants' Supervising Engineer - Civil, of the Enrico Fermi 2 Project, testified that the entire sacrificial shield was in fact subsequently reinspected. Tr. 332. Mr. Alessi testified that the void areas had subsequently been filled with grout, and that it had been determined that there were no more void areas. Tr. 333. Mr. Little testified that this item had then been reinspected by the NRC Staff. Little, ff. Tr. 270 at 18-19. As a result of that reinspection, the Staff deemed this item of non-compliance to have been resolved. Id.

20. From the above testimony, our finding must be that none of Mr. Kuron's additional allegations forms an adequate basis for a present concern about the safety of Fermi 2. With respect to the reflective shielding and the stop valves, the NRC investigators found that those items were not safety-related. With respect to the globe valve, the drywell, and the concrete anchors, the investigators found no evidence of noncompliance with NRC regulations. The sacrificial shield was the only item in which noncompliance was found. The investigators' Report No. 50-341/79-04, supra, together with the testimony supporting it, presents the investigators' methods in detail. We accept the Staff's and Applicants' testimony on these items as accurate and convincing. This testimony shows that no factual basis exists for any of the additional allegations in Mr. Kuron's testimony on Contention 4(b).

21. Contention 4(b) also alleges broadly that, before a halt in construction in 1974, the Applicants' quality assurance program was not performed in conformance with NRC regulations. CEE offered no testimony

to prove this allegation other than the specific allegations discussed above. Kuron, ff. Tr. 367 at 3. Mr. Kuron did not allege that there were inadequacies in the present, or recent, quality assurance program; he only alleged that there were inadequacies during the early stages of construction. Id. Mr. Alessi testified on this point on behalf of the Applicants. He stated that the inspection program at Fermi 2 is carried out according to a manual which corresponds to Criterion X of Appendix B to 10 CFR Part 50; that this manual has been reviewed by the NRC; that the manual prescribes inspection procedures for all safety-related work at Fermi 2; that when a deficiency is found as a result of an inspection a nonconformance report is prepared and the deficiency corrected and then reinspected; and that the entire process is audited and reviewed by NRC inspectors. Alessi, ff. Tr. 262 at 1-3. Mr. Little testified on behalf of the NRC Staff. He described the Staff's methods of auditing the Applicants' inspection program; he stated that the Applicants' inspection program has been in effect since the beginning of construction of Fermi 2; and he stated that the Applicants' program was in accordance with NRC regulations. Little, ff. Tr. 270 at 7-13. We find that the testimony on this point by the Applicants and NRC Staff shows that the Applicants' inspection program was adequate during the early stages of construction. CEE offered no evidence, other than the broad allegation already mentioned, to the contrary. Therefore we find that CEE's general allegation concerning the adequacy of the Applicants' quality assurance program to be without merit. We should point out that there would be

more reason for concern about the Applicants' program had no construction deficiencies been found. Deficiencies are, as a practical fact of life, to be expected. The purpose of inspection, and of quality control and assurance programs, is to assure that deficiencies are corrected before the facility operates. As shown in ¶¶ 13 and 17 above, deficiencies were found at Fermi 2 and were corrected.

22. For the reasons stated in ¶¶ 13-21 above, we find that none of the several allegations in Contention 4(b) has any merit.

C. Loss or Destruction of Quality Assurance Records

23. Contention 4(c) alleges that the Applicants have not maintained adequate quality assurance records during the period of construction, because some of these records have been destroyed or lost. Mr. Kuron testified that Detroit Edison's officials ordered the destruction of two trailer loads of records, which were believed at the time to be quality assurance records. Kuron, ff. Tr. 367 at 3. He also testified that quality assurance records were destroyed in a second fire on December 16, 1978, and that this latter fire was reported to NRC as being less serious than it was. Id. at 4.

24. Mr. Alessi testified that Edison has in fact maintained all required quality assurance records. Alessi, ff. Tr. 262 at 5. He said that Edison protects such records against loss by safekeeping in

fireproof facilities. Id. at 6. He stated that Edison is not aware of any fire which burned trailer loads of quality assurance records, but that in 1974, when the offices of some of Edison's contractors were cleared out, personal file copies of documents such as letters and drawings were destroyed by burning. Id. at 7. He said that these documents were not quality assurance records. Id. Mr. Alessi also testified that on December 15, 1978 a faulty gas heater in Building 45A at the Fermi 2 site caused a fire which damaged several quality assurance records which had been left on an inspector's desk. Id. Most of the records in the office were in a steel cabinet and were not damaged. Id. Of the records which were lost, many could be reconstructed from master files. Id. Two lost records of weld tests could not be reconstructed, however, so the welds were retested to make sure they were acceptable. Id.

25. Mr. Harry Shannon Phillips, NRC's Construction Project Inspector for Region III, presented the Staff's testimony on this point. He stated that the allegations concerning the two fires were brought to the attention of the NRC investigators at the time of the investigation in February, 1979. Phillips, ff. Tr. 270 at 20. Mr. Phillips was responsible for investigating those allegations at that time. Id. The investigators interviewed a number of persons at the construction site and also checked to see whether required records were complete and could be retrieved. Id. at 21. They also reviewed NRC inspection reports dating back to 1972 to determine whether NRC had noted previously that required records were missing, incomplete, or irretrievable. Id. They

discovered only that certain personal records, working drawings, and so forth had been burned after one of Detroit Edison's contractors had left the site. Id. None of the documents burned were quality assurance records. Id. With respect to the fire in Building 45A, the investigators interviewed several persons who saw the results of the fire. Id. at 22. These persons gave an account which matched Edison's report of the fire to NRC. Id. Only a small number of documents were burned in that fire, and many of those could be reconstructed. Id. In the case of a few weld inspection records which could neither be saved nor reconstructed, the welds were reinspected. Id. The investigators did not find any factual basis for either of the allegations concerning the fires. Id.

26. In light of the above testimony by Messrs. Alessi and Phillips, which we accept as accurate and convincing, and in light of the lack of any detailed probative evidence by CEE, we find no basis in fact for the allegation that required permanent quality assurance records have been lost, or destroyed by fire. Contention 4(c) is therefore without merit.

D. Replacement of the Ralph M. Parsons Company

27. Contention 4(d) alleges that Detroit Edison dismissed the Ralph M. Parsons Company as general contractor "because Parsons' employees refused to sacrifice quality control in order to expedite the construction schedule." Mr. Kuron testified that the first team of

managers used by Parsons at Fermi 2 did an efficient job of quality assurance and control. Kuron, ff. Tr. 367 at 8. He said that this led rapidly to their replacement, however, by a second team of Parsons' managers who were less concerned about quality assurance and control. Id. Then, he said, Detroit Edison used the halt in construction in 1974 to replace Parsons as general contractor; Edison substituted the Daniel Construction Company, which was less concerned than Parsons about quality assurance and control. Id. at 8-9.

28. Mr. William J. Fahrner testified on behalf of the Applicants. He stated that during the time when the Parsons Company was general contractor, Edison did request that two of Parsons' project managers be replaced. Fahrner, ff. Tr. 265 at 3. According to Mr. Fahrner, one was replaced because of his poor attendance at the construction site, and the other was replaced because he could not maintain labor harmony at the site. Id. Mr. Fahrner said that neither replacement was based on the manager's attitude toward quality assurance or control. Id. Mr. Fahrner said that he was not aware that any of Parsons' employees had ever complained about quality assurance or control. Id. With respect to the replacement of Parsons as general contractor, Mr. Fahrner said that during the halt in construction in 1974 Edison's senior management decided that the system of having a general contractor -- as Parsons was -- was less effective than the system of having a construction manager. Under the latter system a manager who does not perform any direct construction work represents the project owner's interest at the site. Id. at 2. Edison selected Daniel International as the construction manager and terminated the contract

with Parsons, as Edison had a right to do under the terms of that contract. Id. Mr. Fahrner also testified that it was not unusual to replace contractors or supervisors in the course of large projects which extend over several years. Id.

29. Mr. Phillips testified on behalf of the NRC Staff. He said that when Mr. Kuron supplied his list of allegations to the NRC investigators in February of 1979, Mr. Kuron did not include any specific allegation about the replacement of the Parsons Company. Phillips, ff. Tr. 270 at 23. Mr. Kuron commented generally about the replacement of Parsons, but he did not identify any specific item. Id. at 24. As a result of these general comments, however, the NRC investigators discussed the Parsons matter with Edison's management. Id. Edison indicated that its quality assurance and quality control arrangements with Parsons had been satisfactory. Id. The investigators did not discover any information which might show that Parsons' employees were requested to sacrifice quality control in order to expedite the construction schedule. Id. Mr. Phillips also stated that, by the time of the investigation in 1979, the Staff had already performed about fifty inspections of construction activities at Fermi 2, and that during those inspections quality assurance specialists and engineers had reviewed Edison's quality control procedures and their implementation. Id. at 24-25. Each of those inspections established that each contractor performing safety related work had a satisfactory quality assurance program or, if not, the contractor was cited for non-compliance and

corrective action was required. Id. at 25, 28. We accept the above testimony of Messrs. Fahrner and Phillips as accurate and convincing. In light of that testimony, and in light of Mr. Kuron's failure to supply any detailed support for his general allegation, we find that there is no credible evidence that the Parsons Company was dismissed for reasons related to quality assurance or quality control. Thus, we find that Contention 4(d) is without merit.

E. Specific Flaws in Construction

30. Contention 4(e) alleges certain flaws in construction. Specifically, it alleges that the concrete base of the reactor building cracked during construction, and that the cracks were repaired by patching. It also alleges that hairline cracks developed in the structural steel surrounding the drywell.

31. With respect to the cracks in the concrete base of the reactor building, Mr. Kuron testified that the cracks might allow radiation to leak out of the reactor building, and that the cracks may have impaired the structural integrity of that building. Kuron, ff. Tr. 367 at 7. He also said that Detroit Edison had grouted the cracks to seal the base and prevent infiltration of ground water. Id.

32. Mr. Alessi testified on behalf of the Applicants. He stated that in 1972, after the concrete base had been poured, Edison's inspectors discovered radial and circumferential hairline cracks on its surface. Alessi, ff. Tr. 262 at 9. Also, a small amount of ground water

was seeping into the reactor basement floor. Id. Core samples revealed that the cracks were from 6 inches to 3 feet deep. Id. The concrete base is 4 feet thick. Id. Edison repaired the cracks with non-shrinking grout applied under high pressure. Id. at 10.

33. Mr. Phillips testified that Mr. Kuron had reported these cracks to the NRC at the time of the investigation in 1979. Phillips, ff. Tr. 270 at 26. As part of his investigation, Mr. Phillips reviewed a report which Edison had filed with NRC at the time the cracks were discovered and repaired. That report indicated that Sargent and Lundy, the structural designers of the reactor building, performed a thorough analysis of the cracks and concluded that the cracks did not impair the structural strength of the base. Id. at 27. Edison's report also indicated that Edison had monitored the width and length of selected cracks to check them for any increase, and that Edison had monitored the base to discover any new cracks. Id. at 28. In addition, the report indicated that in case of an accident, contaminated water could not leak out of the reactor building through the floor unless the water inside the building had reached a height equal to or greater than the pressure head of the ground water outside, which is about 30 feet under normal operating conditions. Id. at 27. Before this height were reached inside the building, the reactor could be shut down and the water processed through the radwaste system. Id. Finally, the report concluded that even this leakage could not occur, because the cracks had been satisfactorily repaired. Id.

34. In order to verify the success of Edison's repair program, Mr. Phillips reinspected the grouted areas on February 22, 1979; his inspection revealed no evidence of seepage. Id.

35. The above testimony by Messrs. Alessi and Phillips shows that the cracks had been discovered and repaired long before Mr. Kuron mentioned them to the NRC investigators in 1979, and long before CEE filed Contention 4(e). The testimony shows that the repairs were satisfactory, and that the cracks do not amount to flaws in the construction of Fermi 2. We find that the evidence does not support CEE's allegation of a construction flaw in the base of the reactor building.

36. With respect to the hairline cracks in the structural steel surrounding the drywell, Mr. Kuron testified that he learned of the cracks in conversations with construction personnel, and that after discussing the matter further with NRC inspectors, he believes that the cracks are in steel clip angles welded to plates embedded in the walls of the reactor building. Kuron, ff. Tr. 367 at 8. This is the extent of CEE's testimony on cracks in the structural steel.

37. Mr. Alessi testified that one of Edison's inspectors observed fine cracks in the clip angles referred to by Mr. Kuron. Alessi, ff. Tr. 262 at 10. The clip angles are attached to steel plates embedded in the wall of the reactor building, and the clip angles support the ends of girders. Id. at Figure 1. Edison discussed the cracks with the NRC Staff, but the Staff determined that they amounted to a normal construction problem and were not reportable. Id. at 10. Sargent and

Lundy, the designers of the reactor building, evaluated the cracks and concluded that the cracks were caused either by defects in the material from which the clip angles were made, or by excessive welding used to attach the clip angles. Id. at 11. At the suggestion of Sargent and Lundy, Edison replaced the uninstalled clip angles with those made of proper material, and limited the welding to that specified. Id. Edison also replaced the clip angles which had already been installed, except in locations where the concrete slab had been poured and the clip angles were not accessible. Id. In the latter locations Edison installed beam seats under each clip angle, so that if a clip angle failed the beam seat would carry the load of the girder. Id. at 11 and Fig. 2.

38. Mr. Phillips testified on behalf of the Staff. He stated that when Sargent and Lundy analyzed the cracks in the clip angles, Sargent and Lundy determined that the design was adequate. Phillips, ff. Tr. 270 at 29. He confirmed that all clip angles which were not embedded in concrete were replaced or repaired in the field. Id. He also confirmed that beam seats were installed under all the girders where concrete had already been poured. Id. at 30. The Staff verified Edison's actions by visually inspecting about ten clip angles for cracking (no cracking was found) and by verifying the installation of the beam seats. Id.

39. The above testimony by Messrs. Alessi and Phillips shows that Edison has satisfactorily repaired the cracks in the structural steel surrounding the drywell. We accept that testimony as accurate and convincing. CEE offered no credible evidence to the contrary.

40. We find, based on the testimony by Messrs. Allessi and Phillips described above, that there is no credible evidence to support CEE's allegations concerning cracks in the base of the reactor building or cracks in the structural steel surrounding the drywell. Therefore, we find Contention 4(e) to be without merit.

III. CEE'S CONTENTION 8: EVACUATION OF STONY POINT

41. Contention 8 was the second of the two contentions litigated. Its language, stipulated by the parties, is as follows:

> CEE is concerned over whether there is a feasible escape route for the residents of the Stony Point Area which is adjacent to the Fermi-2 site. The only road leading to and from the area, Pointe Aux Peaux Road, lies very close to the reactor site. In case of an accident, the residents would have to travel towards the accident before they could move away from it.

The parties viewed this Contention as alleging that Pointe Aux Peaux Road is not an adequate evacuation route for the residents of Stony Point. There was no dispute as to whether Pointe Aux Peaux Road lies close to the reactor - it clearly does - or whether it is the sole evacuation route from Stony Point - it clearly is - or whether in using the Road the residents of Stony Point would be forced to move toward the reactor before moving away from the reactor - they clearly would. The sole issue was whether, given these facts, the road is a feasible evacuation route.

42. Mr. Kuron testified on behalf of CEE. He stated that if an accident were to release a radioactive plume toward Stony Point, the residents of that area could be forced to travel through the plume before

they would be safe. Kuron, ff. Tr. 367 at 9. Mr. Kuron based this statement on his personal knowledge as a resident of Stony Point. Id.

43. Ms. Evelyn F. Madsen testified on behalf of the Applicants. Ms. Madsen was accompanied to the witness stand by Herbert Eugene Hungerford, Professor of Nuclear Engineering at Purdue University; Andrew C. Kanen, a Vice President of PRC Voorhees; and Roger A. Nelson, a professional meterologist. Professor Hungerford co-sponsored Ms. Madsen's testimony on radiological dose evaluation (Tr. 406), and Mr. Kanen co-sponsored Ms. Madsen's testimony on evacuation time estimates (Tr. 405-06).

44. Ms. Madsen testified that Stony Point lies approximately one mile south of the reactor, that the population of Stony Point is approximately 1400 persons, that the total number of automobiles in Stony Point is about 783, and that about 600 automobiles would be used to evacuate Stony Point. Madsen, ff. Tr. 406 at 2-3. She derived her estimates from the 1980 Advance U.S. Census Report. Id. at 2. According to Ms. Madsen, traffic congestion during evacuation would depend upon the capacity of available roads and the spread in departure times of the evacuees. Id. at 5. Pointe Aux Peaux Road has a capacity of 1200 vehicles per hour based on a speed of 15 to 20 miles per hour. Id. On two of the most important roads feeding into Pointe Aux Peaux - Lakeshore Drive and Dewey Drive - the capacity was estimated to be 900 vehicles per hour. Departure times of evacuees would be affected by a variety of factors: whether workers were at work or at home at the time of notification to evacuate; the time needed for workers to return

home; and the time needed at home to prepare for departure. Id. at 4. On the average weekday maximum traffic was projected to occur about one hour and fifteen minutes after residents were advised to evacuate. Id. at 5-6, and at Table 1. This would be a result of projected departure times. Id. During the busiest 15 minute period, a total of 180 vehicles would be expected to arrive at the intersection of Dewey Drive and Pointe Aux Peaux Road. Id. at 6. The exit capacity along Pointe Aux Peaux Road during that 15 minute period would be 300 vehicles, so no congestion would occur. Id. On the weekend, when most workers would already be at home, there would be about 252 vehicles during the busiest fifteen minute period, which is still below the capacity of the Road. Id. Ms. Madsen estimated that on an average weekday the entire population of Stony Point could reach Pointe Aux Peaux Road and travel along it to a point at or near its end within two and one half hours. Id. On a weekend the time would be one hour and forty-five minutes. Id. The travel time of an individual evacuee would be about twelve minutes. Id. These estimates assume "no significant traffic delays." Id. During adverse weather conditions, such as snow or ice, drivers would either go slower or increase the amount of space between their automobiles. Id. at 6-7. These changes reduce the capacity of the roads. Id. at 7. The capacity of Pointe Aux Peaux Road would be reduced to 800 vehicles per hour (200 per fifteen minute period); the capacity of side streets such as Dewey Drive and Lakeshore Drive would be reduced to 600 vehicles per hour (150 per fifteen minute period). On a weekday during adverse weather, a maximum of 128 vehicles would be expected to arrive on Lakeshore and

Dewey Drives during the peak fifteen minute period; this would be within the 150 vehicle capacity of those side streets. Id. On Pointe Aux Peaux Road, however, a maximum of 203 vehicles would be expected to arrive during this period, which is at the 200 vehicle capacity of that Road. Id. at 8. Thus, there might be congestion at the intersection of Pointe Aux Peaux Road and Dewey Drive (the principal side street). Id. However, the congestion would not exist for more than fifteen minutes. Id. If the adverse weather occurred on a weekend, the level of congestion would increase because of the more rapid rate of departure. Id. Congestion for more than fifteen minutes would be likely at the intersection of Dewey Drive and Pointe Aux Peaux Road and on some of the side streets. Id. However, because of the more rapid rate of departure on a weekend, the congestion would not increase the total evacuation time for the residents. Id. at 8, and at Table 2. Travel time for the persons who encountered the congestion would be increased by about five to seven minutes. Id.

45. The Staff's testimony on Contention 8 was presented by Rick J. Anthony, an Emergency Management Specialist with the Federal Emergency Management Agency; Thomas Urbanik, II, a transportation engineer with the Texas Transportation Institute at Texas A&M University; and Falk Kantor, an Emergency Preparedness Analyst with the Commission's Office of Inspection and Enforcement.

46. Mr. Kantor testified that in the event of an accident at Fermi 2, the residents of Stony Point would be asked to take one of three possible protective actions: to take shelter; to evacuate, as a

precaution, before a release of radiation occurred; or to take shelter while the plume passed over their area, and then be relocated afterward. Kantor, ff. Tr. 533 at 3-4. Mr. Kantor also stated that an evacuation time of 1 - 2-1/2 hours is well within the range of evacuation time estimates for other nuclear facilities. Id. at 4.

47. Mr. Urbanik testified that all the residents of Stony Point could leave that area within a period of 1-1/4 to 2-1/2 hours, and that the time actully required would depend upon the weather and the vehicular traffic caused by workers coming from the vicinity of the reactor. Urbanik, ff. Tr. 533 at 2. He assumed that 1150 vehicles would be used to evacuate Stony Point, which amounts to 1.5 vehicles per household, and accounts for visitors and for families with more than one auto. Id. He also assumed that workers using 1000 vehicles would be leaving the Fermi 2 plant at the time of the accident. Id. The relevance of the workers leaving Fermi 2 is this: the exit road from Fermi 2 ends at North Dixie Highway. Workers leaving Fermi 2 would be forced to turn into that highway and travel along it either to the north or the south. Madsen, supra, at Fig. 1. Pointe Aux Peaux Road also ends at North Dixie Highway, a short distance south of the point where the exit from Fermi 2 ends. Id. Persons leaving Stony Point would be forced to travel along Pointe Aux Peaux Road to its intersection with North Dixie Highway, turn into the Highway, and then travel along the Highway either to the north or the south. Id. Thus, it is possible that the vehicles of workers leaving Fermi 2 could encounter the vehicles of residents of Stony Point at the intersection of Pointe Aux Peaux Road and North Dixie Highway.

Id. If the workers were evacuated to the north, they would travel north on North Dixie Highway, would not pass the intersection of North Dixie Highway and Pointe Aux Peaux Road, and not encounter the vehicles of persons leaving Stony Point. Id. Mr. Urbanik testified that in such a case, the 1150 vehicles from Stony Point could turn into North Dixie Highway within 1-1/4 hours. Urbanik, supra, at 3. The more difficult situation would be presented when the 1000 vehicles from Fermi 2 turn south on North Dixie Highway and meet the 1150 vehicles from Stony Point. Id. Without traffic control at the intersection of Pointe Aux Peaux Road and North Dixie Highway, the time required to accommodate the traffic from Stony Point would be slightly more than 2 hours. Id. With traffic control, the time required could be reduced to about 1-1/2 hours. Id. Adverse weather, including rain or light snow, would increase these times by about 20%. Id. Severe weather (heavy snow) would increase the times by the amount of time necessary to clear the roads. Id. Mr. Urbanik concluded that persons from Stony Point could be evacuated along Pointe Aux Peaux Road without encountering any unusual or unmanageable traffic problems. Id.

48. We find the above testimony by the Applicants and Staff on evacuation times to be reasonable and convincing. CEE offered no testimony to contradict it. The Staff analyzed the "worst case", in which workers leaving Fermi 2 meet persons leaving Stony Point at the intersection of Pointe Aux Peaux Road and North Dixie Highway, and the Staff showed that even that situation would be acceptable. It is not likely, however, that this worst case would be as bad as the Staff

assumed, because all the residents of Stony Point probably would not leave at the same time, and because workers would probably begin to leave Fermi 2 before residents would begin to leave Stony Point. Tr. 442 (Kanen). We find that the entire population of Stony Point could be evacuated along Pointe Aux Peaux Road within 1-1/2 to 2-1/2 hours, and that this amount of time is acceptable.

49. The possibility of flooding was also discussed at the hearing. During the "100 year flood" Stony Point would be flooded. Tr. 481 (Madsen). However, Pointe Aux Peaux Road, which is the subject of Contention 8, would not be flooded. Tr. 476, 499 (Madsen).

50. There was also evidence describing the procedures for ordering an evacuation and the time required to carry out those procedures. Ms. Madsen described a siren system which Edison plans to install, and which would notify the residents of Stony Point of an emergency at Fermi 2. Id. at 9. There was also testimony on the question whether handicapped persons would be furnished transportation, Tr. 409-411 (Madsen), whether hearing-impaired persons could be notified, Tr. 415 (Madsen), whether Edison would have authority to turn on the siren, Tr. 443 (Madsen), and how long it might take the Governor of Michigan to turn on the siren after Edison recommended evacuation, Tr. 445 (Madsen). All of these matters fall under the general question whether the evacuation plan for Stony Point is adequate. They do not fall under Contention 8, which is limited to the feasibility of Pointe Aux Peaux Road as an evacuation route. Since our jurisdiction is limited to ruling on matters within the scope of admitted contentions, we make no

finding on any of these other matters. CEE also raised, in its cross-examination, the question whether Pointe Aux Peaux Road could be cleared in the case of an accident. Tr. 420 (Howell). Mr. Kanen responded that there are provisions in the Monroe County Emergency Plan under which wreckers would be sent immediately. Tr. 422. This point also appears to be beyond the scope of Contention 8; it refers principally to the adequacy of the Emergency Plan. There was no evidence that anything about Pointe Aux Peaux Road makes it unusually susceptible to accidents or makes clearing accidents on that Road unusually difficult. We find nothing in the evidence discussed in this paragraph to show that Pointe Aux Peaux Road is not a feasible evacuation route from Stony Point.

51. We are left with the fact that evacuees using Pointe Aux Peaux Road must travel toward the reactor before traveling away from it. Does this fact make Pointe Aux Peaux Road infeasible as an evacuation route? The evidence on this point was supplied by Ms. Madsen and Mr. Kantor.

52. Ms. Madsen postulated an accident which released a substantial amount of radioactivity to the atmosphere over a period of eight hours during which the wind blew steadily toward Stony Point at a low rate of speed (1 meter/second, or 2.24 miles per hour). Madsen, ff. Tr. 406 at 11-12. She selected nine locations in and around Stony Point, and then estimated doses at those locations. Id. at 13. She also estimated doses along various possible evacuation routes. Id. An evacuee using some of the routes would cross the hypothetical plume from one side to the other; on other routes the evacuee would travel along the centerline of the plume. Id. She also included non-existent evacuation

routes (which would have to be constructed). Id. The doses were first calculated for each of the various locations on the assumption that no evacuation occurred. Id. at 14, and at Table 3. Then, doses were calculated for each of the different evacuation routes. Id. at 14, and Table 4. The total doses received by the evacuees were found by adding the dose received before evacuation to the dose received during evacuation. Id. Based upon the above, Ms. Madsen concluded that evacuation would reduce the total dose to all evacuees, and thus would be preferred to nonevacuation. Id. at 15. She also concluded that the nonexistent routes, which would have to be constructed, would not result in lower doses than would the evacuation routes using Pointe Aux Peaux Road. Id. at 16.

53. Mr. Kantor compared the time traveling toward the reactor to the total time required for evacuation. Pointe Aux Peaux Road, the sole evacuation route, is located between Stony Point and the reactor. The distance from most (80%) of the residences in Stony Point to the road is not great (about 3/4 miles), id. at Fig. 4; that distance is considerably shorter than the road itself (which is 2.5 miles long), Kantor, ff. Tr. 533 at 2; and that distance is small when compared to the total distance persons would be expected to travel in an evacuation (which would include at least a substantial distance on North Dixie Highway). Mr. Urbanik testified that only six to ten minutes would be spent driving toward the reactor. Tr. 563. Mr. Kantor concluded that, regardless of the amount of dose one assumed would be received by residents during an evacuation, the incremental increase due to those six to ten minutes would be insignificant. Tr. 569-570. Mr. Kantor's

attention also was drawn to the fact that Pointe Aux Peaux Road itself extends a small distance toward the reactor (about 1/4 mile) during its 2.5 mile course, and Mr. Kantor was asked whether the increase in dose due to traveling this distance would be significant. He responded that it would not. Tr. 559. He also said that the necessity of driving toward the reactor for a short distance before driving away from it was not unique in the 10-mile emergency zone. Tr. 548. Mr. Kantor's opinion on these points is corroborated by Ms. Madsen's estimate of dose as a function of evacuation routes and departure times. Madsen, ff. Tr. 406 at Table 4. We accept Mr. Kantor's conclusion as accurate and convincing; we find that the need to drive toward the reactor does not make Pointe Aux Peaux Road infeasible as an evacuation route.

54. Despite the above finding, however, it remains true that travel toward the reactor might increase an evacuee's dose. For some residents of Stony Point, evacuation would begin at a point 2 miles from the reactor. These persons would be within 1 1/4 miles when they reached Pointe Aux Peaux Road. Id. at Fig. 6. Other residents also would be forced to travel toward the road, but not as far. As stated above, 80% of the residences are within 3/4 miles of the road. Mr. Kantor testified that the consequences of moving toward the reactor are most severe in the nearest vicinity of the reactor. Tr. 552. If the wind were toward Stony Point, but at a speed much lower than that postulated by Ms. Madsen, the exposure dose rate could rise rapidly as one approached the reactor. Tr. 483-484 (Nelson); Tr. 485 (Hungerford).

This would be true, for example, where the wind speed were nearly zero, a radioactive air mass formed over the reactor building with a bell-shaped (Gaussian) distribution of radioactivity within it, and the mass spread slowly across Pointe Aux Peaux Road toward Stony Point. See, e.g., Tr. 482-484 (Nelson); 489-490 (Hungerford). An evacuee driving into the air mass from a point on the edge of the bell-shaped curve where the concentration was low, to a point within the curve where the concentration was high, could conceivably increase his dose rate by a substantial factor. For example, an evacuee at a distance of two standard deviations from the center of the curve would be exposed to a dose rate of approximately 14% of the maximum intensity at the center. If he then traveled to a point half way toward the center (one standard deviation away) he would be exposed at a dose rate of approximately 60% of maximum intensity. He would receive additional exposure after turning at that point and traveling out of the curve. Altogether, such a trip could increase his dose rate by a factor of 5 to 10. In such circumstances, evacuation along Pointe Aux Peaux Road might not be the appropriate protective action (see 10 CFR § 50.47) for residents of Stony Point. The question of alternative routes then arises. For the residents to be able to drive directly away from the reactor, it would be necessary to construct a new road leading west from Stony Point along the border of Lake Erie. Madsen, supra, at Fig. 7.

55. We have considered the possibility of radioactivity moving more slowly toward Stony Point, because we believe that such a

phenomenon is imaginable. The fact that some evacuees from Stony Point must reduce their distance from the reactor by almost one-half, and must travel along the edge of the site boundary, possibly increasing their radiation dose unnecessarily, justifies our considering such an event. However, we must also consider the probability that such an event would happen. First, the goal of the emergency plan is to evacuate all persons within Stony Point before radiation is released. Kantor, ff. Tr. 533, at 4. Thus, it is likely that most of the residents would have left Stony Point before a release occurred. Second, if a release did occur before or during evacuation, the probability of its moving toward Stony Point is small, because the wind blows from the reactor toward Stony Point less than 5% of the time. Madsen, supra, at 13. Averge wind speeds in Stony Point are 8 to 10 miles per hour, id., so the probability of a stationary or slow moving plume over Pointe Aux Peaux Road is very small indeed. To these probabilities we must add the fact that the time spent driving toward the reactor is six to ten minutes from the farthest point in Stony Point. For most residences it is less. For an evacuee's dose rate to increase by the factor of five to ten mentioned above, this driving period would have to begin just as the outer edge of the bell-shaped mass reached the evacuee's point of departure. Finally, one must consider what it means to say that an evacuee's dose rate could be increased by a factor of five to ten. It does not mean that an evacuee's total dose during evacuation would be increased by a factor of five to ten; the total dose increase very probably would be less. The doses estimated by Ms. Madsen, who postulated a serious accident, reached a maximum of

1.94 rems for the most highly exposed evacuation route. Madsen, supra, at Table 4. For the emergency plan to be unacceptable, one would have to postulate an accident even more severe -- and more unlikely -- than Ms. Madsen did.

56. We believe that the slow-moving air mass spreading toward Stony Point is the only imaginable situation in which our conclusion in ¶ 53 might be subject to doubt. We find that the probability is remote, however, that such a situation could cause a significant increase in the dose to evacuees. This conclusion is based upon the direction of prevailing winds and their average speeds, the shortness of the time spent driving toward the reactor, the small likelihood that an evacuee's time of departure will coincide with the arrival of the edge of the mass at his point of departure, and the small likelihood of an accident severe enough to make significant the increase in dose which might occur. For these reasons, we find that the use of Pointe Aux Peaux Road as an evacuation route creates only a negligible increase in the total risk to residents of Stony Point. The increase does not justify building a road leading away from Stony Point toward the west.

57. For the reasons just stated, we find that the testimony by the Applicants and the Staff establishes that vehicles departing Stony Point during an evacuation can be accommodated by Pointe Aux Peaux Road, and that the fact that it will be necessary for the vehicles using that Road to move toward the reactor for a short distance does not impair the

feasibility of that road as an evacuation route. Thus, Contention 8 must fail.

IV. MONROE COUNTY'S PETITION TO INTERVENE

58. By a motion dated August 27, 1982, the County of Monroe, Michigan has petitioned to intervene in this proceeding. In its petition, the County requests that we admit a number of additional contentions as issues in controversy, and that we reopen the record to take additional evidence on those contentions. The contentions are all concerned with emergency planning. The Applicants and the NRC Staff oppose the petition on the ground that the petition is not timely and would delay the proceeding. CEE supports the petition.

59. The period for timely intervention began on September 11, 1978, when the Commission published a notice of opportunity for hearing. 43 Fed. Reg. 40327. The period ended thirty days later on October 10, 1978. Id. CEE filed a timely petition to intervene at that time, and was later admitted as a party. Thus, the County's petition comes almost four years late. As stated in ¶ 2 above, the hearing began on March 31, 1982 and ended on April 2, 1982. The evidentiary record now has been closed and proposed findings have been filed. At the time the County's petition reached us, we had reviewed the record, considered the proposed findings, and were preparing our initial decision.

60. The Commission has set down specific criteria for judging late petitions to intervene. 10 CFR § 2.714(a) provides as follows:

> Nontimely filings will not be entertained absent a determination by the Commission, the presiding officer or the atomic safety and licensing board designated to rule on the petition and/or request, that the petition and/or request should be granted based upon a balancing of the following factors...:
>
> (i) Good cause, if any, for failure to file on time.
>
> (ii) The availability of other means whereby the petitioner's interest will be protected.
>
> (iii) The extent to which the petitioner's participation may reasonably be expected to assist in developing a sound record.
>
> (iv) The extent to which the petitioner's interest will be represented by existing parties.
>
> (v) The extent to which the petitioner's participation will broaden the issues or delay the proceeding.

We shall discuss each of these factors in order.

Good cause for failure to file on time

61. The County's petition states expressly the County's reasons for filing late. The reasons are: a) that the County has been trying to devise a radiological emergency plan; b) that the County has tried to work closely with the Federal Emergency Management Agency (FEMA) to formulate such a plan; c) County residents have provided information to FEMA by testifying at formal public hearings in 1982; d) as a result of these activities, the County Commissioners "have only recently become aware that significant defects in emergency planning, as stated more fully in the County Commissioners' Contentions... are not remediable by the County Commissioners themselves and urgently need addressing before

any decision is made on an operating license for Fermi 2...." The Commissioners' contentions assert that there are not enough buses, that volunteer firefighters will not be adequate, that the County cannot provide recovery and reentry services for evacuees, that roads from beach areas are inadequate, that the County's personnel are inadequately trained, that there is inadequate staff for decontamination and reception centers, that there is no means to test vehicles for contamination, that distribution of potassium iodide is not likely to be adequate, that radiological monitoring is inadequate, that the local personnel who would be required to do evacuation work might evacuate their families instead of doing that work, that the available methods of decontaminating vehicles would be inadequate, and that responsible local officials could not be mobilized in time to carry out the emergency plan. The legal issue for us to decide is whether, given this statement of the County's reasons, they amount to "good cause" under 10 CFR § 2.714. In effect, the County's statement is that, as a result of the County's work with FEMA, the County has only recently become aware of inadequacies in the County's emergency plan. Because we are concerned with the County's excuse for delay rather than the importance of its contentions, the crucial part of the County's statement is that it has "only recently become aware" of the inadequacies. If the County were or should have been aware earlier, then the County's stated reason cannot be accepted.

62. In their answer to the County's petition, the Applicants contend that the County was in a position to file an intervention petition as early as January, 1980. The Applicants attached to their

answer documents showing the County's experience in emergency planning. The first attachment is a letter to the Nuclear Regulatory Commission from Mr. Arden T. Westover, Chairman of the Monroe County Board of Commissioners. The letter is dated January 25, 1980. It states that "Monroe County is already deeply involved in the planning process to cope with a nuclear accident." It urges the Commission to adopt the proposed rules on emergency planning which the Commission was then considering. The Applicants also attached a second letter. It was written to the Commission by Mr. Jon R. Eckert, Director of the Office of Civil Preparedness of Monroe County. It was dated January 21, 1980, and stated that Monroe County would file a detailed letter commenting on the Commission's proposed rule. It also stated that Mr. Eckert planned to participate in a workshop on the proposed rule in Chicago on January 22, 1980. During 1980, Monroe County formed the Enrico Fermi 2 Emergency Planning Committee, which consisted of about sixty officials from various governmental agencies. This latter development was described by Mr. Eckert during a public meeting, a portion of the transcript of which the Applicants attached to their answer.

63. During 1981, the County worked on its emergency plan. The completed version of the plan was submitted for review and comment to the FEMA Regional Assistance Committee on November 19, 1981. Interim Findings for Enrico Fermi Nuclear Power Plant, Unit 2 Off-Site Radiological Emergency Preparedness, Federal Emergency Management Agency, at p. 2. The Applicants state that a working draft of this plan was circulated for public comment earlier, in April of 1981, before being

submitted to FEMA, and that the draft was extensively reviewed by local officials.

64. On February 2, 1982, a full-scale exercise was held to test both the emergency plan and the ability of local officials to respond to an emergency at Fermi 2. Final Report, February 22, 1982, on the Enrico Fermi Atomic Power Plant, Unit #2 Full Scale Joint Emergency Exercise February 1-2, 1982, Federal Emergency Management Agency, at p. 1. Monroe County participated actively in the exercise. Id. at 1-13. On the evening of February 3, the State of Michigan conducted a public hearing on the exercise. Monroe County participated in that hearing. This was the public meeting attended by Mr. Eckert, mentioned above, a portion of the transcript of which the Applicants attached to their answer. FEMA's written critique of the exercise was published on February 22, 1982 (see Final Report, id.). The findings and suggestions FEMA made in the Report have been available to the County since that date.

65. Mr. Frank Kuron, CEE's witness at the hearing, has been a Monroe County Commissioner since January of 1981. Tr. 501 (Kuron). Mr. Kuron also serves on the Monroe County Civil Preparedness Board. Id. Mr. Kuron was a member of CEE when it intervened in 1978, Tr. 15 (Kuron), and Mr. Kuron began participating in this proceeding on December 18, 1978, when he made a statement at the first prehearing conference. Tr. 6-15. The Applicants contend that Mr. Kuron's knowledge of the hearing process should be imputed to the County beginning in January, 1981, when Mr. Kuron became a Commissioner.

66. The NRC Staff also opposes the County's petition. First, the Staff points out that the first person to make a limited appearance at the start of the evidentiary hearing was Mr. Eckert (Tr. 221) who commented upon Edison's proposed siren system, upon Edison's traffic surveys, and said that Edison should provide funds to the County for emergency preparedness. Second, the Staff points out that the testimony at the hearing covered several subjects having to do with emergency response and evacuation plans. The inference here is that the County was fully aware of emergency planning issues at the time of the hearing, and could have intervened then.

67. We find that, in light of the facts set out above, there is not "good cause" for the County's delay. The County was aware of emergency planning issues early in 1980; the County began to work actively on emergency planning during 1980; the County submitted a detailed emergency plan to FEMA in November of 1981; that plan had been reviewed earlier in 1981 by local officials; the County participated in the full-scale exercise on February 2, 1982, participated in its critique, and had the benefit of FEMA's findings and suggestions during that same month; the County's principal staff official on emergency planning made arguments at the evidentiary hearing and Mr. Kuron, who has participated in this proceeding since its inception, has been a Commissioner since January of 1981. It is possible to believe that in 1980, the County was not yet fully aware of the issues posed by emergency planning. By November of 1981, however, the County must have been aware of those issues, because the County had already gone through the process

of preparing an emergency plan for Fermi 2. By February of 1982, when the full-scale exercise was carried out, the County was aware not only of what its emergency plan contained, but was aware of how the plan fared in the exercise. The County must have been aware, at this point at the very latest, of the issues posed by emergency planning and response for Fermi 2. February 2-3, the days of the exercise and its critique, were still eight weeks before the beginning of the evidentiary hearing. It is impossible to believe that the County did not possess sufficient knowledge to intervene at that time.

68. The evidentiary hearing was held from March 31, 1982 to April 2, 1982. It produced considerable testimony by the Applicants and the Staff on emergency response and emergency planning. The County participated in that hearing and was aware of the testimony when it was given. Yet, the County still did not petition to intervene. The County waited almost five more months before asserting any interest. It is obvious that the County was aware of emergency planning issues during the hearing, but simply took no action.

69. The discussion above has reviewed the available evidence of when the County was aware of issues on emergency planning and response. It should be pointed out, however, that the burden is not on the Applicants and Staff to show that the County was or should have been aware of those issues at a certain time. The burden of showing good cause is on the late petitioner. The County's statement that the County "has only recently become aware" is not a showing of why it did not or could not have become aware earlier. The County's statement is simply a

statement; no details are provided to back it up. In light of this failure by the County to make any detailed showing, and in light of the clear evidence that the County was aware of the asserted issues eight weeks before the hearing, and was also aware of those issues at the time of the hearing, our ruling must be that the County has not shown good cause for its delay.

Other means of protecting the petitioner's interest

70. This second factor in 10 CFR § 2.714(a) points away from allowing late intervention if the interest which the petitioner asserts can be protected by some means other than litigation. The County asserts that no other means can guarantee an adequate offsite emergency plan for Fermi 2. The County's showing on this factor, however, is limited simply to making that assertion. The County has not provided any argument or information to show why other means would not be adequate.

71. The Applicants and the NRC Staff both argue that means other than litigation are available. Under the Commission's regulations, the NRC Staff is required to make a finding that offsite emergency preparedness is adequate before granting an operating license. 10 CFR § 50.47. NRC is required to base its finding on FEMA's evaluation of whether local emergency plans are adequate and can be implemented. Id. The Appicants and the NRC Staff argue that the County's concern about bus shortages, volunteer firefighters, and so forth are precisely the things which FEMA is required to evaluate in reviewing the County's plan. Thus,

the Applicants and the Staff conclude that FEMA provides an available alternative forum for the County, and an adequate means for protecting the County's interest.

72. The Applicants and the Staff are clearly right about the responsibility of FEMA. Under 10 CFR § 50.47, an affirmative finding must be made on the adequacy of emergency preparedness, and that finding must be made regardless of the issues litigated in a licensing proceeding. However, an intervenor may demand and receive a hearing on matters which FEMA will review, if the intervenor tenders admissible contentions which are timely filed. If review by the NRC Staff (and FEMA) were always an adequate alternative to litigation, no petitioner could ever satisfy the second factor of 10 CFR § 2.714(a).

73. We do not believe it is necessary for us to decide whether, or to what extent, review by FEMA or the NRC Staff may be adequate to protect the County's interest in order to weigh the second factor here. The burden is on the County to show why this factor points in the direction of granting the County's late petition. The County has made no such showing and has not carried its burden. That alone is reason enough not to weigh this factor in the County's favor.

The County's assistance in developing a sound record

74. The County asserts in its petition that it will assist in developing a sound record. However, the assertion alone is the extent

of the County's effort to address this factor. The County offers no factual support for the assertion. Absent such factual support, which the County has the burden to supply, there is no basis for concluding that the County's assertion is true. For that reason, we cannot find that this factor should be weighed in the County's favor.

Whether existing parties will represent the County's interest

75. The County's petition states that "no existing party has the legal or actual capacity" to protect the County's interest. It is no doubt true that only the County has the legal capacity to represent the County. Moreover, if the County's interest is expressed by the additional contentions it seeks to litigate, it also seems true that no other party stands ready to litigate them. This factor appears to weigh in the County's favor.

Whether the County's participation will broaden the issues or delay the proceeding

76. This is the final factor to be considered. At this point in the proceeding, the issues consist of specific allegations concerning construction (Contention 4), and of the question whether Pointe Aux Peaux Road is a feasible evacuation route (Contention 8). The County's contentions challenge the adequacy of the emergency plan. That plan has not been an issue thus far, so the County's contentions, if admitted,

would broaden the issues considerably. Would the County's participation delay the proceeding? If the County were admitted now, it would be necessary for us to begin what would amount to a new case. The County's contentions would have to be screened for admissibility at a new prehearing conference, a new round of discovery would begin, another prehearing conference would occur before another evidentiary hearing, and the parties would file a new set of proposed findings. Only then would we be able to reach a decision. It is obvious that the proceeding would be delayed if the County were admitted now.

77. The County states that the delay "will not prejudice any party" because the Applicants do not propose to begin full power operation of Fermi 2 until November, 1983. However, this statement ignores the words of the regulation, which refer to delay of the proceeding, not to delay of operation of the facility. The Applicants and NRC Staff are entitled to assume, after the hearing has reached the stage this one has, that both the issues to be litigated and the parties to the hearing have been established with finality. This is simply a matter of fairness to them as parties. Thus, it is irrelevant, in our opinion, whether granting the County's petition would delay operation of the facility. Moreover, it is by no means clear that the County's participation would not have that effect. The Staff points out that the date of fuel loading, rather than operation, is the crucial one, because the Applicants must have a license in order to load fuel. The projected full loading date is June, 1983. The time necessary to hear and decide the County's contentions could easily extend past that date. We find

that granting the County's petition would broaden the issues and delay the proceeding. Thus, the last factor weighs against granting the County's petition.

Our conclusion on the County's petition

78. Of the five factors considered above, only the fourth weighs in the County's favor. The first and fifth weigh against the County. When considering these factors together, we find that the lack of good cause (factor one) and the delay in the proceeding (factor five) outweigh by a considerable margin the fact that no other party will represent the County's asserted interest (factor four). For this reason, we deny the County's petition.

V. CEE'S MOTION TO REOPEN THE RECORD

79. In its answer in support of the County's petition, CEE also requests that the record be reopened to litigate CEE's "Amended Contentions 8 and 9." These "Amended Contentions" were contained in CEE's Amended Petition to Intervene, filed on December 4, 1978. In that Petition, paragraph (Amended Contention) 8 referred broadly to emergency planning; paragraph (Amended Contention) 9 referred to medical treatment of radiation injuries. In a Prehearing Conference Order on January 2, 1979, this Board ruled that paragraph 8 was acceptable only insofar as it referred to the evacuation route from Stony Point. The balance of

paragraph 8, which referred to evacuating the City of Detroit, was excluded. The Board also excluded paragraph 9, subject to CEE's right to amend or supplement that paragraph afterward.

80. On March 5, 1979 the parties submitted a list of stipulated contentions upon which they had agreed. Contention 8 of that list omitted the language previously excluded by the Board and was in the form litigated at the hearing. Contention 8 was also discussed at a second prehearing conference on July 22, 1981. At that conference the Applicants asserted that the general adequacy of the emergency plan was not an issue in controversy; they asserted that "the sole matter in controversy is the evacuation route from Stony Point." Tr. 207 (Voight). In response, CEE said:

> Speaking on behalf of the Intervenor, the contention that was submitted is very specific. We are not going to attempt to expand the contention in this proceeding. We have major reservations about the Applicants' emergency evacuation plans. We can deal with that in other forums. We are not going to try to expand our contentions.

Tr. 208 (Siegfried). Paragraph 9 was also discussed at that same prehearing conference. The parties' stipulation had provided that CEE would have a further opportunity to amend paragraph 9. At the Conference, however, CEE voluntarily abandoned paragraph 9. The discussion was as follows:

> MR. SIEGFRIED: [Contention] Nine is actually the hospital contention, and that there is clearly no problem with. And No. 10 is the generic safety problems for BWRs.
>
> Now, our position is we want to witndraw 10 also.

> CHAIRMAN MILHOLLIN: Very well. So you are withdrawing 9 and 10 in their entirety.
>
> MR. SIEGFRIED: Yes, again on the basis, not that we do not have these concerns, but if we are not going to be able to provide expert witnesses and we are not going to be able to proceed, I do not see any sense in keeping them on the table.

Tr. 195.

81. From the above, it is clear that, before the hearing, CEE voluntarily relinquished its right to litigate paragraphs 8 and 9. Elementary fairness requires that CEE be estopped from raising those matters now.

82. Because CEE also requests that the evidentiary record be reopened, CEE must show that there is new and significant information which, if available to the Board and parties, would materially affect the decision. Pacific Gas and Electric Co. (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-81-5, 13 NRC 361, 362-63 (1981); Kansas Gas & Electric Co., et al. (Wolf Creek Generating Station, Unit 1), ALAB-462, 7 NRC 320, 338 (1978). CEE has provided no such information, so its petition fails this requirement also.

83. For the reasons stated above, we deny CEE's petition to reopen the record.

VI. CONCLUSIONS OF LAW

84. We have considered all the evidence submitted by the parties and the entire record of this proceeding. That record consists of the Commission's Notice of Hearing, the pleadings filed by the parties, the transcripts of the hearing, and the exhibits received into evidence. All issues, arguments, or proposed findings presented by the parties, but not addressed in this decision, have been found to be without merit or unnecessary to our decision. Our findings of fact on Contentions 4 and 8 are presented above in our discussion of those Contentions. Those findings are supported by reliable, probative and substantial evidence in the record. Our discussion above describes that evidence in detail, describes our analysis of it, and describes our application of it to the two contentions which were litigated. Our jurisdiction is limited to deciding those contentions which are admitted as issues in controversy. 10 CFR § 2.760a.

85. With respect to Contention 4, we find that none of the allegations it contains is supported by the evidence of record. We further find that every matter raised by that contention has been identified and investigated by the Commission's Office of Inspection and Enforcement and that every matter has been satisfactorily resolved.

86. With respect to Contention 8, we find that the evidence of record shows that Pointe Aux Peaux Road is feasible for evacuating persons from Stony Point, and that this is so despite the fact that the

road lies near the reactor and despite the fact that persons using the road would be forced to travel toward the reactor for a short distance.

87. With respect to the matters alleged by Contentions 4 and 8, we find that there is reasonable assurance that this facility can be operated without endangering the health and safety of the public, and that the facility has been constructed and will be operated in accordance with the Commission's regulations.

VII. ORDER

WHEREFORE, IT IS ORDERED that the Director of Nuclear Reactor Regulation is hereby authorized to issue, in accordance with 10 CFR § 50.57, an operating license to Applicants for the Enrico Fermi Atomic Power Plant, Unit 2.

IT IS FURTHER ORDERED that this Initial Decision shall constitute the final action of the Commission forty-five (45) days after the date of issuance hereof, subject to any review under 10 CFR Part 2. Exceptions to this Initial Decision may be filed by any party within ten (10) days after its service. A brief in support of the exceptions shall be filed within thirty (30) days thereafter, and forty (40) days thereafter in the case of the Staff. Within thirty (30) days of the

filing and service of the brief of the appellant, forty (40) days in case of the Staff, any other party may file a brief in support of, or in opposition to, the exceptions.

THE ATOMIC SAFETY AND
LICENSING BOARD

Peter A. Morris
Dr. Peter A. Morris
ADMINISTRATIVE JUDGE

David R. Schink (by Gary L Milhollin)
Dr. David R. Schink
ADMINISTRATIVE JUDGE

Gary L Milhollin
Gary L. Milhollin, Chairman
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland
this 29th day of October 1982