FORM 21
REV 11-70

file

ARKANSAS POWER & LIGHT COMPANY

INTRA COMPANY CORRESPONDENCE

February 28, 1975

MEMORANDUM

TO: SAFETY REVIEW COMMITTEE

Mr. J. H. Woodward	Mr. E. P. Fitzgerald
Mr. W. McClintock	Mr. T. Cogburn
Mr. W. Cavanaugh	Dr. C. G. Chezem
Mr. J. W. Anderson	Mr. T. Baker
Dr. D. Mathews	Mr. J. Holman

FROM: Marshall L. Pendergrass, Secretary

SUBJECT: ARKANSAS NUCLEAR ONE - UNIT 1
SAFETY REVIEW COMMITTEE MEETING
MINUTES OF FEBRUARY 24, 1975
(File: 0280.3)

Attached are the Minutes of the February 24, 1975, meeting of the Safety Review Committee. If you have any comments or corrections to these minutes, please bring them to my attention at the next meeting.

Marshall L. Pendergrass

MLP:jp

Attachment

cc: Mr. J. D. Phillips

8001160701

MINUTES OF THE

SAFETY REVIEW COMMITTEE MEETING

FEBRUARY 24, 1975

ATTENDEES: McClintoc., Fitzgerald, Cavanaugh, Holman, Pendergrass

OLD BUSINESS: 1. There was no old business.

NEW BUSINESS: 1. The committee reviewed and approved Non-Routine, Non-Radiological Reports Nos. 50-313/75-14, 50-313/75-15, 50-313/75-16, 50-313/75-17, 50-313/75-18, 50-313/75-19. A mixture of threadfin and gizzard shad made up not less than 99% of the total weight of the fish in each of the reports.

Marshall L. Pendergrass

ENCLOSURE 1

SSINS No.: 6870
Accession No.:
8005050050

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON. D.C. 20555

IE Information Notice No. 80-21
Date: May 16, 1980

ANCHORAGE AND SUPPORT OF SAFETY-RELATED ELECTRICAL EQUIPMENT

Description of Circumstances:

Seismic design evaluations in connection with the NRC Systematic Evaluation Program (SEP) have indicated a potential safety deficiency in the anchorage and support of safety-related electrical equipment. This subject was highlighted for more in-depth evaluation after site visits to several facilities. The site reviews indicated that equipment was supported in a non-uniform manner. In some cases, design modifications were required to render acceptable seismic design margins. The deficiencies in anchorage and support may be due to the fact that earlier engineering design criteria did not require rigorous analyses.

Letters were issued in January 1980 to the SEP plants which requested a review of the anchorage of safety-related electrical equipment. The findings from the reviews at Haddam Neck, Big Rock Point, Dresden 2, Oyster Creek, and Palisades identified various safety-related electrical equipment that did not have positive anchorage. The reviews at other SEP plants are continuing. A summary is provided below of those items so far identified.

- Station Service Transformers (4160 V - 480V)
- DC to AC Inverters
- Emergency Diesel Generator Room Heater
- Batteries - Emergency Diesel Generator
  - Diesel Fire Pump
  - Station
- Station Battery Rack
- Motor Control Centers
- Cable Trays
- Computer
- Control Panels - MG Set
  - Air Compressor
  - Control Room
- Instrument Rack
- Battery Room Main Breaker and Distribution Panel

A related item has been identified at Comanche Peak (under construction) in which the welds to the floor supports for the main control panels were found to be undersized and improperly spaced. Also, the SEP reviewers observed that non-seismic Category I ancillary items (dolleys, gas bottles, block and tackle gear, ductwork, etc.) may be located such that they could potentially dislodge, impact, and damage safety related equipment during an earthquake.

The type of anchorage systems utilized in the SEP plants and their expected capacities vary widely. For example, high uncertainty exists relative to the capacity of non-engineered tack welds and attachments that rely on frictional clamping forces. In some cases, equipment has been found free standing with no means of positive lateral support. (Friction being the only lateral load carrying mechanism). Most often, heavier equipment is anchored using (1) tack welds to steel angles embedded in concrete; (2) clips that rely on frictional resistance; (3) concrete embedded anchor bolts; or (4) external braced frames. Lighter equipment housed in cabinets or attached to panels or racks has been anchored using (1) bolts; (2) sheet metal screws; (3) tack welds; and (4) braced racks.

The potential concern is that certain pieces of equipment may not have adequate levels of seismic resistance capability due to limited anchorage capacity. The potential problems relate to overturning and/or sliding of large equipment and gross movement or unacceptable forces on smaller attached equipment that may render it inoperable during an earthquake. For certain large battery racks, this judgment is supported by analysis that predict unacceptable seismic behavior.

Section 3.10 of the Standard Review Plan provides acceptance criteria for the seismic qualification of Category I electrical equipment. These criteria include IEEE Std. 344, "Guide for Seismic Qualification of Class 1E Electrical Equipment for Nuclear Power Generating Stations", first issued in 1971. Facilities designed before about 1971 without benefit of such design and testing criteria may have some anchorage deficiencies.

The NRC staff is continuing to evaluate this issue on the SEP plants as part of the seismic review in the SEP. Remedial actions have been planned for the affected plants.

This Information Notice is provided as notification of a possibly significant matter. It is expected that recipients will review the information for possible applicability to their facilities. No specific action or response is requested at this time. If NRC evaluations so indicate, additional actions may be requested or required. If you have any questions regarding this matter, please contact the Director of the appropriate NRC Regional Office.

ENCLOSURE 1

SSINS No.: 6830
Accession No.:
8005050052

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

IE Circular No. 80-12
Date: May 14, 1980

VALVE-SHAFT-TO-ACTUATOR KEY MAY FALL OUT OF PLACE WHEN MOUNTED BELOW HORIZONTAL AXIS

Description of Circumstances:

Tennessee Valley Authority has identified and reported to the NRC a non-conformance on a Bettis Robot-Arm actuator installed on a Pratt butterfly valve at the Sequoyah nuclear plant.

It is reported (ref. attached 10 CFR 50.55(e) report) that a valve became inoperable when the valve-shaft-to-actuator key fell out of place. It is further noted that the orientation of this valve assembly was such that the operator was on the bottom of the valve (below the horizontal axis).

The Pratt butterfly valve furnished with Bettis actuator is designed with a press-fit keyway connection valve/actuator. We believe other manufacturers' connections may be of similar construction and therefore subject to this failure mode.

On May 1, 1980, Pratt Company sent letters to their customers who have these connections (attached list). They recommended that their customers review their installation of such connections, and if the keyway is oriented below horizontal, make one of the following field modifications:

1. Add a spacer bushing, or shim plate to fill the void between the top of the shaft and the indicating plate on the actuator.

2. Locally upset the end of the valve shaft in the area of the keyway using a hand punch in such a way that the key could not work loose.

3. Install new keys of longer length which extend above the end of the valve shaft whereby the key is up to the actuator plate and could not slip down if inverted.

Recommended Action for Licensee Consideration:

We request that all plants make the above recommended inspection of all connections similar to the above described Bettis/Pratt connection, whether or not supplied by those particular manufacturers. If connections are found that are susceptible to failure, one of the above recommended actions or other appropriate action should be taken to correct the potential problem.

No written response to this Circular is required. If you desire additional information regarding this matter, contact the Director of the appropriate NRC Regional Office.

Attachments

ATTACHMENT 1
SEQUOYAH NUCLEAR PLANT UNITS 1 AND 2
NCR 19P
10 CFR 50.55(e)
REPORT NO. 1 (FINAL)
LOOSE KEY IN BETTIS ROBOT-ARM VALVE ACTUATORS

Description of Condition

A containment isolation valve in Unit 1 became inoperable when the key which locks the actuator to the valve shaft fell out of place. This problem could occur with Bettis Robot-Arm valve actuators (model numbers 732C-SR80, 721C-SR60, 521C-SR60, CB525-SR60) when installed upside down or sideways. With the valve shaft mounted below horizontal, there is a potential for the key to work itself loose.

Safety Implications

If the valve actuator were to fall out, it would result in a loss of valve control. Since these valve actuators are on safety-related valves, this condition could have adversely affected or reduced the redundancy of safety-related systems.

Corrective Action

TVA has identified 51 suspect operators in the Purge Air System, Emergency Gas Treatment System and the Chilled Water System. Those operators that are installed so that the key can work loose will have spacer bushings installed in the actuator as recommended by the vendor. Installation of the spacer bushings will be completed before fuel loading. All TVA design project managers are being asked to ensure that this problem does not occur at other TVA nuclear plants.

ATTACHMENT 2
LIST OF ADDRESSEES FOR MAY 1 LETTER
FROM HENRY PRATT COMPANY

Metropolitan Edison - Three Mile Island #2

Arkansas Power & Light Arkansas Nuclear One 1

Wisconsin Public Service - Pioneer Service Kewaunee

Northern States Power - Prairie Island 1 & 2

Baltimore Gas & Electric - Calvert Cliffs 1 & 2

Florida Power Corporation - Crystal River #3

Florida Power & Light - St. Lucie #1 & 2

Toledo Edison - Davis-Besse #1

Alabama Power Company - Joseph M. Farley 1 & 2

Tennessee Valley Authority - Sequoyah 1 & 2

Pennsylvania Power & Light - Susquehanna 1 & 2

Mississippi Power & Light - Grand Gulf 1 & 2

Cleveland Electric Illuminating Company - Perry 1 & 2

Commonwealth Edison Company - Zion 1 & 2

Rochester Gas & Electric - Robert E. Ginna 1

Westinghouse Hanford/FFTF

Westinghouse - Phillipines

Northeast Utilities - Millstone #3

Tennessee Valley Authority - Stride

SSINS No.: 6830
Accession No.:
8002280662

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

May 13, 1980

IE Circular No. 80-11

EMERGENCY DIESEL GENERATOR LUBE OIL COOLER FAILURES

Description of Circumstances:

Within a two week period (August 27 to September 11, 1979), the tube sheets failed in the lube oil coolers of both emergency diesel generators for Arkansas Nuclear One (ANO) Unit No. 1. The introduction of water into the diesel lube oil system resulted in trips of both diesels during surveillance testing. The diesels were not considered capable of sustained operation. These events were previously identified to all operating license and construction permit holders by Information Notice 79-23, Emergency Diesel Generator Lube Oil Cooler on September 25, 1979. The emergency diesel generators involved were manufactured by the Electro-Motive Division (EMD) of the General Motors Corporation and the failures occurred on engines 71-A1-1117 and 71-A1-1130. The failed lube oil coolers were manufactured by the Young Radiator Company.

An analysis of the failed coolers performed by EMD resulted in the conclusion that the failures were caused by severe corrosion of the solder which sealed the tubes to the tube sheets. The corrosion inhibitor in use at ANO was Calgon CS, a borate-nitrite type inhibitor. The manufacturer of this type of inhibitor has recommended the use of hard solder in CS treated systems. EMD does not recommend the use of Calgon CS since the puddle solder used in EMD radiators and oil coolers is considered to be soft solder of a lead-tin composition.

Recommended Action for Licensees' Consideration:

Based on the above, it is recommended that licensees:

1. Verify that the corrosion inhibitor used in cooling water systems of the emergency diesel generators is compatible with all materials wetted by the cooling water and the engine manufacturer's specific recommendations. Also, by means of the engine maintenance history, verify that the system corrosion inhibitor has been properly monitored and maintained at the recommended concentration.

2. If Item 1 cannot be successfully performed, the affected components should be inspected in accordance with the manufacturer's recommendations.

No written response to this Circular is required.

If you desire additional information regarding this matter, contact the Director of the appropriate NRC Regional Office.

Enclosure

RECENTLY ISSUED
IE CIRCULARS

Circular No.	Subject	Date of Issue	Issued to
80-10	Failure to Maintain Environmental Qualification of Equipment	4/29/80	All holders of Reactor OLs and CPs
80-09	Problems With Plant Internal Communications Systems	4/28/80	All holders of a power reactor OL or CP
80-08	BWR Technical Specification Inconsistency - RPS Response Time	4/18/80	All General Electric BWR's holding a power reactor OL
80-07	Problems with HPCI Turbine Oil System	4/3/80	All holders of a power reactor OL or CP
80-06	Control and Accountability Systems for Implant Therapy Sources	4/14/80	Medical licensees in Categories G and G1
80-05	Emergency Diesel-Generator Lubricating Oil Addition and Onsite Supply	4/1/80	All holders of a power reactor OL or CP
80-04	Securing of Threaded Locking Devices on Safety-Related Equipment	3/14/80	All holders of a power reactor OL or CP
80-03	Protection from Toxic Gas Hazards	3/6/80	All holders of a power reactor OL
80-02	Nuclear Power Plant Staff Work Hours	2/1/80	All holders of Reactor OLs, including research and test reactors, and CPs
80-01	Service Advice for GE Induction Disc Relays	1/17/80	All licensees of nuclear power reactor operating facilities and holders of nuclear power reactor CPs