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U.S. Nuclear Regulatory Commission
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Licensee Event Report #90-004-0, Docket #050237 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10 CFR 50.73(a(2)(i)(B).

E.D. Eenigenburg
Station Manager
Dresden Nuclear Power Station

EDE/ade

Enclosure

cc: A. Bert Davis, Regional Administrator, Region III
File/NRC
File/Numerical

(ZDVR/1)

IE22

LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1)	Docket Number (2)	Page (3)
Dresden Nuclear Power Station, Unit 2	0 5 0 0 0 2 3 7	1 of 0 9

Title (4) Additional Volumes Added to Type B and C Local Leak Rate Testing Program Due to a Self-Assessment Initiative

Event Date (5)			LER Number (6)			Report Date (7)			Other Facilities Involved (8)	
Month	Day	Year	Year	Sequential Number	Revision Number	Month	Day	Year	Facility Names	Docket Number(s)
									Dresden Unit 2	0 5 0 0 0 2 3 7
0 7	2 0	9 0	9 0	0 0 4	0 0	0 8	1 5	9 0	Dresden Unit 3	0 5 0 0 0 2 4 9

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)			
POWER LEVEL (10) 0 9 2		___ 20.402(b)	___ 20.405(c)	___ 50.73(a)(2)(iv)	___ 73.71(b)
		___ 20.405(a)(1)(i)	___ 50.36(c)(1)	___ 50.73(a)(2)(v)	___ 73.71(c)
		___ 20.405(a)(1)(ii)	___ 50.36(c)(2)	___ 50.73(a)(2)(vii)	___ Other (Specify in Abstract below and in Text)
		___ 20.405(a)(1)(iii)	X 50.73(a)(2)(i)	___ 50.73(a)(2)(viii)(A)	
		___ 20.405(a)(1)(iv)	___ 50.73(a)(2)(ii)	___ 50.73(a)(2)(viii,(B)	
		___ 20.405(a)(1)(v)	___ 50.73(a)(2)(iii)	___ 50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

Name	TELEPHONE NUMBER
John Geiger, Technical Staff Engineer Ext. 2610	AREA CODE 8 1 5 9 4 2 - 2 9 2 0

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

___ Yes (If yes, complete EXPECTED SUBMISSION DATE) X NO

Expected Submission Date (15): Month | Day | Year

ABSTRACT (Limit to 1400 spaces, i.e, approximately fifteen single-space typewritten lines) (16)

At 1245 hours on July 20, 1990, with Unit 2 at 92% power and Unit 3 at 99% power, a self-assessment of the Primary Containment Local Leak Rate Testing (LLRT) program concluded that the Units 2 and 3 Reactor Building Closed Cooling Water (RBCCW) Primary Containment inlet piping LLRT configuration was inadequate, and that the Units 2 and 3 Control Rod Drive (CRD) to Reactor Recirculation System hydrostatic test line and a Unit 2 Suppression Chamber narrow range level transmitter gasketed flange were not included in the primary containment LLRT program. An orderly Unit shutdown was then initiated for both Units 2 and 3. The shutdowns continued until a temporary waiver of compliance was granted from the NRC at 1850 hours on July 20, 1990. Corrective actions included performing leak checks on the CRD and Suppression Chamber pathways, and establishing administrative controls for the remainder of each operating cycle for the RBCCW pathways. These pathways will also be formally included into the LLRT program. The safety significance of this event was minimal due to the satisfactory leak checks performed on the previously untested Suppression Chamber pathway and the system configuration of the CRD and RBCCW pathways. A previous event involving an LLRT design basis concern was reported under LER 89-31 / 050237.

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor (BWR) - 2527 MWt rated core thermal power.

Nuclear Tracking System (NTS) tracking code numbers are identified in the text as (XXX-XXX-XX-XXXXX)

EVENT IDENTIFICATION

Additional Volumes Added to Type B and C Local Leak Rate Testing Program Due to a Self-Assessment Initiative.

A. CONDITIONS PRIOR TO EVENT

Unit(s): 2(3) Event Date(s): July 20, 1990 Event Time: 1340 Hours

Reactor Mode(s): N (N) Mode Name(s): Run(Run) Power Level(s): 92%(99%)

Reactor Coolant System (RCS) Pressure(s): 1004 psig (1004 psig)

B. DESCRIPTION OF EVENT

At 1245 hours on July 20, 1990, with Unit 2 at 92% power and Unit 3 at 99% power, subsequent to a self-assessment of the Dresden Primary Containment Local Leak Rate Testing (LLRT) program, it was concluded that the current LLRT program was inadequate. The self-assessment had been previously initiated as part of a corporate goal to review the Dresden, Quad Cities, and Zion Stations' LLRT programs. This project was first begun at the Quad Cities site with the station specific review consisting of the following primary steps:

- Research of the plants 10 CFR 50 Appendix J, Commitments and Policies,
- Compilation of physical data on containment isolation valves, penetrations and pathways, and
- Review of each containment pathway, utilizing the above information to document all testing requirements along with their regulatory and technical basis.

Upon completing the Quad Cities review in December 1989, seven Quad Cities systems were identified as not conforming to current LLRT policies. A review of these untested pathways was then performed against the Dresden LLRT program. This review concluded that three of the previously identified Quad Cities systems were not included in the Dresden LLRT program. LLRTs of these three systems were then promptly completed in December, 1989, on Dresden Units 2 and 3. All three systems tested yielded satisfactory results. These previous concerns were reported in LER 89-31/050237.

One of the seven systems previously identified at Quad Cities involved the inlet and outlet to Primary Containment of the Reactor Building Closed Cooling Water (RBCCW)[CC] system (Dresden containment penetrations X123 and X124). Initially, in December, 1989, this system was not identified as a Dresden concern due to the fact that the RBCCW system has been included in the Dresden LLRT program since 1984. However, during the Dresden specific review, further study of this system revealed a potential concern. This specific concern along with the others found during the Dresden review are explained later in this report.

The Dresden specific study was completed by the Support Services Staff and preliminarily reviewed with Station personnel on July 18, 1990. The potential concerns brought up were then studied and subsequently verified by station personnel on July 20, 1990. Consequently, at 1245 hours on July 20, Primary Containment operability was classified as indeterminate as a conservative measure in accordance with Technical Specification 3.7.A.2, which states that the Primary Containment integrity shall be maintained at all times when the reactor is critical except during low power physics testing. Orderly shutdowns were also initiated for both Units 2 and 3 per Technical Specification 3.0.A, which states that in the event a Limiting Condition for Operation cannot be satisfied because of circumstances in excess of those addressed in the specification, the unit shall be placed in at least hot shutdown within 12 hours and in cold shutdown within the following 24 hours. At 1340 hours, an Emergency Notification System (ENS) call was completed. Generating Station Emergency Plan (GSEP) Unusual Events were also declared on both Units.

The concerns stemming from the Dresden specific review are listed below.

1. RBCCW LLRT Volume Concern.

   Although the Dresden RBCCW inlet and outlet piping to and from primary containment has been included in the Dresden LLRT program since 1984, the inlet piping LLRT methodology did not conform with current LLRT practices at the newer Commonwealth Edison sites. The inlet RBCCW line consists of a motor operated valve (MO 2(3)-3702), a manual isolation valve (2(3)-3799-128) which is normally open during operation, and a check valve (2(3)-3769-500) located within the Primary Containment (see Figure 1). Initially, this system was designed as a closed loop system and did not include LLRT test taps. Subsequent to a 1982 NRC exemption request review, a modification had been performed in 1984 to add test taps to the RBCCW inlet and outlet lines to provide for LLRT capabilities. However, the test taps which were added on the inlet line were intended only to provide testing capabilities of the motor operated valve (2(3)- 3702) and the manual isolation valve (2(3)-3799-128). The current valve configuration was not intended to provide testability of inboard check valve (2(3)-3769-500). In addition, the current LLRT methodology did not provide adequate venting capabilities downstream of the (MO 2(3)-3702) valve.

2. Control Rod Drive (CRD)[CD] to Reactor Recirculation [AD] System Hydrostatic Test Line Concern.

   The Dresden specific LLRT study revealed that Units 2 and 3 have a one inch line from the CRD system penetrating primary containment which had not previously been included in the LLRT program (see Figure 2). This concern involves a line which when valved in provides pressurized water from the CRD charging water line to the pump suction lines of the Reactor Recirculation system for the purpose of hydrostatically testing the Reactor Recirculation pump seals. This line is equipped with 4 inboard isolation valves (2 valves per reactor recirculation loop) which are normally closed and 2 outboard valves arranged in parallel which are also normally closed.

3. Suppression Chamber Narrow Range Level Instrument Concern.

   The study also revealed that the Dresden Units 2 and 3 Suppression Chamber narrow range level instrument piping are equipped with a gasketed flange which is exposed to Suppression Chamber atmosphere (see Figure 3). This particular flange was not previously challenged by an LLRT on Unit 2. The Dresden Unit 3 Suppression Chamber narrow range level transmitter flange was challenged during the latest Primary Containment Type A Integrated Leak Rate Test (ILRT) performed in February, 1990; therefore, the similar Unit 3 Suppression Chamber instrument flange was not a concern.

The NRC Resident Inspector, and other Region III and Nuclear Reactor Regulation (NRR) staff officials, were promptly notified of these concerns. The decision was then made to seek Temporary Waivers of Compliance from Technical Specification requirements to test these lines. Corrective and Compensatory actions were also initiated; administrative controls were implemented to control and ensure the integrity of the RBCCW system piping during a postulated design basis Loss of Coolant Accident (LOCA), and preparations were made to LLRT the Unit 2 Suppression Chamber narrow range level instrument flange. In addition, preparations were made to cap the CRD lines and perform corresponding leak checks.

At 1730 hours on July 20, a teleconference was held between Station, Engineering, Nuclear Licensing, and NRC personnel. During this teleconference, the Station requested that the leak rate testing requirements for the specific components described above be extended on a one time basis to facilitate continued operation and the completion of corrective and compensatory actions. A verbal Waiver of Compliance from the Technical Specification requirements was then granted at 1850 hours on July 20, 1990. This verbal waiver was granted for five containment pathways, two of which involved the Units 2 and 3 RBCCW supply lines to the Primary Containment. The remaining three pathways, which included the Unit 2 Suppression Chamber level instrument flange and the Units 2 and 3 CRD test lines to the Reactor Recirculation system, were granted a 48 hour waiver of compliance until repairs and testing could be completed. These waivers were given with the condition that a Technical Specification amendment request concerning the RBCCW pathways would be completed for transmittal to the NRC by July 27, 1990. At this time the orderly Unit shutdowns were halted.

The Unit 2 Suppression Chamber narrow range level instrument flange was promptly tested at 2000 hours on July 20, 1990. The volume of piping which contains the flange gasket was pressurized with air to 48 psig and then leak checked using a soap bubble solution. No indications of leakage were observed from the gasket or in the vicinity of the flange.

The CRD to Reactor Recirculation lines on Units 2 and 3 (penetration x139) were subsequently cut and capped outside of containment. The Unit 3 line was cut and capped on July 20 under the direction of work request D94132. A leak check was then performed with air at 48 psig using a soap bubble solution. All potential leakage paths on the line were inspected yielding no signs of any observable leakage. The Unit 2 line was cut and capped on July 21 under the direction of work request D94133. The newly installed cap was then leak checked utilizing reactor recirculation system pressure. No leakage was observed.

C. APPARENT CAUSE OF EVENT

This event is reported in accordance with 10 CFR 50.73 (a)(2)(i)(B), which requires the reporting of any condition prohibited by the Technical Specifications. As stated previously, section 3.0.A of the Technical Specifications were entered and orderly Unit shutdowns were initiated; NUREG 1022 requires classification of section 3.0.A entries in accordance with the LER rule.

The root cause of these concerns was attributed to a management deficiency, in that the penetrations involved were not properly identified and incorporated into the Dresden LLRT program subsequent to the of 10CFR50 Appendix J.

D: SAFETY ANALYSIS OF EVENT

As described in the Technical Specification Bases, dose calculations indicate that the accident leak rate could be allowed to increase to about 3.2 weight%/ day before the guideline thyroid dose value given in 10 CFR 100 would be exceeded. However, the maximum allowable leak rate as stated in the Technical Specifications (La) of 1.6 weight%/day provides an additional margin of safety to assure the health and safety of the general public. Additional margin is achieved by establishing the allowable measured operational leak rate at 75% of 1.6 weight%/ day. A leak check performed on the Unit 2 Suppression Chamber level instrument flange gasket yielded zero leakage. The CRD lines to the Reactor Recirculation piping were also leak checked subsequent to their being cut and capped. An as found test on these lines will be performed during the upcoming Unit 2 and 3 refuel outages. It should be noted that these lines are equipped with manual isolation valves as shown in figure 2. For these reasons, the safety significance of these previously untested pathways is minimal.

Although Units 2 and 3 have been and are currently operating with an inadequately tested RBCCW pathway, the safety significance and potential consequences involving these RBCCW pathways remain minimal, as described below.

The RBCCW system contains two six inch lines that penetrate Primary Containment. The supply (inlet) line is isolated via a check valve inside and a motor-operated gate valve outside of Primary Containment. The return line contains two remotely operated valves, one inside and one outside of Primary Containment.

In addition to the two containment isolation valves on each line, other barriers exist. Inside of the containment, the piping forms a closed loop. Outside of containment, the piping is configured such that loop water seals are created. The system is filled with pressurized water during normal operation. The water serves as a seal for potentially leaking valves. Additionally, any through-wall water leaks would be easily detected either inside or outside of the Primary Containment through sump level alarms, system pressures, or tank levels.

The piping outside of the Primary Containment is connected to a vented surge tank. This tank receives makeup water that is supplied by multiple pumps connected to a common header, which provides suction from a 100,000 gallon storage tank. This configuration provides substantial assurance that the system would remain water-filled in post accident conditions.

A Probabilistic Risk Assessment (PRA) of the Dresden RBCCW configurations was also performed to further demonstrate that the probability of events which would result in a containment function failure, by the untested pathway, coincident with a LOCA are insignificant . Based on this evaluation, fission product barriers remain intact unless an extreme combination of coincident failures (which is highly improbable) occur. The probabilities calculated for the event in which containment function failure would occur under LOCA conditions were found to be insignificant (well below 1E-7 per year). A recirculation piping failure, RBCCW pipe failure inside containment, and a failure of the loop seal would have to occur in order to result in failure of the containment function. The probability of failure of the RBCCW system's containment function coincident with a LOCA is small and is therefore considered insignificant.

E. CORRECTIVE ACTIONS

Prompt action was taken on the CRD to Reactor Recirculation System piping on both Units by capping these lines outside of the Primary Containment. Leakage tests were then performed to ensure the integrity of these repairs. During the upcoming refuel outages, LLRTs of these pathways will also be performed (237-200-90-07001).

The Unit 2 Suppression Chamber narrow range level instrument flange was also promptly tested by performing a leak check of the gasket and flange. This test identified zero leakage.

Certain administrative controls were also implemented to control and ensure the integrity of the RBCCW system during postulated accident conditions. Under the guidance of Operating Order 10-90, the Operators have been directed to close the remotely operated valves on the RBCCW systems when the Reactor Recirculation Pumps trip during a postulated LOCA. The RBCCW pumps will be kept on if possible to ensure the system is filled with water and pressurized above containment pressure. Appropriate changes to annunciator response procedures were also made to provide for informing the Station Director if the RBCCW Expansion Tank HI/LO level alarm is received during a LOCA event so that field teams can be sent, as conditions permit, to check RBCCW piping outside the Primary Containment to ensure integrity. If conditions permit, Operators would also be dispatched to further isolate the RBCCW Primary Containment supply and return headers. These actions are to remain in effect until the RBCCW inlet to the Primary Containment LLRT volume can be properly tested.

The Technical Staff LLRT engineer will revise Dresden Technical Staff Surveillance (DTS) 1600-1, LLRT of Primary Containment Isolation Valves, to include all of the above mentioned previously untested volumes (237-200-90-07002). Dresden Administrative Procedure (DAP) 14-5, LLRT Program, will also be revised to require accounting of these new LLRT volumes in the Type B and C LLRT data bases (237-200-90-07003).

F. PREVIOUS EVENTS

LER/Docket Number	Title
89-031/050237	Additional Volumes Added to Type B and C Local Leak Rate Testing Due to Self-Assessment Initiative

This LER documented the previous LLRT concerns identified in December 1989 as part of the followup activities involved with the Quad Cities self assesment.

G. COMPONENT FAILURE DATA

As no component failures were involved, this section is not applicable.

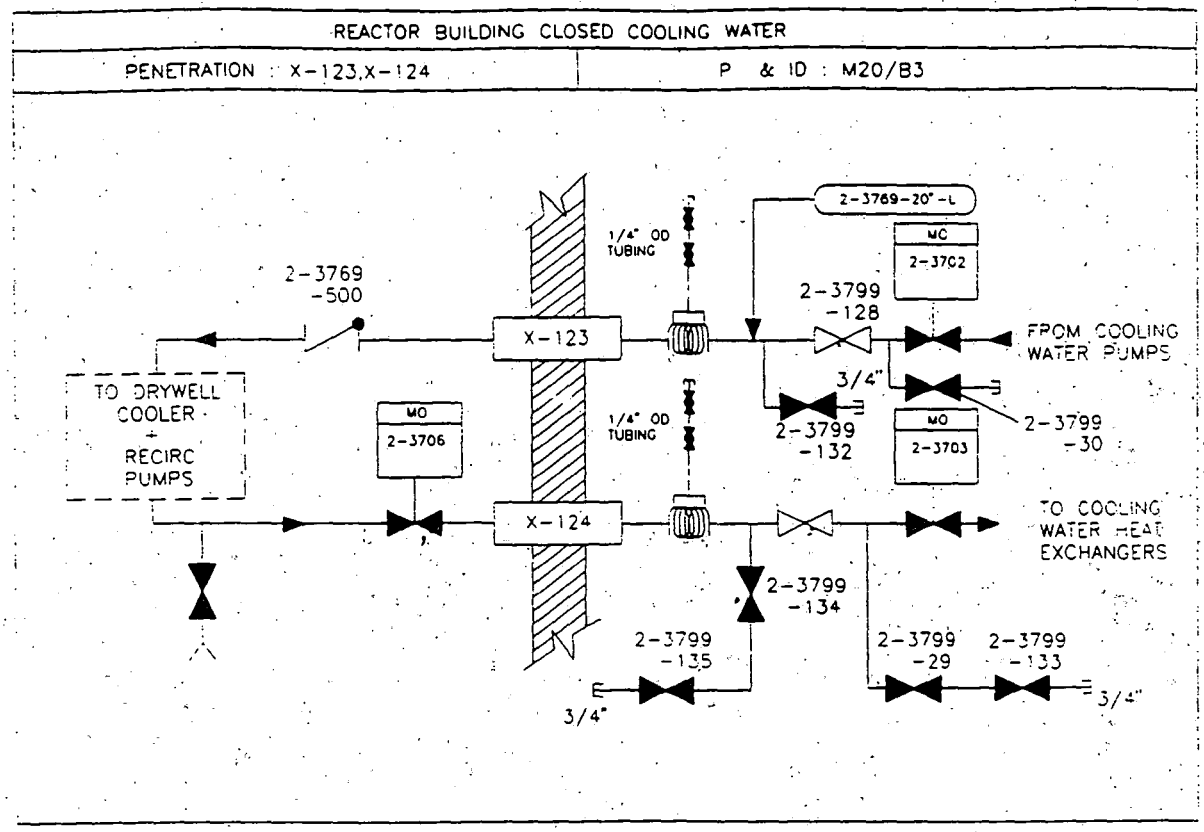

Figure 1

RBCCW Primary Containment Supply and Return Piping Configuration

Note: Unit 2 shown, Unit 3 configuration is similar.

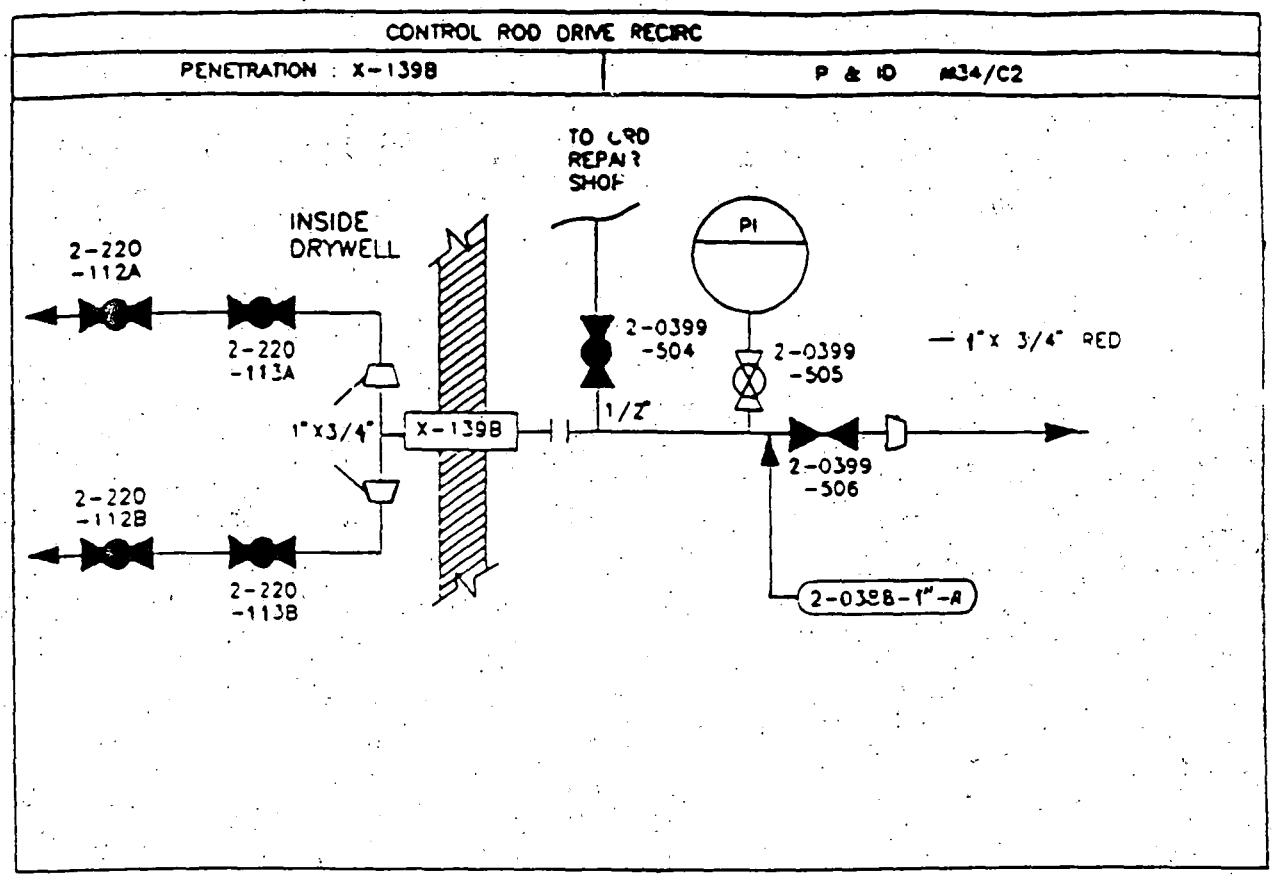

Figure 2

CRD to Reactor Recirculation Hydrostatic Test Line Configuration

Note: Unit 2 shown, Unit 3 configuration is similar with the exception that the 1/2" line to the CRD repair shop is only present on Unit 2.

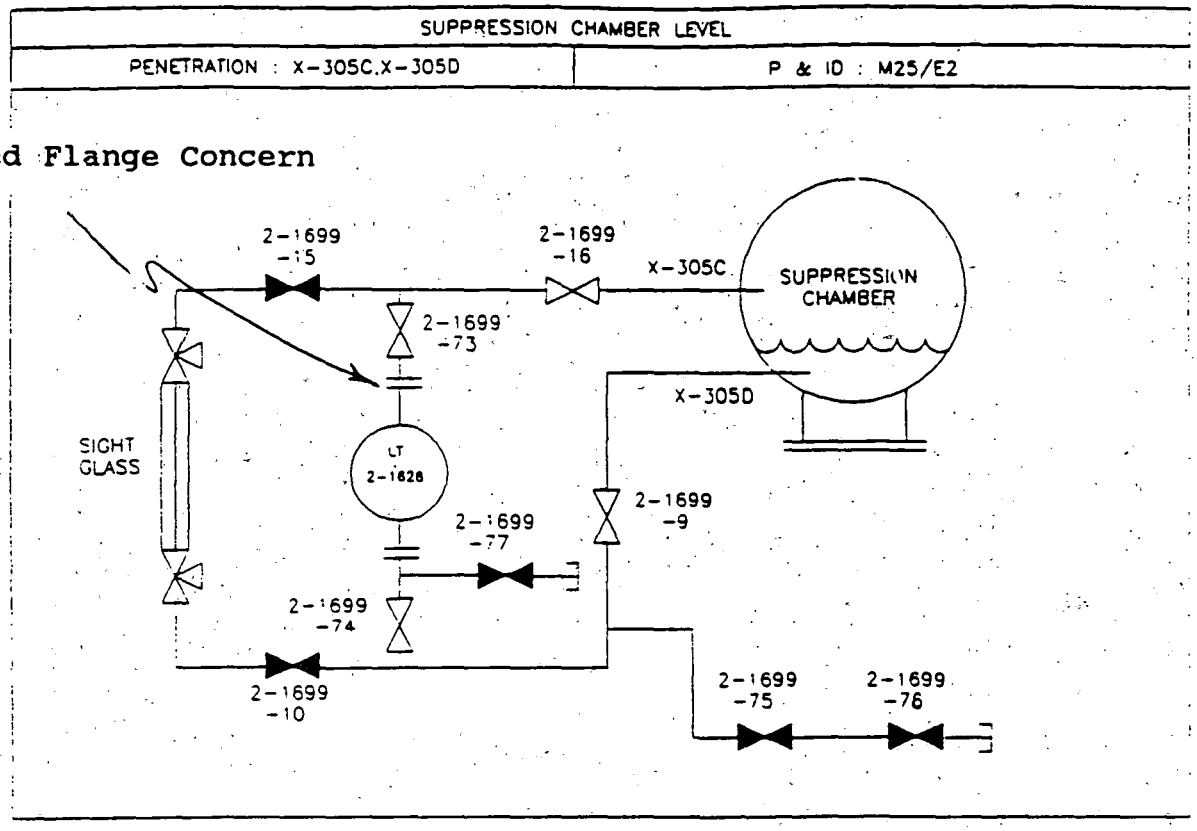

Figure 3

Unit 2 Suppression Chamber Narrow Range Level Sensing Line Configuraton