NRC FORM 366 (7-77)

79-023/01T-0

U. S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT

(CAR 1249)

CONTROL BLOCK: | | | | | | | (1) (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

| 0 | 1 | N Y R E G 1 (2) LICENSEE CODE | 0 0 - 0 0 0 0 0 - 0 0 (3) LICENSE NUMBER | 4 1 1 1 1 (4) LICENSE TYPE | (5) CAT |

CON'T

| 0 | 1 | REPORT SOURCE L (6) | 0 5 0 0 0 2 4 4 (7) DOCKET NUMBER | 1 2 0 7 7 9 (8) EVENT DATE | 1 2 2 1 7 9 (9) REPORT DATE |

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0 2 During normal inservice inspection of pressurizer relief nozzle-to-safe-end weld,
0 3 liquid penetrant exam showed linear indications 1-1/8" and 3/8" long. (T.S. 6.9.2.
0 4 a(3)) UT did not show any. Followup X-ray exam showed no volumetric indications.
0 5 Further liquid penetrant and replication showed area of attack 6-7" by 1/8" consisting
0 6 of a family of fine cracks similar to intergranular type attack. All pressurizer head
0 7 nozzle-to-safe-end weld areas were examined with UT and liquid penetrant with no
0 8 other relevant indications noted.

0 9	SYSTEM CODE	CAUSE CODE	CAUSE SUBCODE	COMPONENT CODE	COMP. SUBCODE	VALVE SUBCODE
	C B (11)	E (12)	D (13)	P I P E X X (14)	B (15)	Z (16)

(17) LER/RO REPORT NUMBER

EVENT YEAR		SEQUENTIAL REPORT NO.		OCCURRENCE CODE	REPORT TYPE		REVISION NO.
7 9	—	0 2 3	/	0 1	T	—	0

ACTION TAKEN	FUTURE ACTION	EFFECT ON PLANT	SHUTDOWN METHOD	HOURS (22)	ATTACHMENT SUBMITTED	NPRD-4 FORM SUB.	PRIME COMP. SUPPLIER	COMPONENT MANUFACTURER
B (18)	X (19)	A (20)	A (21)	0 4 1 6	Y (23)	Y (24)	N (25)	W 1 2 0 (26)

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 Possible causes: original fabrication contamination or chloride concentration occurring
1 1 during operation. Investigation includes examining boat sample with scanning electron
1 2 microscope to determine corrosive species, and insulation leaching chemical analysis.
1 3 Cloth cover replaced with fiberglass. Report of metallurgical analysis results to be submitted later. Pressurizer head nozzle-to-safe-end weld areas to be reexamined in
1 4 1980 AI&O.

1 5	FACILITY STATUS	% POWER	OTHER STATUS (30)	METHOD OF DISCOVERY	DISCOVERY DESCRIPTION (32)
	G (28)	0 0 0 (29)	NA	B (31)	Routine ISI

1 6	ACTIVITY RELEASED	CONTENT OF RELEASE	AMOUNT OF ACTIVITY (35)	LOCATION OF RELEASE (36)
	Z (33)	Z (34)	NA	

PERSONNEL EXPOSURES

1 7	NUMBER	TYPE	DESCRIPTION (39)
	0 0 0 (37)	Z (38)	NA

PERSONNEL INJURIES

1 8	NUMBER	DESCRIPTION (41)
	0 0 0 (40)	NA

LOSS OF OR DAMAGE TO FACILITY (43)

1 9	TYPE	DESCRIPTION
	Z (42)	NA

PUBLICITY

2 0	ISSUED	DESCRIPTION (45)	NRC USE ONLY
	Y (44)	News release was made December 11, 1979.	

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Attachment to LER 79-[redacted]3/01T-0

Rochester Gas and Electric Corporation
R. E. Ginna Nuclear Power Plant, Unit No. 1
Docket No. 50-244

Event Description

On Friday, December 7, 1979, during a normal inservice inspection program examination on the pressurizer relief nozzle-to-safe-end weld, linear indications 1-1/8" long and 3/8" long were noted by the liquid penetrant examination method. The ultrasonic examination performed did not reveal any indications. On Saturday, December 8, 1979, the area of the indications was prepared by mechanical means with a flapper wheel and light grinding. A reexamination with liquid penetrant revealed an area of attack approximately 6-7 inches long by 1/8" wide. Due to other work being performed in the pressurizer head area supplementary examinations were not performed until Sunday night, December 9, 1979. These examinations included more liquid penetrant examinations and radiographic (X-ray) examination of the area where the original liquid penetrant indication was found. The radiographs of the affected area revealed no apparent volumetric indications. Supplemental ultrasonic examinations of the area also revealed no apparent volumetric indications.

Inplace metallography was attempted without much success due to the restrictions imposed by the piping system that attaches to the relief nozzle. Replication using a plastic material revealed a family of very fine cracks. In a 2 inch long area the indications were ground out at about 1/8 inch depth. Confirmation of this finding occurred when in an additional 3 inch long area the indications were ground out after less than 1/8 of an inch of material was removed. On Wednesday, December 12, 1979, a boat sample was removed for further investigation and analysis of the cracks. The results of the investigations made in the field revealed that the cracks were in the 309 weld material that was used for the dissimilar weld between the carbon steel nozzle (SA-216-GR.WCC) and the stainless steel safe-end material (SA-182 TP, 316) and not the safe-end material as originally thought.

The repair procedure included removal of the remaining cracked material, preparing the excavated area for weld repair and welding with the Gas Tungsten Arc Welding Process utilizing ER-309 base filler metal. Post preparation, first weld pass and final weld liquid penetrant examinations were performed. A final weld preservice ultrasonic examination of the repaired area was also performed. The results of all examinations did not reveal any indications.

Also examined during this investigation were all the nozzle-to-safe-end weld areas on the pressurizer head utilizing the liquid penetrant and ultrasonic examination methods. The ultrasonic examinations included a normal inservice inspection technique and a special stress corrosion tech-

nique. Welds in associated piping of the four nozzles were also examined utilizing the liquid penetrant method with no further relevant indications noted. There were no health or safety consequences to the public or to plant personnel due to this event.

Cause Description

Replication of the as polished weld surface revealed a very tight crack pattern, similar to an intergranular stress corrosion. The boat sample analysis revealed three cracks as follows:

Crack #1 - 1.4 mm from carbon steel fusion line
0.4 mm in depth

Crack #2 - 2.3 mm from carbon steel fusion line
0.7 mm in depth

Crack #3 - 3.5 mm from carbon steel fusion line
1.1 mm in depth touching carbon steel bevel

Further analysis utilizing the scanning electron microscope is ongoing to determine if any corrosive species can be identified.

Presently only speculation can be made on the cause of this cracking. It may have been caused by original fabrication contamination or by a chloride concentration that has occurred during operation. As part of this investigation a chemical analysis of leachable contaminants from the thermal insulation that surrounded the relief nozzle was performed as prescribed in Regulatory Guide 1.36, Nonmetallic Thermal Insulation for Austenitic Stainless Steel. The results of this analysis are as follows for sample 1 - woven cloth cover and sample 2 - glass fibrous layered material:

Sample	PPM CI	PPM F	PPM CI+F	PPM Na	PPM SiO_3	PPM Na + SiO_3
1	98	9.4	107.4	100	207	307
2	30	1.6	31.6	40	99	139

Based on this analysis according to Figure I of Regulatory Guide 1.36, Sample 2 - the glass insulation is acceptable, however Sample 1 - the cloth cover is not within the acceptable region. Although it would be logical to assume that the insulating cloth provided the chlorides that might have caused this cracking phenomena, the cloth could have been contaminated during the handling of removal. Therefore, the results of the scanning electron microscope will have to be further analyzed before confirming the insulation involvement.

As part of the corrective action the insulation material was changed on the pressurizer nozzles to assure that potential leachable contaminants from insulating material will require no further consideration. Also each nozzle-to-safe-end area was cleaned to remove any contaminants prior to reinsulation. A full report on the final results of the metallurgical analysis will be submitted when the investigations are complete. These nozzle-to-safe-end weld areas will be reexamined during the 1980 refueling and maintenance outage.