

TERA



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I  
631 PARK AVENUE  
KING OF PRUSSIA, PENNSYLVANIA 19406

Docket No. 50-412

JAN 31 1979

Duquesne Light Company  
ATTN: Mr. C. N. Dunn  
Vice President  
425 Sixth Avenue  
Pittsburgh, Pennsylvania 15219

Gentlemen:

Subject: Beaver Valley Power Station - Unit No. 2  
Reactor Containment Liner - Overlay Pod Fillet Weld Crack  
(Your letter of January 19, 1979)

Thank you for your letter, referenced above, which forwarded an interim report pursuant to 10 CFR 50.55(e) regarding the subject matter.

This matter will be reviewed during our next inspection.

Your cooperation with us is appreciated.

Sincerely,

Robert T. Carlson, Chief  
Reactor Construction and Engineering  
Support Branch

cc:  
R. J. Washabaugh, Quality Assurance Manager

7903060562

5



**Duquesne Light**

435 Sixth Avenue  
Pittsburgh, Pennsylvania  
15219

(412) 471-4300

January 19, 1979

United States Nuclear Regulatory Commission  
Region I  
631 Park Avenue  
King of Prussia, PA 19406

ATTENTION: MR. BOYCE H. GRIER, DIRECTOR

SUBJECT: Beaver Valley Power Station - Unit No. 2  
Reactor Containment Liner - Overlay Pad  
Fillet Weld Crack  
Docket No. 50-412  
Significant Deficiency Report No. 78-03


Gentlemen:

Field attachment of an overlay pad to the containment liner cylinder, has resulted in the cracking of the wall liner plate. The crack was found to exist along the horizontal, bottom side of the overlay pad, adjacent to the continuous fillet weld used to make the attachment. The problem was reported to Mr. Seth Folsom of your office, on December 22, 1978, as a significant deficiency.

An investigation into the cause of the cracking is currently underway. Pursuant to the requirements of 10 CFR 50.55(e), a written interim report is herewith submitted, and it is presently anticipated that a final written report on this matter will be submitted to you on March 22, 1979.

DUQUESNE LIGHT COMPANY

By

  
\_\_\_\_\_  
C. N. Dunn  
VICE PRESIDENT

cc: Dr. E. Volgenau (15)  
Mr. William G. McDonald

INTERIM REPORT ON  
REACTOR CONTAINMENT LINER  
OVERLAY PAD FILLET WELD  
AT  
BEAVER VALLEY POWER STATION - UNIT NO. 2

1.0 SUMMARY

A required visual examination of the reactor containment liner plate and associated equipment, following a sandblast operation required for prime paint substrate, revealed a crack along the toe of a bottom horizontal fillet weld which attaches an overlay pad to the reactor containment liner plate. The overlay pad is located at elevation 719'-4", fourteen feet west of the north containment centerline. See the attached sketch for a typical overlay pad configuration. The crack was approximately 1'-0" in length at the toe of the weld adjacent to the liner plate.

As a result of grinding necessary for repair, the crack depth was found to be greater than half the thickness of the liner material.

2.0 IMMEDIATE ACTION TAKEN

Upon discovery that the crack continued beyond the contractor's maximum allowed excavation depth, further grinding was stopped and detailed evaluation commenced. Currently there is no overlay pad installation in progress. No additional overlay pads will be installed until this problem is resolved.

Since this problem was construed to be a possible reportable significant deficiency pursuant to 10CFR50.55(e)(1), the U.S. Nuclear Regulatory Commission (NRC) was notified orally on December 22, 1978.

3.0 DEFICIENCY

3.1 Description

The overlay pad was fit up on December 15, 1977, tacked in place on December 19, 1977, and final welded on December 21, 1977. Visual and magnetic particle examinations were performed on January 16, 1978 and February 15, 1978, respectively, with acceptable results. The sandblast operation and resultant visual observation of the crack was performed on October 23, 1978.

The Contractor's general procedures allow for repair of base metal linear defects which do not exceed 1/2 t

(t is base metal thickness) in depth or 1/2 t in width. Linear defects which exceed the above require the Contractor's Project Engineer to be notified.

Based on this information, Nonconformance and Disposition (N&D) Report No. 9167 was issued by the site personnel. The Engineers reviewed the problems and dispositioned N&D No. 9167. Further grinding invoked by N&D No. 9167 showed the crack to approximate a through-liner crack, thus a potential breach of the containment vapor tight boundary.

### 3.2 Analysis of Problem

The crack has been observed in the toe of the fillet weld at the parent liner base material. The cause of the crack is presently under investigation. The investigation will involve an historical review of documentation, metallurgical evaluation of a sample, nondestructive examination of similar welds, and review of events during construction which might have contributed to the cause of the crack.

Historical Review of documentation will result in the review of the following items as a minimum:

- a. Material mill certifications for:
  - 1) Liner plate
  - 2) Overlay plate
  - 3) Weld electrode
- b. Weld rod storage oven records
- c. Weld rod issuance records
- d. Welding procedure specifications
- e. Environmental records
- f. Nondestructive examination procedures and records
- g. Fabrication checklists
- h. Construction activities

The metallurgical evaluation will be performed on a sample removed from the cracked weld and will include some or all of the following, should the need be identified as the investigation progresses:

- a. Nondestructive examination; i.e., magnetic particle
- b. Hardness surveys of weld and base metals
- c. Chemical analysis of weld and base metals
- d. Macro-etch and examination of weld and base metals
- e. Metallographic examination of weld and base metals
- f. Electron microscopy of cracked surface
- g. Mechanical tests of weld and base metals

Fillet welds at all similar 1'-0" square overlay plates will be reexamined by visual and magnetic particle methods.

An independent consultant, Dr. C.M. Adams, Jr., has been engaged to review the problem. Dr. Adams's report will be included with the final report.

The stresses resulting from thermal excursions and construction events (e.g., concrete placement loading and wind brace effects) will be evaluated.

#### 4.0 ANALYSES OF SAFETY IMPLICATION

A through thickness crack constitutes a breach of the primary containment. Under postulated accident conditions, it is possible that containment leak rate could exceed the design basis causing radiation exposure to off-site individuals to exceed the limits set forth in 10CFR100.

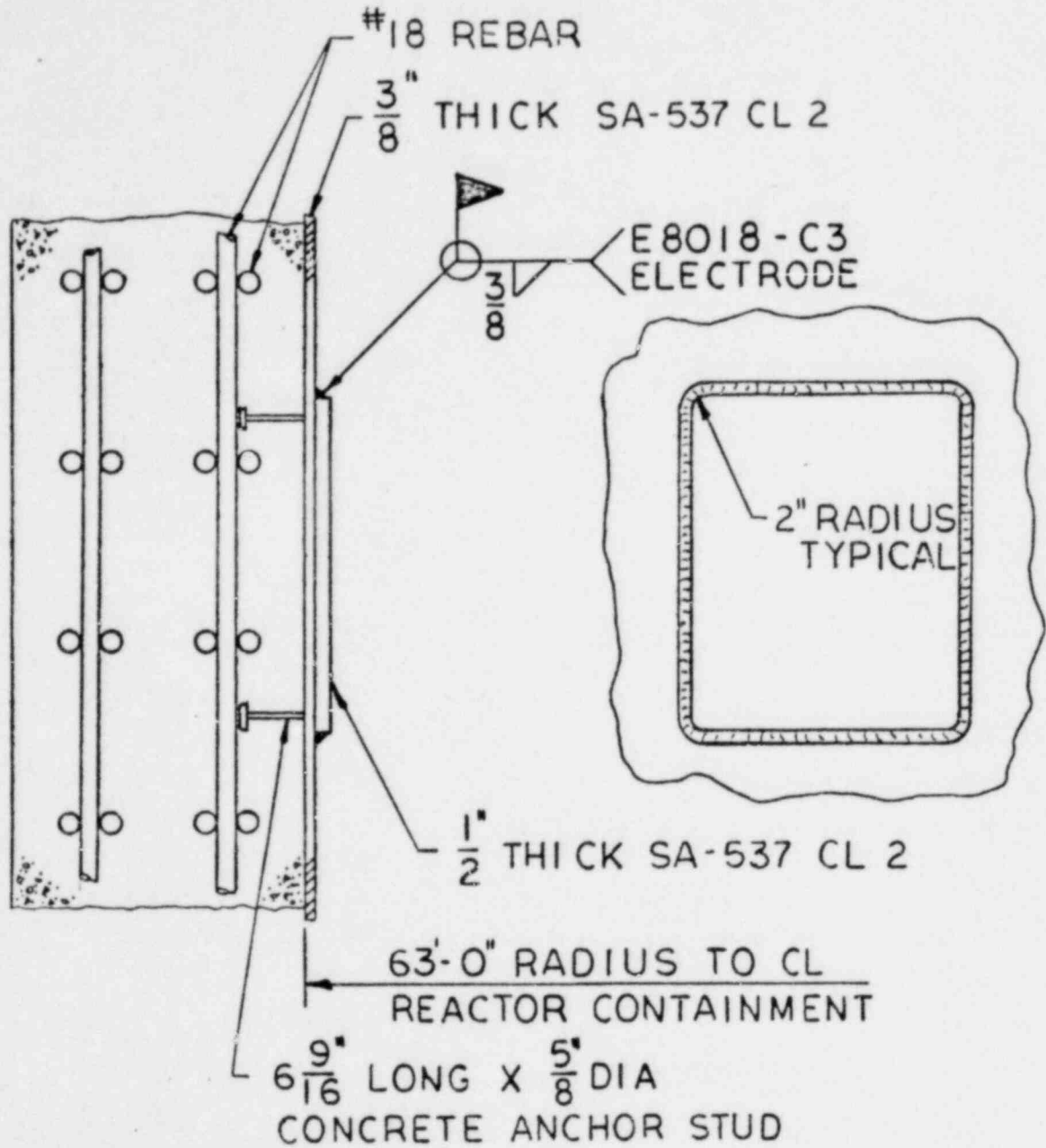
#### 5.0 CORRECTIVE ACTION TO REMEDY DEFICIENCY

Corrective action will be determined and will be reported in the final report.

#### 6.0 FINAL REPORT

A final report on this matter will be forwarded to the NRC on March 22, 1979.





POWER INDUSTRY GROUP		TITLE	SCALE: NONE	
CHECKED	PW/W	TYPICAL OVERLAY PAD	DATE: 1-15-79	
CORRECT	NA		SKETCH NUMBER	
APPROVED	NA		NA	
REVISIONS	②	③	④	⑤