



UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

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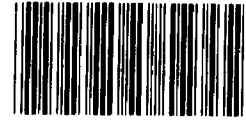
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B-200227

SEPTEMBER 17, 1980

The Honorable Leon E. Panetta
House of Representatives

RELEASED



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Dear Congressman Panetta:

Subject: [The Nuclear Regulatory Commission's
handling of allegations of defective
cable] (EMD-80-115)

At your request, we reviewed the circumstances surrounding the alleged defective cable supplied by the Raychem Corporation to five nuclear utilities during the period 1971 to 1975. Your interest in this matter was spurred by allegations made by a constituent who was a former employee of the Raychem Corporation. The Commission investigated the allegations from 1976 to 1977, and based on tests and other studies decided, in its technical judgment, that the cable was not defective.

In conducting this review, we established three objectives. Our first objective--understanding the events which triggered the allegations--would provide an indication of the overall merits to the allegations. To meet this objective, we met and talked extensively with the alleger and requested all available information that would support the allegations. Our second objective--reviewing the Commission's investigation of the cable problem--would determine how the Commission reached the decision that the cable was not defective. To meet this objective, we spoke with Commission officials and reviewed all available Commission documentation of their investigation. Our third objective--evaluating the actions of the affected utilities--would disclose what care they exercised to assure that defective cable was not installed in their plants. To meet this objective, we contacted all utilities suspected of having received the alleged defective cable and discussed with them how they and the Commission handled the matter.

In summary, our review of this matter revealed that the Commission's handling of the investigation was extremely poor. Examples included:

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- The Commission's reluctance to issue a bulletin or an advisory informing affected utilities of a potential generic safety problem with the cable.
- The lack of information on who had received the defective cable and in what quantity.
- The Commission's failure to inform the alleged of the results of its investigation or to prepare a summary document that closed out its investigation.

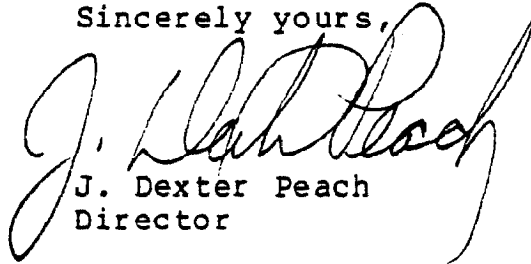
Commission officials admitted that their handling of the investigation left much to be desired. Nonetheless, they said that tests and other independent studies assured them that the Raychem Corporation cable was not defective and was, in fact, suitable for the service intended. Specifically, the Raychem Corporation performed a series of tests on the alleged defective cable and reported the results to the Commission on July 29, 1977. The Franklin Institute Research Laboratories--an independent cable testing organization--also did two studies of the cable, one at the request of the Raychem Corporation and the other at the request of United Engineers and Constructors, Inc., for the Carolina Power and Light Company. Commission officials reviewed these tests and studies and determined, based on their technical judgment, that the cable was not defective.

Even though we identified certain problems with the way the Commission conducted its investigation, the overriding issue is whether sufficient information was gathered and sufficient tests were made to determine the suitability and acceptability of the cable. The Commission decided that the cable would safely meet intended use requirements and that the cable was not defective. We verified that the tests were made and had no basis to question the technical judgment of the Commission.

Still, upon completing our review, we contacted the alleged to discuss our work results. The alleged sent a letter listing 21 questions that he wished answered. As agreed with your office and the alleged, these questions have been additionally submitted to the Commission for response. We plan to forward the Commission's response to the alleged plus copies of tests and studies used by the Commission to support its decision that the cable was not defective. The enclosure to this letter discusses the results of our work in more detail.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 3 days from the date of the report. At that time, we will send copies to the Commission and others upon request. Also, as arranged with your office, we have not submitted this report to the Commission for comment.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "J. Dexter Peach".

J. Dexter Peach
Director

Enclosure

DETAILED DISCUSSION OF ALLEGED DEFECTIVE CABLEPRODUCED BY THE RAYCHEM CORPORATIONBACKGROUND

A former employee of the Raychem Corporation alleged to Nuclear Regulatory Commission (NRC) Region V personnel in April 1976 that cable shipped to nuclear power customers of that Corporation during the period of 1971 to 1975 would not meet certain industry specifications and was, therefore, defective. This employee also alleged, according to NRC documents, that quality certifications had been falsified, a test had not been supervised, and that the formula for the plastic insulation on the cable had been changed, causing it to lose water resistance. NRC inspectors visited the Raychem Corporation on three occasions and initially determined that some cable supplied to five utilities was defective or suspected of being defective as determined by the Raychem Corporation. 1/ Inspectors could not substantiate the other allegations.

The inspectors' report showed that the Raychem Corporation had completed an examination of the problem in 1976. That examination showed that the defective cable only occurred in cable component wires which, in the cable jacket, had a combined insulation thickness of more than 0.12 inch. Also, Raychem Corporation determined that five utilities had received defective cable. The NRC inspection report noted that the five utilities were contacted, the cable was being retested and recalled as necessary, no defective cable was installed, and no safety hazard existed.

Subsequent NRC inspection reports confirmed that three utilities were contacted about the cable and that two of these had, in fact, installed some of the cable in their nuclear plants. The first, the Pacific Gas and Electric Company, had installed and then voluntarily removed 150,000 feet of cable from each of its two Diablo Canyon nuclear powerplants. Both units, at the time, were undergoing operating license review. The second, the Carolina Power and Light Company, elected not to replace the Raychem Corporation cable in its operating Brunswick nuclear powerplant. The company made this decision after determining that the cable would be acceptable for its intended service and upon

1/Subsequent tests showed, according to NRC, that the cable was suitable for its intended purpose.

establishing a continuing surveillance program consisting of periodic insulation measurements.

The third utility, the Washington Public Power Supply System, elected not to install--within its two powerplants under construction--any Raychem Corporation cable in excess of the 0.12-inch thickness, and to test all cable it had received from the Raychem Corporation with less than a 0.12-inch thickness. These tests concluded that while not all furnished cable met the specific criteria, the cable would be acceptable for its intended service.

The record on the remaining two utilities to receive the Raychem Corporation cable--the Florida Power and Light Company and Niagara Mohawk--is somewhat uncertain. According to one NRC inspector, there is no evidence that these utilities were contacted about the alleged defective cable.

During our review, we analyzed the actions taken by NRC, the Raychem Corporation, and the affected utilities concerning the alleged defective cable. We found that NRC's handling of the investigation was extremely poor; however, NRC believes that sufficient tests were done to show that the cable is suitable for its intended purpose. Details are discussed below.

NRC'S HANDLING OF THE INVESTIGATION WAS EXTREMELY POOR

After NRC inspectors visited the Raychem Corporation and learned that alleged defective cable was supplied to five different utilities, the course of the NRC investigation became extremely difficult to follow. Apparently, a decision was made within NRC not to issue a bulletin or an advisory informing the five affected utilities of a potential generic safety problem with the cable. NRC normally disseminates generic safety-related information and solicits utilities' commitments to inspect, report, and correct any problem.

We were not offered an explanation as to why NRC deviated from normal procedures. However, a representative from one of the affected utilities commented on this. In a memo to the file, a representative from the Pacific Gas and Electric Company explained that he was contacted by an NRC Region V official about the cable problem. He wrote that NRC headquarters was apparently reluctant to issue a bulletin requesting a response from all affected utilities and that Region V intended to handle this locally with his company.

NRC, it seems, decided to pursue its investigation of the alleged defective cable through its normal and routine inspection coverage of the affected utilities. However, we found no NRC documents to support this decision. Even worse, the only piece of NRC information that sheds any light on who received the alleged defective cable, and in what quantity, is a handwritten page which, NRC officials say, was attached to an inspection report on the Raychem Corporation. This page is neither signed nor dated, and the inspection report to which it was supposedly attached makes no reference to an attachment. The following information is contained on the handwritten page.

Carolina Power and Light (Brunswick)	-
Pacific Gas and Electric (Diablo Canyon)	(None in the nuclear plants)
Washington Public Power Supply System	(1.4 million feet)
Niagara Mohawk	(4.6 million feet in lighting circuits)
St. Lucie	(15 million feet)

The handwritten page, however, was in error by stating there is no defective cable in the Diablo Canyon nuclear powerplants. Approximately 300,000 feet of Raychem Corporation cable was voluntarily removed by the utility owner from the two units there. The page also did not show that any cable was sent to the Carolina Power and Light Company. In contacting the company, we discovered that about 7 million feet of Raychem Corporation cable has been installed throughout the Brunswick nuclear plant.

One NRC official told us that he saw no problem in documenting who had received the defective cable and in what amounts on the handwritten page. He also conjectured that NRC would have developed more concrete information had it been discovered that the cable was, in fact, defective. While this may be true, NRC did not close this case until July 1977, more than 1 year after the allegations of defective cable were made. This, we believe, was a rather long time to wait and see if the allegations were true before developing more concrete information.

Because NRC decided to pursue its investigation of the alleged defective cable through its normal and routine inspection effort, we attempted to follow the NRC investigation

by reviewing available inspection reports. However, according to one NRC inspector, no inspection reports for two utilities-- Florida Power and Light Company and Niagara Mohawk--mention the cable problem, thus raising the question as to whether the utilities were ever contacted.

A representative of the Florida Power and Light Company-- owners of St. Lucie--told us that the company has no recollection or information to indicate that NRC pursued this matter with them. The representative said his company found out about the cable problem through a trade association meeting after which the company also heard that the Raychem Corporation had retested the cable and found it to be acceptable. At that point, the Florida Power and Light Company terminated its interest in the matter.

A representative of Niagara Mohawk told us that the company has records of receiving Raychem Corporation cable for its Nine Mile Point nuclear powerplant but not for the Fitzpatrick plant, as NRC had indicated to us. After hearing of the alleged defective cable in 1976, Niagara Mohawk elected to use the cable for scrap.

NRC officials speculated that they may have contacted the utilities by telephone, but they could not confirm this. NRC may also have relied on the Raychem Corporation to contact the affected utilities. This would not be improper except when one considers the charges being made against the Raychem Corporation.

For example, after having received some alleged defective cable, the Washington Public Power Supply System sent a team of investigators to the Raychem Corporation headquarters in Menlo Park, California, to evaluate cable production. The Washington utility discovered 52 discrepancies related to Raychem Corporation's quality assurance operations. NRC officials offered no explanation as to why NRC did not conduct its own independent quality assurance investigation of these discrepancies. 1/

Further, the former employee of the Raychem Corporation alleged not only that defective cable had been produced, but that quality certifications had been falsified and that a test had not been supervised. These are rather damaging allegations that challenge the integrity of the Raychem

1/NRC subsequently conducted routine inspections of the Raychem Corporation's quality assurance program in late 1976 and early 1978.

Corporation and its workers. Yet, NRC's inspection report on the Raychem Corporation shows that the Corporation, and not NRC, established the cause for the alleged defective cable. There is no evidence that NRC independently confirmed the cause for the alleged defective cable or the number of customers involved.

Of the three utilities that NRC contacted, two elected either to remove or not install the alleged defective cable, while the third one elected to leave the cable in its plant. For all three, NRC accepted what was done by the utility almost without question. It is, of course, important to note that each utility conducted a separate investigation of the matter and reached a decision based on that investigation. The Pacific Gas and Electric Company decided that it would remove 300,000 feet of cable from the two Diablo Canyon nuclear powerplants. The Carolina Power and Light Company, on the other hand, decided that it would be acceptable to leave about 7 million feet of cable in the Brunswick nuclear powerplant.

NRC officials told us that one cannot compare the actions taken by the two companies. The Pacific Gas and Electric Company, according to NRC officials, was about to get its operating license and was willing to expeditiously resolve the matter--by removing the cable--to avoid any possible delays in the licensing review process. The Carolina Power and Light Company was already operating and did not want to shut down to remove the cable unless it was shown that the cable was defective.

NRC officials admitted to us that their handling of this particular investigation left much to be desired. For instance, NRC officials said they should have followed up with the allegor and briefed him on the results of their investigation. This was not done and was one reason why the allegor believed NRC had not acted on the allegations. Also, NRC did not prepare a summary document that closed out its investigation. NRC officials said that would have helped an outside organization, such as GAO, reconstruct the steps taken by NRC.

TESTS SHOW CABLE IS SUITABLE FOR ITS INTENDED PURPOSE

Despite problems with their handling of the investigation, NRC officials said that tests and other independent studies assured them that the cable was not defective and was, in fact suitable for the service intended. Specifically, the Raychem Corporation performed a series of tests on alleged defective cable and reported the results to NRC on July 29, 1977.

Although initial tests showed that the cable would not meet design specifications, subsequent tests showed that the cable was suitable for its intended purpose.

In these subsequent tests, the Raychem Corporation redefined the specifications for its cable. This was done because the cable was a new product line with high flame retardant qualities, and the original design specifications, as contended by the Raychem Corporation, did not reflect the unique properties of its cable. At least one utility--the Washington Public Power Supply System--agreed with the Raychem Corporation on this and said that new specifications were in order.

Also, the Franklin Institute Research Laboratories--an independent cable testing organization--did two studies of the cable, one at the request of the Raychem Corporation and the other at the request of United Engineers and Constructors, Inc., for the Carolina Power and Light Company. NRC officials reviewed these tests and studies and reached a decision, based on their technical expertise, that the cable would meet the requirements for which it was intended. Thus, they concluded no defective cable had been installed in any nuclear power-plants around the country.

CONCLUSION

Even though we identified certain problems with the way NRC conducted its investigation, the overriding issue is whether sufficient information was gathered and sufficient tests made to determine the suitability and acceptability of the cable. NRC decided that the cable would safely meet intended use requirements and that the cable was not defective. We verified that the tests were made and had no basis to question NRC's judgment.

Still, upon completing our review, we contacted the alleged to discuss our work results. The alleged sent a letter listing 21 questions that he wished answered. As agreed with your office and the alleged, these questions have been additionally submitted to NRC for response. We plan to forward NRC's response to the alleged, plus copies of tests and studies NRC used to support its decision that the cable was not defective.