Station Support Department

GL 88-01

PECO ENERGY

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U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Subject: Peach Bottom Atomic Power Station, Units 2 and 3
Response to Questions Regarding a Leak in the Reactor Water Cleanup System (RWCU) Piping

Dear Sir:

In a conversation between M. C. Kray (PECO Energy) and J. W. Shea (U. S. Nuclear Regulatory Commission (USNRC)) on November 13, 1995, details concerning a leak in the Reactor Water Cleanup (RWCU) System piping were discussed. In that conversation, the USNRC provided five questions to which PECO Energy was requested to respond. Each question is restated below followed by PECO Energy's response:

USNRC Question Number 1:

What were the operating conditions for the pipe in which the crack was found, i.e., pressure and temperature?

PECO Energy Response:

On November 9, 1995, a leak was discovered during the performance of a contaminated pipe walkdown procedure in the Peach Bottom Atomic Power Station (PBAPS), Unit 3 RWCU System piping. This leak was located near an elbow-to-pipe weld in the return portion of the RWCU System piping at the inlet to the final stage of the Regenerative Heat Exchanger (see Attachment). The internal pressure of the piping at the location of the leak is estimated to be 1050 psig. The normal operating temperature at the inner diameter of the leak location is estimated to be 330°F.

USNRC Question Number 2:

What were the results of the non-destructive examination?

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PECO Energy Response:

In an effort to expedite repair of the weld and to minimize radiation worker exposure, no Ultrasonic Testing (UT) was performed while the piping was intact. In the process of removing the piping, the pipe was cut too close to the leak such that no UT could be performed at the leak location. Rather, a dye penetrant examination of the inner diameter of the pipe revealed a crack on the circumference at the top inside of the pipe. The crack was 1.3 inches and was adjacent to the weld on the pipe side. Additionally, the dye penetrant confirmed three longitudinal cracks of lengths .65, .75, and .80 inches at a location of 90 degrees from the top of the pipe on the elbow side of the weld. These longitudinal cracks were within a one inch circumferential band on the piping. Sufficient pipe length was available to confirm the presence of these longitudinal cracks with UT. All cracking was attributed to Intergranular Stress Corrosion Cracking (IGSCC).

An approximate 5-foot section of the piping was removed for examination and repair. This section included two elbows and the four elbow-to-pipe welds. A UT of a second elbow weld identified four longitudinal cracks. Two cracks were on each side of the weld and were .65 inches. These longitudinal cracks were within a one inch circumferential band on the piping. An examination of the remaining two elbow welds revealed no IGSCC indications.

USNRC Question Number 3:

Provide a discussion regarding the replacement of the piping, the type of piping that is being replaced, and the Intergranular Stress Corrosion Cracking susceptibility of the piping being replaced.

PECO Energy Response:

The repair was completed, and the RWCU System was placed back in service on November 12, 1995. The removed pipe and elbows were Type 304 stainless steel. The piping was fabricated by the Regenerative Heat Exchanger vendor and was furnished as an assembled unit with 3 stacked heat exchangers. The section of replaced piping is U-shaped, 4-inch nominal diameter, Schedule 80 pipe, which includes two elbows. This section of piping connects the shell ends of the middle and upper heat exchangers. The pipe-to-shell welds were not replaced. The piping was replaced with new pipe and fittings composed of Type 304L stainless steel which is not susceptible to IGSCC. The weld filler metal is Type 308. The use of this filler does not permit the welds to be improved above a Category G weld. A Category G weld is defined in Generic Letter 88-01, "NRC Position on Intergranular Stress Corrosion Cracking (IGSCC) in BWR Austenitic Stainless Steel Piping."

USNRC Question Number 4:

Are similar cracks occurring on the PBAPS, Unit 2 piping? Are any associated exams planned?

PECO Energy Response:

No cracks are known to exist in the PBAPS, Unit 2 RWCU System outboard of the containment isolation valves. As a result of this event, two welds, similar to the welds which experienced IGSCC in PBAPS, Unit 3, will be examined on the PBAPS, Unit 2 RWCU System. These welds will be examined as a part of the GL 88-01 inspections planned for the current cycle at PBAPS, Unit 2.

USNRC Question Number 5:

Are any sample expansions planned? When would these exams be performed?

PECO Energy Response:

As stated previously, the leak (later confirmed as IGSCC) was identified as part of the contaminated pipe walkdown procedure, which is outside of the Generic Letter 88-01 sample inspection program. However, as discussed in response to Question 2, an additional three welds were inspected.

If you have any questions, please contact us.

Very truly yours,

D. B. Helker /for

G. A. Hunger, Jr.
Director - Licensing

Attachment

cc: T. T. Martin, Administrator, Region I, USNRC
W. L. Schmidt, USNRC Senior Resident Inspector, PBAPS

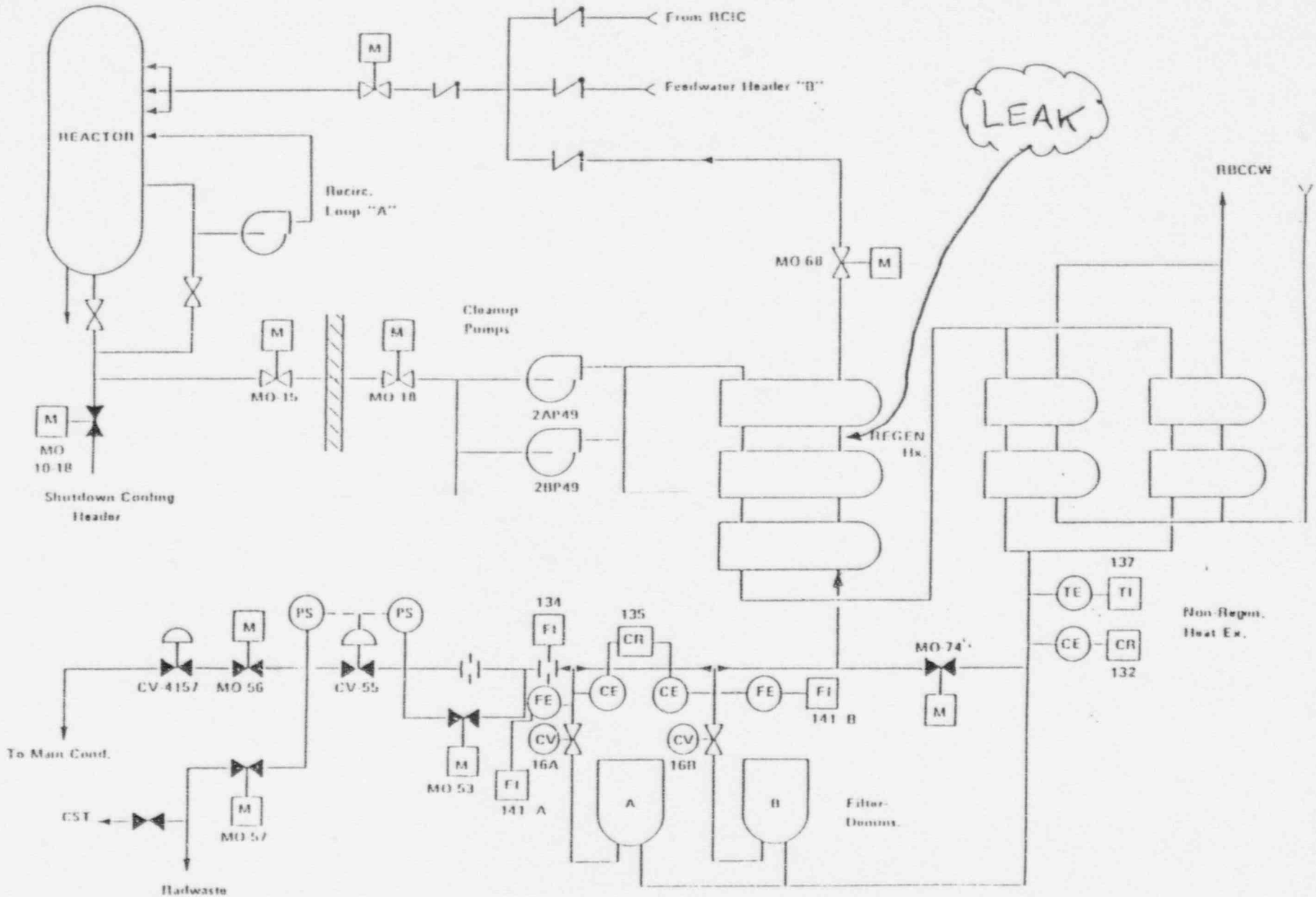
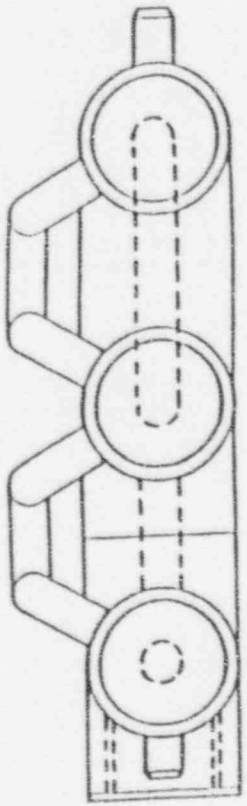


Figure 11-1-D1
Reactor Water Cleanup
Simplified Diagram



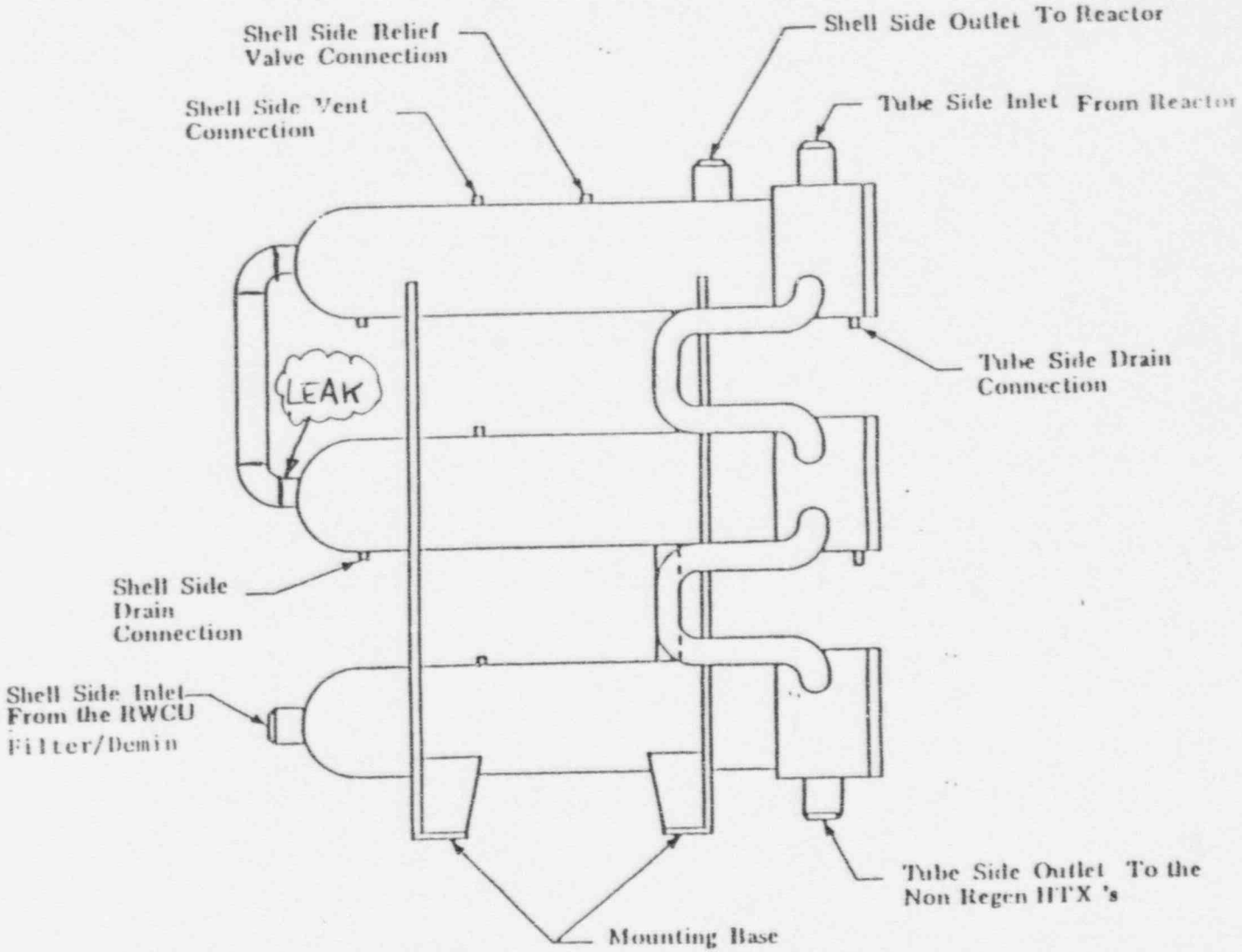


Figure 11-1-C1
Regenerative Heat Exchanger Set