



Commonwealth Edison

One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690

December 14, 1983

Mr. James G. Keppler, Regional Administrator
U.S. Nuclear Regulatory Commission
799 Roosevelt Road - Region III
Glen Ellyn, IL 60137

Subject: LaSalle County Station Units 1 and 2
Response to Confirmatory Action
Letter dated November 28, 1983
NRC Docket Nos. 50-373 and 50-374

Reference (a): J. G. Keppler letter to Cordell Reed
dated November 28, 1983.

Dear Mr. Keppler:

Reference (a) is a Confirmatory Action Letter regarding the ethylene-propylene soft seats on the inboard 24 inch feedwater check valves at LaSalle County Station Units 1 and 2. The purpose of this letter is to fulfill the requirements of Action A, B, C, and D, and to provide the current status of Action E. Attached please find the Commonwealth Edison Company response on these items.

To the best of my knowledge and belief the statements contained herein and in the attachment are true and correct. In some respects these statements are not based on my personal knowledge but upon information furnished by other Commonwealth Edison and contractor employees. Such information has been reviewed in accordance with Company practice and I believe it to be reliable.

If there are any further questions in this matter, please contact this office.

Very truly yours,

CW Schroeder 12/14/83

C. W. Schroeder
Nuclear Licensing Administrator

lm

Enclosures

cc: H. R. Denton - NRR
Resident Inspector - LSCS

8401040278 831227
PDR ADOCK 05000373
Q PDR

7795N

DEC 16 1983

RESPONSE TO CONFIRMATORY ACTION LETTER

DATED NOVEMBER 28, 1983

Action A

Install replacement seals of the molded design furnished by Anchor/Darling which have provided successful service at other nuclear plants under similar conditions. The appropriate portions of your Q.A. Program will be applied to the procurement of the replacement seals to ensure seal quality consistent with those in service at other nuclear plants under similar conditions.

Response

Molded seals have been purchased in accordance with CECo's QA Program and procedures. A Safety Related Purchase Order, No. 743412, has been issued to Anchor/Darling Valve Co. A/DV, has in turn, issued a P.O. to Sargent Industries, Stillman Seal Division, who supplied the seals shipped with the original disk modification.

Since Stillman is not on CECo's Approved Bidders List, and has not been issued a Safety Related P.O. by A/DV, a QA Auditor was sent from CECo to review their manufacturing procedures. His Audit Report, QAS-01-83-240, dated November 21, 1983, noted that the seal fabrication was controlled by Stillman's QA program Rev. J, February, 1983.

A receipt inspection was performed on site by A/DV's serviceman and CECo's QC before they were accepted for installation.

It is felt that the QA controls imposed by CECo are sufficient to insure seal quality consistent with that at other nuclear plants.

QAS-01-83-240
November 21, 1983

Mr. W.J. Shewski
Manager of Quality Assurance

To: Mr. Shewski

Subject: Surveillance of Sargent Industries, Stillman Seal Div.
(Main Feed Water Check Valve Seals)

A surveillance and inspection was conducted on November 18, 1983 at Stillman Seal Division, (Sargent Industries) at San Diego, California to verify that certain activities were performed in accordance with Stillman Div., Quality Systems Manual, Rev. J-1983, for the Main Feed Water check valve seals. Personnel contacted were as follows:

Mr. George Haight - Product Sales
Mr. D. Gero - Q.C. Inspector
Mr. S.E. Posey - Engineering Manager
Mr. D.B. Jackson - Chief Chemist

The Purchase Order form Anchor Darling (y2816) to Stillman Seal Div., dated 11-21-83 - Advance P.O.) was reviewed and found not in accordance with Anchor Darling Technical Advisory Letter dated 11-82. Anchor Darling advisory letter dated 11-82 recommends use of seals manufactured to SR-723-70, not SR-740-70. The seals were manufactured to the original requirements which was SR-740-70 in 1981. Anchor Darling Valve Co. was contacted by phone on 11-18-83. A letter from Anchor Darling was telecopied to Stillman Seal accepting the SR-740-70 materials. A review of this letter from Anchor Darling required Station Nuclear Engineering Department to issue La Salle Station a conformation to accept the SR-740-70 material. This problem was corrected and considered closed.

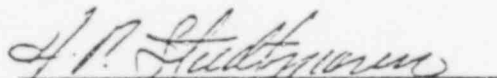
Final Inspection of the Main Feed Water check valve seals rings was observed. A total of seventeen (17) seal rings were originally manufactured. Ten (10) seals were acceptable to Anchor Darling Drawing #6530-3-1, Rev. 0. Visual inspection rejected seven (7) rings. The final inspection of the seal rings is performed using a small sample from a seal ring on an optical comparator and verifying dimensions to Drawing 6530-3-1, Rev. 0. The optical comparator was calibrated using Johanson Gauge Blocks on 11-15-83. The Johanson Gauge Blocks are verified to N.B.S. #738-227676, dated 10-21-83. A steel tape was used to verify overall length of the seal rings, tape #028838 checked for accuracy on 2-8-83 using a calibrated Vernier Gauge. No discrepancies noted.

Control of material was verified as follows; a router or process sheet with shop order #51395-10 for batch #25462 was issued for the seal rings. Process sheets are signed off and stamped by a Quality Control Inspector for each operation if acceptable. Unacceptable material is scrapped immediately, rubber type material can not be repaired. This control was found acceptable.

Verification as to material type used for the seal rings was traced to the test laboratory by the batch #25462. A Receiving Inspection Report for the material was noted - test date 4-25-83, for SR-740-70. The samples used for the test in accordance with A.S.T.M. Procedure D 414-72. Documentation as to the test requirements are listed on the test form for the batch inspected. No deficiencies. The Batch #25462 follows with the process sheets until final inspection is completed.

A schedule of audits is prescribed in the Stillman Seal Div. Quality Systems Manual dated February 1983 - Rev. J. Audits are performed but it could not be verified that all audits required by the program are completed as the Quality Control Manager was out-of-town on business at the time of the surveillance.

Overall the control of materials, calibration, manufacturing process, and inspection area were being implemented as required by Stillman Seal Div. Quality Systems Program, February 1983, Rev. J. This surveillance is considered closed.


H.P. Studtmann
Quality Assurance Supervisor
Maintenance

0017y

HPS/els

cc: G. Diederich
R. Kyrouac —
R. Clark

QAL 01-83-55
LaSalle County Station

December 5, 1983

R. Janecsek
Station Nuclear Engineering

Subject: Feedwater Check Valve Soft Seats

In regards to your concerns on Q.A. program involvement on the LaSalle Unit 1 feedwater check valve soft seats, the following information is being provided for your consideration.

The Q.A. Department, along with Station Quality Control, performed a vendor surveillance at Sargent Industries, Stillman Seal Division, on the making of these seals as documented in the attached surveillance, QAS 01-83-240.

This purchase order was designated as safety related commercial grade 10CFR Part 21 not applicable with a certificate of conformance required and was let to the Anchor Darling Valve Company.

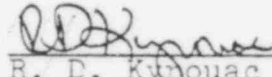
The vendor inspection exceeds what would normally be done on an approved vendor for this type of order. Due to the significance of this item, it was insisted upon by our Q.A. Department that this surveillance be performed.

The seals were received on-site through our normal Quality Assurance receiving inspection and installed in compliance with our Quality Assurance program under the safety related work request system.

The only other utility that I am aware of is Duke Power Company, who did apply 10CFR Part 21 to their order with Anchor Darling. However, they too only received a certificate of compliance.

CECo. Quality Assurance is presently planning to conduct a vendor audit of Anchor Darling regarding this item to try and pinpoint any problems that they might have.

I believe no further actions should be required from Q.A. The Resident NRC Inspector, Mr. Bill Guldemon, is aware of the Q.A. actions and does not believe any further action is required.



R. D. Kyrrouac
Station Q.A. Supervisor
LaSalle County Station

RDK/kjs

cc: W. J. Shewski/J. Bitel
H. Studtmann
R. Kyrrouac/File

Action B

Provide a documented evaluation of the operating performance history of similar seals procured by other nuclear plants from Anchor/Darling and utilized in similar applications as a basis for the justification for your interim use of the ethylene-propylene soft seals.

Response

Similar seal designs are being used for the same service at the Brunswick and Pilgram Stations. Both are presently using molded EPR seals fabricated by Sargent Industries, Stillman Seal Division (see attached A/DV letter dated 12-1-83).

Inquiry into the maintenance history for the soft seats at both stations showed that the seals lasted, as a minimum, one refueling cycle. See attached phone memorandums dated 12-1-83 and 12-2-83.

The replacement seals presently being used at LaSalle are identical to those initially supplied with the modified disk. The failure mode of these seals was cutting on the back side caused by burrs and sharp edges on the pressure vent grooves. These areas have been smoothed to eliminate any potential for cutting in the future.

The failure mode of the most recent group of seals was the opening of their vulcanized joint. These seals were vulcanized by the Stevens Co. This type of failure would not be expected with the molded seals as they are fabricated in one piece, and are not vulcanized. Also, this EPR compound has shown some surface cracking that has not been experienced by the Stillman compound.

Anchor/Darling

Valve Company

701 FIRST STREET

P.O. BOX 3428

WILLIAMSPORT, PA 17701-0428

(717) 327-4800

TELEX: 84-1438

December 1, 1983

Commonwealth Edison Company

P. O. Box 767

Chicago, Illinois 60690

Attention: Mr. Robert L. Scott
LaSalle Nuclear Station

Subject: Anchor/Darling 24"1500-TDC Valves
A/DV S.O. Nos. E5875 and P3673
P.O. No. 167385

Reference: Telecon 11/29/83

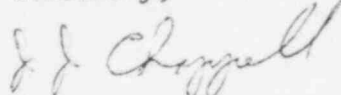
Gentlemen:

I have reviewed our records and confirmed that the rubber seal rings recently shipped to the LaSalle site under A/DV order no. P3673 were identical in material composition to the original seals installed in the feedwater check valves at Carolina Power and Light Brunswick Station.

The original seals installed at Boston Edison Pilgrim Station were procured directly from Stilman Seal by Boston Edison.

Please contact me if you require further information.

Sincerely,



J. J. Chappell
Manager-Engineering

dd

copy: W. G. Knecht
P. A. Loudenslager

December 1, 1983

Subject: LaSalle County Station, Units 1 and 2
Telephone Memorandum
Feedwater Check Valves

Person Called: Ron Sherry 617-746-7904 x8136
Maintenance Department
Pilgram Station

Person Calling: R.L. Scott 312-294-8562
SNED
Commonwealth Edison Co.

Requested maintenance history and operating experience for the ethylene propylene soft seats in the feedwater check valves, F010.

Mr. Sherry noted that the soft seats were installed originally during the 1976-77 outage. Two seats were replaced during the 1979 outage to pass the LLRT. During the 1978 outage, four seals were replaced to pass the LLRT.

RLS:mnh
3683L

December 2, 1983

Subject: LaSalle County Station, Units 1 & 2
Telephone Memorandum
Feedwater Check Valves

Person Called: Rodney McCoy 919-457-9251 X2104
Carolina Power & Light
Maintenance Department

Person Calling: R.L. Scott 312-294-8562
SNED
CECo

Requested Maintenance History and Operating Experience for the ethylene propylene soft seats in the feedwater check valves, F010, at the Brunswick Station.

Mr. McCoy replied as follows: Soft seated disks were installed on Unit 1 in January, 1980, on Unit 2 in June, 1980. For Unit 1, a LLRT was done in August, 1982 with the valves passing. During the last outage, December, 1982 to July, 1983, a LLRT was conducted and the valves passed again. On Unit 2, the seals were changed in August, 1982, to pass the LLRT.

RLS/mct
3690L

Action C

Provide a detailed, documented evaluation and justification for your interim use of the ethylene-propylene soft seals considering the established design requirements for the seals and the available information, including test data, on characteristics and properties (e.g., temperature, pressure, radiation, steam/water, etc.) of the seals.

Response

Specified design parameters used for purchasing these valves, and identified as maximum normal, are 2150 psig and 425°F; and an integrated accident dose rate of 2.6×10^7 rads gamma radiation.

The pressure is based on the shut off head of the turbine driven feedpumps, adjusted for applicable losses, assuming the down stream manual valve is closed. Pressure from the RPV, closing the valve, during normal or accident conditions is limited by the safety relief valves to a maximum of 1275 psig.

Normal feedwater temperature at 100% power is 420°F. Assuming a set of worst case conditions and exceeding single failure criteria, a maximum temperature of 450°F could be hypothesized after several hours.

Station Operating Procedures would prohibit feedwater temperature from reaching this level since the assumptions made would result in shutdown of the Unit. Reactor coolant would then be cooled at a rate of 100°F per hour precluding the temperature at the FO10 valve from reaching 450°F.

Inquiries were made to Sargent Industries, Parker Seal, DuPont and A/DV to find test information on ethylene-propylene compounds. While numerous tests have been made on this material at various temperatures and environments, no tests have been done on the exact compound or to the same conditions as exist at LaSalle.

However, current knowledge and recommended usage of EPR is that it is continuously usable to 450°F and exposure to radiation below 1×10^8 rads. This is based on information from Parker Seal, operating history at Pilgram and Brunswick Stations and AD/V Technical Advisory, TA-105 dated 11-83.

Robert Barbarin, Parker Seal R&D Group, has related that he believes that EPR is the best material available for the operating conditions at LaSalle.

This information, in conjunction with the present operating experience, leads us to believe that EPR is a suitable material for interim use on the LaSalle feedwater check valves, until qualified seals can be offered or EPR can be qualified.

Action D

Establish and implement an augmented testing and inspection program concerning the soft seals. The program will include both local leak rate testing and valve seal inspections to ensure acceptable soft seal performance during normal operating conditions. Within 90 days from the date of achieving Power Operation perform a local leak rate test and an inspection of the accessible portions of the seals. Additionally, if a cold shutdown occurs prior to the 90 day period, perform a local leak rate test; further, if significant seal degradation is indicated by the test, perform an inspection of the accessible portions of the seals. Report the results of all tests and inspections promptly to the NRC Resident Inspector, and submit a written report of these results to the Region III office within 14 days of their occurrence.

Response

The augmented testing and inspection program concerning the soft seals has been prepared and has been approved by members of the onsite review. This program, which includes the minimum testing outlined above, is available onsite for NRC review.

7795N

Action E

Submit a letter to the Region III office describing your plans and schedule for obtaining and installing fully-qualified soft seals to meet design requirements under the provisions of Appendix B of 10 CFR Part 50.

Status

As an alternate elastomer to EPR, compounds that have a higher temperature rating are being evaluated. Two potential materials are being reviewed: Kalrex, made by DuPont, and Aflas compounds from Parker Seals. No test data reflecting LaSalle operating conditions has been obtained. Qualification testing will have to be performed before these materials are used.

Engineering evaluation of these materials should be completed by 2/01/84.

Installation of a qualified seal material could be by start-up after the first refueling outage. This schedule is based on successful completion of the following tasks:

1. Environmental Testing
2. Seal Design
3. Fabrication of an Injection Mold
4. Seal Fabrication

Our final plan and schedule for obtaining and installing qualified seals will be submitted by 2/01/84.