

Regul y File Cy.



Consumers Power Company

General Offices: 212 West Michigan Avenue, Jackson, Michigan 49201 • Area Code 517 788-0550

June 17, 1971

Dr. Peter A. Morris, Director
Division of Reactor Licensing
United States Atomic Energy Commission
Washington, DC 20545

Re: Docket 50-155
DPR 6 (ZEK)

Dear Dr. Morris:

Attention: Mr. D. J. Skovholt

During the February-March 1971 refueling outage, a short section of three-inch 304 stainless steel clean-up system piping was replaced due to five welds of questionable quality located in this piping. The replaced piping was at the tee where the clean-up system return water mixes with poison system injection water and water displaced from control rod drives when they are notched. The intention to replace this piping and the welds was reported in the 13th Semiannual Report of Operations for the Big Rock Point Nuclear Plant. It was obvious after sectioning the removed piping that the welds did not meet Code standards. These welds showed what appeared to be incomplete fusion and "suckback" in the root pass.

While the pieces of the welds were being prepared for shipment to the two vendors involved in the weld inspections, it was noted that the three-inch tee removed contained four slight cracks. These were on the ID of the tee and approximately one third to one half of the pipe wall thickness deep. They are not located in the heat-affected weld zone, but in the radius curvature as shown in the attached pictures and sketch. This is where the highest density of thermal cracks appeared on the previously failed tee reported in the 5th Semiannual Report of Operations dated December 20, 1966.

The original tee failure in May of 1966 was attributed to thermal shocking of the tee material due to the mixing of excess control rod drive hydraulic water at approximately 80°F with clean-up system return water at approximately 500°F. A new tee was installed in May 1966 and the piping system was modified in September 1966 such that cool, excess control rod drive water is mixed with clean-up demineralizer effluent which is at approximately the same temperature.

The cracking appears to be very similar but much less extensive than that observed in 1966. The 1966 failures were attributed to a thermal-induced fatigue failure. It is noted that the original tee had a service

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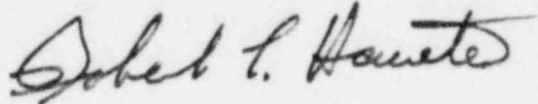
Dr. Peter A. Morris
June 17, 1971

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life of approximately two and one half years under severe thermal operating conditions. The newly installed tee operated under those same thermal conditions for approximately five months prior to the piping modifications. Assuming the results of planned tests will show the cracking to be due to thermal-induced fatigue, it is surmised that the cracking condition on the recently removed tee was induced during its initial five months of operation under the severe thermal mixing conditions.

Samples of the recently removed tee have been shipped to Southwest Research Institute so that metallographic examinations can be performed to determine the cause of failure. When the results of the metallographic examinations are available, further information will be submitted.

Yours very truly,



Robert L. Haueter
Electric Production
Superintendent - Nuclear

RBS/map

CC: BHGreer
Div of Comp
USAEC

FORM 1642
S. CARROLL, INC. 1968

CONSUMERS POWER CO.

DESIGN _____ DATE _____

CHKD. RBS DATE 6/9/71

Sketch of Removed Section of 3-inch Sch80 Piping

DIVISION _____

EST. NO. _____

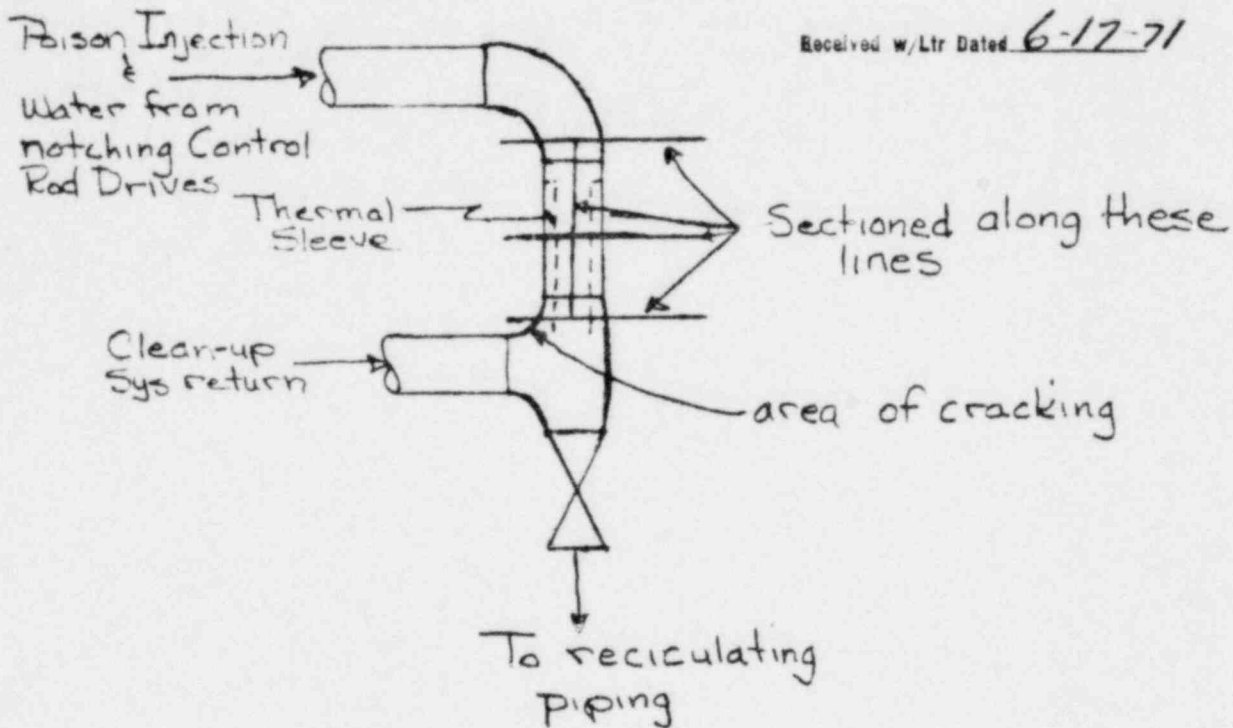
W. O. NO. _____

SHEET _____ OF _____

Regulatory

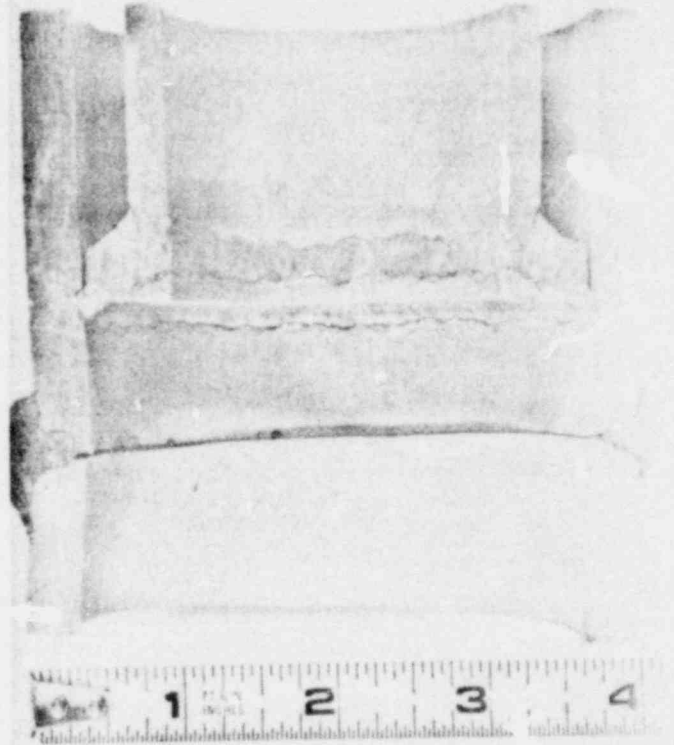
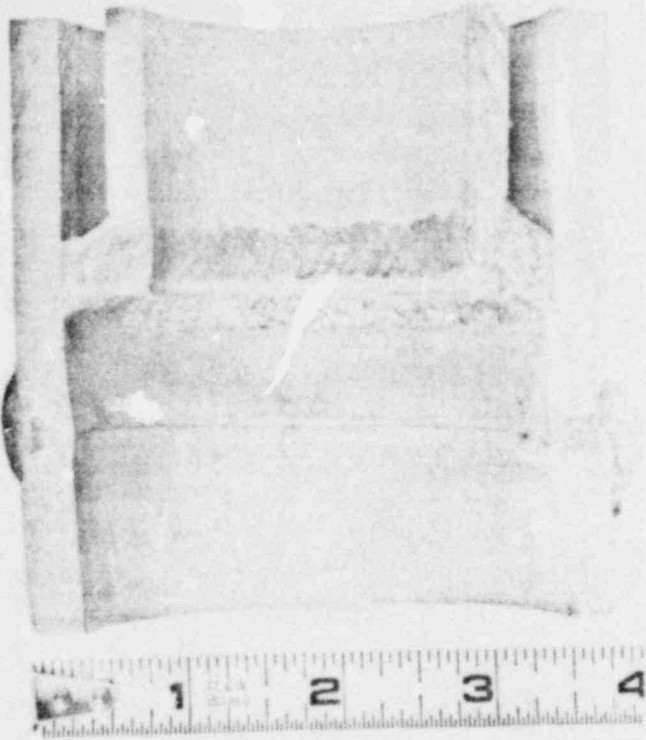
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Received w/Ltr Dated 6-17-71



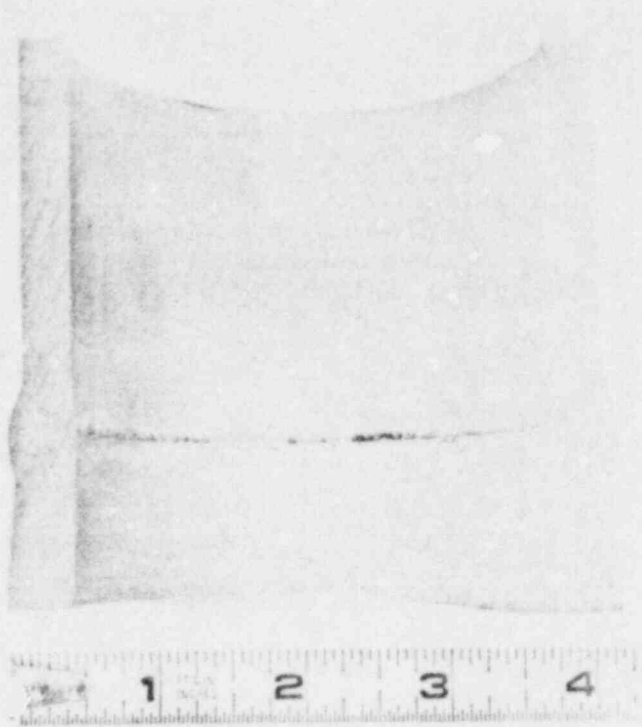
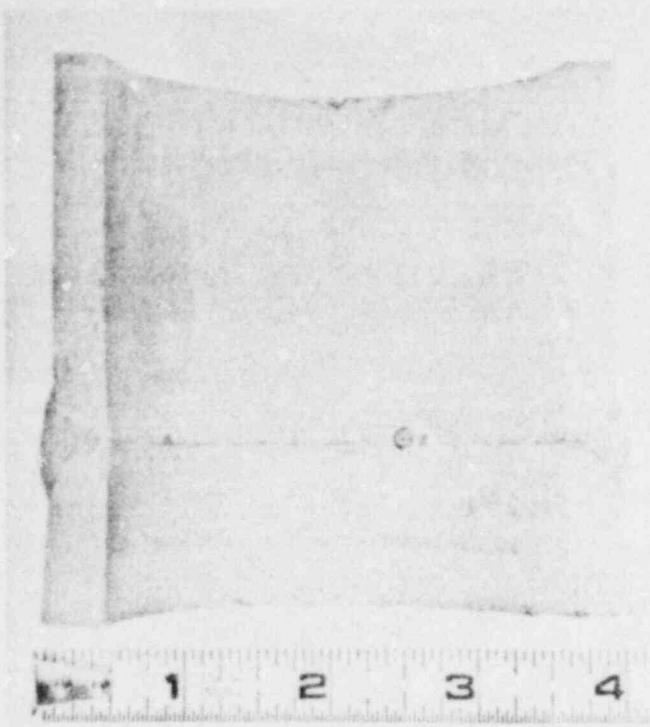
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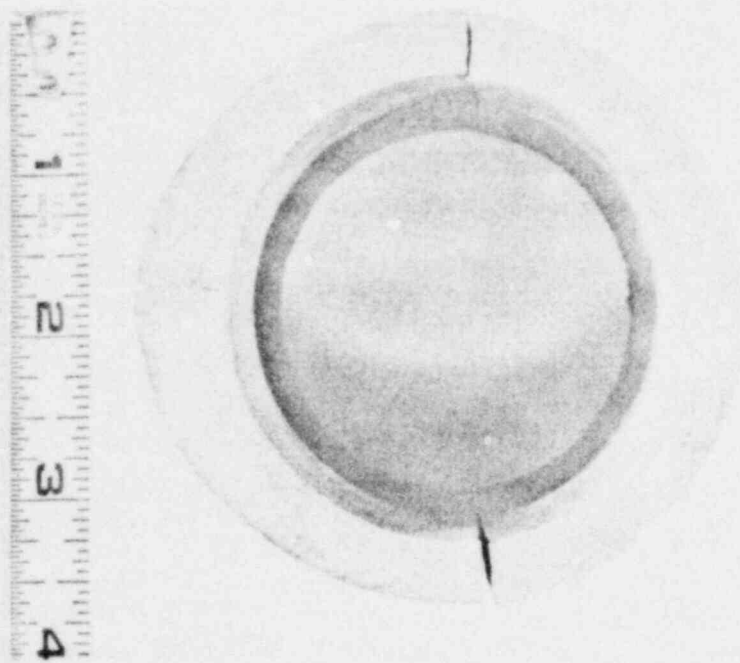


Inside of Sectioned Elbow

Received w/Ltr Dated 6-17-71



Inside of Sectioned Tee
(Note cracks in upper right picture)



End View of Sectioned Tee

Spec. of W. Lfr. Date 6-17-71

FROM: Consumers Power Company Jackson, Michigan 49201 Robert L. Heuster		DATE OF DOCUMENT: June 17, 1971	DATE RECEIVED June 21, 1971	NO.:
TO: Dr. Peter A. Morris		LTR. <input checked="" type="checkbox"/>	MEMO:	RE: <input type="checkbox"/>
CLASSIF: U		ORIG.:	CC:	OTHER:
POST OFFICE		1 signed & 4 addl cys rec'd		
REG. NO:		ACTION NECESSARY <input type="checkbox"/>	CONCURRENCE <input type="checkbox"/>	DATE ANSWERED:
FILE CODE:		NO ACTION NECESSARY <input type="checkbox"/>	CC - MENT <input type="checkbox"/>	BY:
DESCRIPTION: (Must Be Unclassified) Ltr reporting an incident in which a 3-inch tee that was removed from w/lds contained four slight cracks w/atch Sketch of Removed Section of		50-155		
ENCLOSURES: 3-inch SCH80.....		REFERRED TO	DATE	RECEIVED BY
REMARKS:		Ziemann w/2 cys for ACTION	6-21-71	
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		2045		

U.S. ATOMIC ENERGY COMMISSION

MAIL CONTROL FORM FORM AEC-3265 (8-60)