SIGNATURE PAGE

Activity Title: LDCR 97-0047 - Location of Cabinets C-3A(B) and C-4 Outside the CVAS Boundary - Rev. 1

The signatures below apply to the following marked items. (Each item should be marked YES or NO.)

PART A	- PRELIMINARY 10CFR50.59 SCREENING	X YES ___ NO
PART B,C,D	- 10CFR50.59 SAFETY SCREENING ENVIRONMENTAL IMPACT SCREENING RADIOACTIVE WASTE SYSTEMS SCREENING	X YES ___ NO
10CFR50.59 SAFETY EVALUATION		X YES ___ NO
ENVIRONMENTAL IMPACT EVALUATION		___ YES X NO
RADIOACTIVE WASTE SYSTEMS ADDITIONAL SAFETY EVALUATION		___ YES X NO
LICENSE DOCUMENT CHANGE REQUEST		X YES ___ NO

Preparer/Date JOHN Burke John P Burke 7-28-96
Print Name/Signature

Reviewer/Date DAVID VIERA [signature] 7/29/96
Print Name/Signature

Supervisor/Date PAUL GROSS Paul G. Gross 7/28/96
Print Name/Signature

Environmental Dept./Date * N/A
Print Name/Signature

* If there is no Environmental Impact Evaluation required, this line may be marked NA by the preparer.

SUMMARY INFORMATION FOR 10CFR50.59 AND ENVIRONMENTAL IMPACT SCREENING AND EVALUATION

Activity Title: LDCR 97-0047 - Location of Cabinets C-3A(B) and C-4 Outside the CVAS Boundary - Rev. 1

1. Description of the proposed change

The proposed change will prescribe Local Leak Rate testing requirements for penetrations 53 & 65 to address these potential bypass leakage paths created by the location of cabinets C-3A(B) and C-4.

In response to NRC Question 480.36, LP&L stated that instrumentation lines through penetration 53 and 65, form a closed system outside containment, are seismically qualified, and terminate in an area exhausted through the filters of Controlled Ventilation Area System (CVAS). Therefore they do not need to be bypass leakage tested. The design of penetrations 53& 65 was approved by the NRC (SER) based on this information.

Contrary to the above the current plant configuration indicates that these lines terminate in C-3A(B) and C-4 cabinets which are outside CVAS boundary thus resulting in potential bypass leakage paths.

Waterford 3 FSAR will be updated to place the sensing lines in the Leak Rate Testing program, and include the isolation valves on monitoring lines for Type C testing. Additionally, the FSAR will be updated to clarify that the sensing lines meet the design criteria for a closed system for instrumentation lines outside containment.

Reg. Guide 1.11 provides guidance on design requirements for instrument lines penetrating primary reactor containment. The instrument lines up to the downstream isolation valves at penetrations 53 & 65 meet the requirements of Reg. Guide 1.11.

There is no guidance in Reg. Guide 1.11 for the design of instrumentation lines downstream of the outside containment isolation valve. ISA 67.02-1980 and ANSI/ANS-56.2/N271-1976 Section 3.6.2 provides the criteria to meet a closed system for instrumentation lines outside containment.

The sensing lines run from containment to a manual globe valve followed by an excess flow check valve. The lines terminate at C-3A(B) cabinets outside an area exhausted or filtered by CVAS. The instrumentation for sensing lines measure differential pressure between containment and annulus and send signal to CVR system, opening CVR-101 and CVR-201 in presence of vacuum inside containment.

The monitoring lines run from containment to a solenoid globe valve followed by an excess flow check valve. The lines terminate at C-4 cabinet outside an area exhausted or filtered by CVAS. The instrumentation for monitoring lines measure differential pressure between containment and annulus, and provide signal to the plant computer and containment purge. The solenoid valves, CVR 401A(B), normal position was changed to normally closed per OP-002-010.

The tubing for both sensing and monitoring lines up to the excess flow check valves are ASME safety Class 2, Seismic Category I. The sensing line tubing downstream of the isolation valves (CVR-302A&B) has been designed and built to seismic category 1, ASME Safety Class 3 requirements, and is located such that it would not be subjected to any jet impingement loads, pipe whip or missiles in accordance with ANSI/ANS-56.2/N271-1976 and ISA 67.02-1980.

This 50.59 revision is adding clarification that the CVR sensing lines constitute a closed system for instrument lines outside containment in accordance with ANSI/ANS-56.2/N271-1976 and ISA 67.02-1980.

2. Documents and FSAR sections reviewed

Reg. Guide 1.11
FSAR Sections 1.8, 1.9.37, 6.2.4, 6.3.3.8, 7.1, Tables 3.9-9, 6.2.32, 6.2-43
ANSI/ANS-58.9-1981
ANSI/ANS-56.2/N271-1976
ANSI N658-1976
ASME Code, Section III, Subsection NC & ND, '71 Ed. through Winter '72 Ad.
Mercury Isometric Drawings V 10.65-1001-4, 3, 11 & 12
Drawing G-1113, Sh. 2 & 4
Drawing B-430, Sh. DP-26 & BM-01, DP-31
Ebasco Letter LW3-1128-83
Spec LOU-1564.407
Tech Manual 457000494
SER 6.2.4 (NUREG 0787)
SER Supp. 9 Issue #2 (NUREG 0787)
SRP 6.2.4 (NUREG 0800)
FSAR Question 480.26
Seismic Qualification Report SQ-IC-61

Tech Spec. 3/4.6.1.2
TRM Table 3.6-2
TRM Table 3.6-1
SK 407, Sh. 244

PEIR OM-129
OP-002-010
ISA-67.02-1980
Draft Reg. Guide - Instrument Sensing Lines Dated March 1982.

3. Function of affected equipment/procedure

The Containment Vacuum Relief (CVR) system protects the vessel from excessive differential pressure when the containment pressure is lower than the annulus pressure. The CVR system acts to equalize pressure across the containment during an inadvertent spray which lowers containment pressure. Penetrations 53 and 65 each contain two instrument lines. One senses differential pressure across the containment vessel and provides a signal to actuate the CVR system and the other monitors the differential pressure and provides an input to the plant computer and containment purge. The sensing line contains a manually operated valve and an excess flow check valve, located outside containment. Due to its primary safety function, the sensing instrument lines of the CVR system are designated as "essential" thus, not requiring automatic containment isolation. The monitoring line contains a solenoid operated valve and an excess flow check valve, also located outside containment.

4. Impact of change on function of equipment/procedure

The proposed change will prescribe Local Leak Rate requirements to penetrations 53 & 65 to address these potential bypass leakage paths. Since the CVR sensing lines are designed and built to ASME Class 3, the CVR sensing lines constitute a closed system for instrument lines outside containment in accordance with ANSI/ANS-56.2/N271-1976 and ISA-67.02-1980 and will maintain its integrity during all Design Basis Events.

5. Brief summary of screening/evaluation results

This change will not affect the associated equipment and containment integrity. In addition, the radiological dose releases remain below acceptable limits because CVR-401A(B) will remain closed per OP-002-010. The proposed change will prescribe Local Leak Rate requirements to penetrations 53 & 65 to address these potential bypass leakage paths. The safety evaluation did not raise any unreviewed safety questions.

PART A - PRELIMINARY 10CFR50.59 SCREENING

Activity Title: LDCR 97-0047 - Location of Cabinets C-3A(B) and C-4 Outside the CVAS Boundary - Rev. 1

Does the proposed change or activity represent:

YES ____ NO X (1) A change or activity which, in its entirety, has received prior NRC approval?

YES ____ NO X (2) A change or activity which, in its entirety, is addressed by an existing approved 10CFR50.59 evaluation?

YES ____ NO X (3) A change or activity which, in its entirety, constitutes a change to the QA Program, Emergency Plan, Security Plan, Operator Requalification Program?

YES ____ NO X (4) A clearly editorial change or typographical correction?

YES ____ NO X (5) A correction of a nonconformance which results in preserving any applicable licensing basis?

YES ____ NO X (6) A change to the Technical Specifications and/or Operating License?

YES ____ NO X (7) A change to the approved fire protection program which would adversely affect the ability to achieve and maintain safe shutdown in the event of a fire, or a significant change to the basemat cracking surveillance program?
Provide an explanation and references for any YES answer below:

_____

_____

_____

_____

YES X NO ____ A change to the FSAR is required for this proposed change or activity. If yes, complete page 7 of Attachment I.

LICENSE DOCUMENT CHANGE REQUEST FORM

LDCR NO. LDCR 97-0047 - Location of Cabinets C-3A(B) and C-4 Outside the CVAS Boundary - Rev. 1

FSAR SECTIONS, TABLES, OR FIGURES REQUIRING CHANGES:

FSAR Section 1.9.37	
FSAR Section 7.1.2.7	
FSAR Table 3.9-9	
FSAR Table 6.2-32	
FSAR Table 6.2-43	
TRM Table 3.6-1	
TRM Table 3.6-2	

Received and logged by LDCC:

Initials: _____ Date: _____ SE #: _____

(2) Continuing Leak Reduction -- Establish and implement a program of preventive maintenance to reduce leakage to as-low-as-practical levels. This program shall include periodic integrated leak tests at intervals not to exceed each refueling cycle.

Response

LP&L has instituted a program to maintain leakage rates of systems outside containment which could contain radioactivity to as low as practical. To support this program, a review of plant systems has identified the systems outside containment which could potentially contain highly radioactive fluids following a serious accident.

A. Systems included in the leak reduction program:

1) Containment Spray System - that portion of the system located outside containment that would be in use in the recirculation mode of operation including that suction piping from the Safety Injection Sump up through the pumps and heat exchangers to the containment isolation valve.

2) Low Pressure Safety injection - the piping outside of containment in use during operation in the shutdown cooling mode.

3) High Pressure Safety Injection - the piping from the recirculation suction header through the pump up to containment.

4) Hydrogen Analyzer System - that portion of piping from the outside containment isolation valve to the Hydrogen Analyzer Panels, along with the piping to the containment atmospheric grab sampler in the post-accident sampling area and return piping back to the containment isolation valve.

5) Post-accident Sampling System (PASS) - For the liquid portion of the system, testing includes the piping from the SI sump suction header through the sample pump to the PASS skid packages back to the outside containment isolation valve. Also included is the piping from the RCS Hot leg Sample outside containment isolation valve to the PASS skid package and back to the containment isolation valve. For the gas portion of the system, also included is that portion of the tubing from the liquid/gas separator through the skid package back to the outside containment isolation valve.

6) Containment Vacuum Relief (CVR) - the essential instrument tubing from outside containment to the differential pressure instruments.

B. Systems excluded from the program (their isolation will not preclude any option of cooling the reactor core nor prevent the use of needed safety systems):

1) The Gaseous Waste Management System. This system isolates on CIAS and is not required for use post-accident. The Reactor Coolant Vent System provides RCS venting as discussed in Subsection 1.9.18.

R G. 1.11 Instrument Lines Penetrating Primary Reactor Containment (3/10/71)

The recommendations of Regulatory Guide 1.11 are complied with by the following design:

a) A manually operated valve shall be installed as close to the containment as practicable and,

b) Essential system instrument lines shall have a ~~A~~ self actuated excess flow check valve ~~shall be~~ installed as close to the containment as practicable downstream of the manually operated valve. ~~This excess flow check valve will possess an equalizing line. The equalizing line will have a needle valve built in to keep leakage pass the check valve within the allowable limits in case of an accident.~~ Upon high pressure in containment, the excess flow check valve will close. Since the excess flow check valve is orificed, the sensing line will equalize causing the excess flow check valve to open and permit normal operation of the monitoring system. The instrument lines downstream of the excess flow check valves are designed to Safety Class 3, Seismic Category I, therefore meet a closed system for instrument lines outside containment. R1

c) Nonessential system instrument lines will be fit with solenoid valves in lieu of manual valves. The solenoid valves will close on ~~SIAS~~ CIAS ~~and shall be reopened manually from a local control station~~.

~~Upon high pressure in the containment, the excess flow check valve will close And stay closed if there is a break in the line downstream of the valve. If there is no break, the equalizing line will allow equalization of pressure on either side of the check valve. This will allow the check valve to open and permit normal operation of the monitoring system.~~

d) The containment extreme wide range pressure instrumentation for post accident monitoring consists of a sealed liquid filled system with bellows, following the guidelines in ANS-56.2/N271-1976.

R.G. 1.22 Periodic Testing of Protection Systems Actuation Function (2/17/72)

Testing of the RPS and ESFAS in compliance with Regulatory Guide 1.22 is described in sections 7.2 and 7.3.

R.G. 1.29 Seismic Design (6/7/72)

The instrumentation and control of safety-related systems and safety-related portions of systems comply with Regulatory Guide 1.29.

R.G. 1.30 Quality Assurance Requirements For the Installation, Inspection and Testing of Instrumentation and Electric Equipment (08/11/72)

References discussing comparison of the design with the recommendations of Regulatory Guide 1.30 is provided in Table 8.1-3.

R.G. 1.40 Qualification Test of Continuous Duty Motors Installed Inside the Containment of Water Cooled Nuclear Power Plants (3/16/73

A comparison of the design with the recommendations of Regulatory Guide 1.40 is provided in section 3.11.

TABLE 3.9-9 (Sheet 14 of 19)

NON-NSSS SUPPLIED ACTIVE VALVES AND PUMPS

Equipment	Tag No.	Quantity	Type	Operator	Manufacturer	Safety Class	System Design Rating	System Operating Conditions	Size	Function
	2FP-V128 2FP-V130	2	Check	-	TRW Mission	2	175 psig 120°F	130 psig 100°F	3"	Operate
Boron Management System										
Valves										
Containment Isolation	2BM-F108A/B 2BM-F109A/B	2	Gate	Diaphragm	ITT Grinnell	2	50 psig 263°F	5 psig 120°F	3"	Close
HVAC - Purge										
Valves										
	2HV-B150B 2HV-B151A 2HV-B152A 2HV-B153B 2HV-B154B 2HV-B155A	6	Butterfly	Piston	Fisher Controls	2	44 psig 300°F	44 psig 300°F	48"	Close
Vacuum Relief										
Valves										
	2HV-B156A 2HV-B157B	2	Butterfly	Piston	Fisher Controls	2	44 psig 300°F	44 psig 300°F	24"	Close
	2HV-V180A 2HV-V181B	2	Check	-	GPE Controls	2	44 psig 300°F	44 psig 300°F	24"	Operate
	2HV-E634A 2HV-E633B	2	Globe	Solenoid	Valcor	2	44 psig 300°F	44 psig 300°F	3/8"	Close
	3401	4	Check	--	Dragon	2	44 psig 300°F	44 psig 300°F	½"	Operate
CARS										
Valves										
Exhaust	2HV-F253A 2HV-F254B	2	Butterfly	Motor	Fisher Controls	2	Vac 150°F	Vac 150°F	4"	Open
	2HV-B167A 2HV-B168B	2	Butterfly	Motor	Fisher Controls	2	Vac 150°F	Vac 150°F	4"	Open
Supply	2HV-V184A 2HV-V185B	2	Check	-	GPE Controls	2	150 psig 261°F	Vac 150°F	4"	Operate

TABLE 6.2-32 (SHEET 60 OF 85) Revision 8 (5/96)

CONTAINMENT PENETRATIONS AND ISOLATION VALVES

(MODIFIED)
PENETRATION NO.: 53 TYPE[j]: II CLASS: D VENTED/DRAINED FOR TYPE "A" TEST[k]: NO TYPE FLUID[a]: CONTAINMENT ATMOSPHERE

VALVE TAG NO.: UNID EBASCO	CVRMVAAA301 A 2CA-V600	CVRMVAAA302A 3401	CVRISV0401 A 2HV-E634A	CVRMVAAA402A 3401
VALVE TYPE	GLOBE	EXCESS FLOW CHECK	GLOBE	EXCESS FLOW CHECK
VALVE OPERATOR	MANUAL	SELF	SOLENOID	SELF
ACTUATION MODE[g]: PRIMARY	MANUAL	SELF	SOLENOID	SELF
SECONDARY		NOT APPLICABLE		NOT APPLICABLE
VALVE POSITION[f]:				
NORMAL	OPEN	OPEN	OPEN	OPEN
SHUTDOWN	OPEN	OPEN	OPEN	OPEN
POST-ACCIDENT	OPEN	OPEN	CLOSED	~~OPEN~~ CLOSED
LOSS OF POWER TO ACTUATOR	NOT APPLICABLE	NOT APPLICABLE	CLOSED	NOT APPLICABLE
ACTUATION SIGNAL[e]:	NONE	NONE	CIAS	NONE
MAXIMUM CLOSURE TIME (SEC.)	NOT APPLICABLE	NOT APPLICABLE	5	NOT APPLICABLE
LINE SIZE (INCH)	½	½	½	½
ESSENTIAL[d]:	YES	YES	NO	NO
FLOW DIRECTION[b]:	EFFLUENT FROM CONTAINMENT	EFFLUENT FROM CONTAINMENT	EFFLUENT FROM CONTAINMENT	EFFLUENT FROM CONTAINMENT
LOCATION REFERENCE TO CONTAINMENT[c]:	OUTSIDE	OUTSIDE	OUTSIDE	OUTSIDE
POWER SOURCE (AC/DC)	NONE	NONE	AC-SA	NONE
APPROXIMATE LENGTH OF PIPE (FT.-IN.)[h]:	5	5	5	5
TYPE "C" TESTS[i]:	NO	NO	NO YES	NO
TEST ARRANGEMENT[o]:	NOT APPLICABLE		B430 Sheet DP-31	
SYSTEM	INSTRUMENT H&V	INSTRUMENT H&V	INSTRUMENT H&V	INSTRUMENT H&V
REMARKS				

TABLE 6.2-32 (SHEET 72 OF 85) Revision 8 (5/96)

CONTAINMENT PENETRATIONS AND ISOLATION VALVES

PENETRATION NO.: 65 (MODIFIED) TYPE[j]: II CLASS: D VENTED/DRAINED FOR TYPE "A" TEST[k]: YES* TYPE FLUID[a]: CONTAINMENT ATMOSPHERE

VALVE TAG NO.: UNID	LRTMVAAA202	LRTMVAAA204	CVRMVAAA301B	CVRMVAAA302B
EBASCO	2SA-V609	2SA-V611	2CA-V601	3401
VALVE TYPE	GLOBE	GLOBE	GLOBE	EXCESS FLOW CHECK
VALVE OPERATOR	MANUAL	MANUAL	MANUAL	SELF
ACTUATION MODE[g]: PRIMARY	MANUAL	MANUAL	MANUAL	SELF
SECONDARY	NONE	NONE		NOT APPLICABLE
VALVE POSITION[f]:				
NORMAL	LOCKED CLOSED	LOCKED CLOSED	OPEN	OPEN
SHUTDOWN	LOCKED CLOSED	LOCKED CLOSED	OPEN	OPEN
POST-ACCIDENT	CLOSED	CLOSED	OPEN	OPEN
LOSS OF POWER TO ACTUATOR	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
ACTUATION SIGNAL[e]:	NONE	NONE	NONE	NONE
MAXIMUM CLOSURE TIME (SEC.)				5
LINE SIZE (INCH)	1	1	½	½
ESSENTIAL[d]:	NO		YES	YES
FLOW DIRECTION[b]:	INFLUENT TO CONTAINMENT/ EFFLUENT FROM CONTAINMENT		EFFLUENT FROM CONTAINMENT	EFFLUENT FROM CONTAINMENT
LOCATION REFERENCE TO CONTAINMENT[c]:	OUTSIDE	OUTSIDE	OUTSIDE	OUTSIDE
POWER SOURCE (AC/DC)	NONE	NONE	NONE	NONE
APPROXIMATE LENGTH OF PIPE (FT.-IN.)[h]:	5	5	5	5
TYPE "C" TESTS[i]:	YES	YES	NO	NO
TEST ARRANGEMENT[o]:	**	NOT APPLICABLE		
SYSTEM	CONTAINMENT LEAKAGE RATE TEST CONNECTION AND INSTRUMENT H&V	CONTAINMENT LEAKAGE RATE TEST CONNECTION AND INSTRUMENT H&V	CONTAINMENT LEAKAGE RATE TEST CONNECTION AND INSTRUMENT H&V	CONTAINMENT LEAKAGE RATE TEST CONNECTION AND INSTRUMENT H&V

REMARKS
* YES FOR 2SA-V609
** REFER TO LOU 1564-G-164 SH1 (ZONE N-14)

CONTAINMENT PENETRATIONS AND ISOLATION VALVES

PENETRATION NO.: (MODIFIED) 65 (CONTINUED) TYPE[j]: II CLASS: D VENTED/DRAINED FOR TYPE "A" TEST[k]: YES* TYPE FLUID[a]: CONTAINMENT ATMOSPHERE

VALVE TAG NO.: UFSAR EBASCO	CVRISV0401B 2HV-E633B	CVRMVAAA402B 3401	LRTMVAAA201 2SA-V610	LRTMVAAA203 2SA-V612
VALVE TYPE	GLOBE	EXCESS FLOW CHECK VALVE	GLOBE	GLOBE
VALVE OPERATOR	SOLENOID	SELF	MANUAL	MANUAL
ACTUATION MODE[g]: PRIMARY	SOLENOID	SELF	MANUAL	MANUAL
SECONDARY		NOT APPLICABLE	NONE	NONE
VALVE POSITION[f]:				
NORMAL	OPEN	OPEN	LOCKED CLOSED	LOCKED CLOSED
SHUTDOWN	OPEN	OPEN	LOCKED CLOSED	LOCKED CLOSED
POST-ACCIDENT	CLOSED	~~OPEN~~ CLOSED	LOCKED CLOSED	LOCKED CLOSED
LOSS OF POWER TO ACTUATOR	CLOSED	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
ACTUATION SIGNAL[e]:	CIAS		NONE	NONE
MAXIMUM CLOSURE TIME (SEC.)	5	5		
LINE SIZE (INCH)	½	½	1	1
ESSENTIAL[d]:	NO	NO		
FLOW DIRECTION[b]:	EFFLUENT FROM CONTAINMENT	EFFLUENT FROM CONTAINMENT	EFFLUENT FROM CONTAINMENT	EFFLUENT FROM CONTAINMENT
LOCATION REFERENCE TO CONTAINMENT[c]:	OUTSIDE	OUTSIDE	OUTSIDE	OUTSIDE
POWER SOURCE (AC/DC)	AC-SB	NONE	NONE	NONE
APPROXIMATE LENGTH OF PIPE (FT.-IN.)[h]:	5	5		
TYPE "C" TESTS[i]:	NO YES	NO	NO	NO
TEST ARRANGEMENT[o]:	8430 Sheet DP-31		G-164 SH1 (L-12)	G-164 SH1 (M-14)
SYSTEM	CONTAINMENT LEAKAGE RATE TEST CONNECTION AND INSTRUMENT H&V	CONTAINMENT LEAKAGE RATE TEST CONNECTION AND INSTRUMENT H&V	CONTAINMENT LEAKAGE RATE TEST CONNECTION AND INSTRUMENT H&V	CONTAINMENT LEAKAGE RATE TEST CONNECTION AND INSTRUMENT H&V

REMARKS

* YES FOR 2SA-V610 AND 2SA-V612

TABLE 6.2-43 (Sheet 2 of 2)

15, 16, 17, 18, 19, 20, 21, 22	The Component Cooling Water Supply and return to the Containment Fan Cooler Units form a closed seismic Category I system inside of containment. Isolation valves in these penetrations will not be exposed to the containment atmosphere during a loss of coolant accident.
27, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 55, 56, 57, 58, 69,70	The Charging, High & Low Pressure Safety Injection, Safety Injection, Shutdown Cooling Suction, Containment Spray and ECCS Sump Suction penetrations are all connected to closed seismic safety class 2 systems outside of containment. These penetrations from the ECCS system will be in operation during a loss of coolant accident. The piping systems are designed for pressure and temperature equal to or greater than containment design pressure and tempemture. In all of these penetrations, except 32 thru 35, 40 &41 water pressure can be guaranteed to exist under loss of coolant accident conditions, even considering single active failure criteria. Penetrations 32 thru 35, 40 and 41 can be guaranteed to have a water seal under post LOCA conditions. Figures 6.2-59 thru - 64 show the routing and elevation of safety grade piping and associated components that indicate the existence of a water seal.
~~53, 65*~~	~~These penetrations are tested during integrated leakage rate test and therefore do not require a separate Type 'C' test.~~
25	Per the requirements of 1OCFR50 APP J, 11-G, this penetration will be Type B tested.
50,64,72	These penetrations are welded blank spares containing no piping or valves.
54	This penetration, used to monitor containiment pressure, is a sealed fluid system.

~~* Penetration 65 is partially tested to Type C requirements. Refer to Table 6.2-32 for breakdown of testing requirements.~~

TABLE 3.6-1 (Continued)

CONTAINMENT LEAKAGE PATHS

PENETRATION NO	SYSTEM NAME	VALVE TAG NO.	TEST TYPE
45	CARS Makeup to Containment	CARMVAAA101B CARMVAAA102B	Bypass/Type C
46	CARS Makeup to Containment	CARMVAAA101A CARMVAAA102A	Bypass/Type C
47	CARS Exhaust from Containment	CARMVAAA202B CARMVAAA201B	Bypass/Type C
	Containment Pressure Exhaust	CARMVAAA200B	
48	CARS Exhaust from Containmentt	CARMVAAA202A CARMVAAA201A	Bypass/Type C
49	Containment Atmosphere Monitoring Inlet and Outlet	ARMISV0110 ARMISV0109 ARMMVAAA104 ARMISV0103	Type C
51	Refueling Cavity Purification Inlet	FS MVAAA405 FS MVAAA406	Bypass/Type C
53	CVR Non Essential Monitoring Line	CVRISV0401A	Bypass/Type C
59	Safety Injection System from SI Tank to Refueling Water Storage Pool	SI MVAAA344 SI MVAAA343	Bypass/Type C
60	Fire Protection System to Reactor Building	FP MVAAA601A FP MVAAA602A	Bypass/Type C
61	Fire Protection System to Reactor Building	FP MVAAA601B FP MVAAA602B	Bypass/Type C

TABLE 3.6-1 (Continued)

CONTAINMENT LEAKAGE PATHS

PENETRATION NO.	SYSTEM NAME	VALVE TAG NO.	TEST TYPE
62	Water from Refueling Cavity to RWSP	FS MVAAA416 FS MVAAA415	Bypass/Type C
63	Containment Leakage Rate Test Connection	LRTMVAAA109 Blind Flange	Type C
65	Containment Leakage Rate Test Connection ~~and Instrument H&V~~	LRTMVAAA202 LRTMVAAA204	Type C
	CVR Non Essential Monitoring Line	CVRISV0401B	Bypass/Type C
66	Hydrogen Analyzer Supply and Return	HRAISV0110A HRAISV0109A HRAISV0126A HRAMVAAA128A	Type C
67	Hydrogen Analyzer Supply and Return	HRAISV0110B HRAISV0109B HRAISV0126B HRAMVAAA128B	Type C
71	Demineralized Water	CMUMVAAA244 CMUMVAAA245	Bypass/Type C
Escape Lock	NA		Bypass/Type B
Personnel Lock	NA		Type B
Electrical Penetrations	NA		Type B
Equipment Hatch	NA		Type B
Expansion Bellows 1,2,3,4,25,32,33,43	Various		Type B

TABLE 3.6-2

CONTAINMENT ISOLATION VALVES

PENETRATION NUMBER	VALVE NUMBER	FUNCTION
IV. Check Valves (Continued)		
13	CVRMVAAA202	Vacuum Relief
14	NG MVAAA158	Containment N2 Supply
23	CC MVAAA644	CCW to RCPS and CEDM Cooler
27	CVCMVAAA219	CVCS Charging Line
34A&B	CS MVAAA128A	Containment Spray
35A&B	CS MVAAA128B	Containment Spray
36	SI MVAAA143B	SI from LPSI Pumps to Loop 1A
37	SI MVAAA142B	SI from LPSI Pumps to Loop 1B
38	SI MVAAA143A	SI from LPSI Pumps to Loop 2A
39	SI MVAAA142A	SI from LPSI Pumps to Loop 2B
45	CARMVAAA102B	CARS Makeup
46	CARMVAAA102A	CARS Makeup
49	ARMMVAAA104	Containment Atmosphere Monitor
53	CVRMVAAA302A	Containment Vacuum Relief Essential Instrument Line Excess Flow
	CVRMVAAA402A	Containment Vacuum Relief Non-Essential Instrument Line Excess Flow
55	SI MVAAA241	SIS from HPSI Loop 1A
56	SI MVAAA242	SIS from HPSI Loop 1B
57	SI MVAAA243	SIS from HPSI Loop 2A
58	SI MVAAA244	SIS from HPSI Loop 2B
60	FP MVAAA602A	Containment Fire Water Header

TABLE 3.6-2

CONTAINMENT ISOLATION VALVES

PENETRATION NUMBER	VALVE NUMBER	FUNCTION
IV. Check Valves (Continued)		
61	FP MVAAA602B	Containment Fire Water Header
65	CVRMVAAA302B	Containment Vacuum Relief Essential Instrument Line Excess Flow
	CVRMVAAA402B	Containment Vacuum Relief Non-Essential Instrument Line Excess Flow
66	HRAMVAAA128A	Hydrogen Analyzer
67	HRAMVAAA128B	Hydrogen Analyzer
69	SI MVAAA510A	SI Hot Leg Injection
70	SI MVAAA510B	SI Hot Leg Injection
71	CMUMVAAA245	Demineralized Water
V. Valves Which Operate Automatically on an ESFAS Signal (The Safety Function for the valves in this section is the actuated position.)		
1. Safcty Injection Actuation Signal (SIAS)		
15	CC MVAAA807B	CCW to Containment Fan Cooler Units
16	CC MVAAA823B	CCW from Containment Fan Cooler Units
17	CC MVAAA823A	CCW from Containment Fan Cooler Units
18	CC MVAAA807A	CCW to Containment Fan Cooler Units
19	CC MUAAA822A	CCW from Containment Fan Cooler Units
20	CC MUAAA808A	CCW to Containment Fan Cooler Units
21	CC MVAAA808B	CCW to Containment Fan Cooler Units
22	CC MVAAA822B	CCW from Containment Fan Cooler Units
26	CVCMVAAA103	CVCS Letdown

TABLE 3.6-2

CONTAINMENT ISOLATION VALVES

PENETRATION NUMBER	VALVE NUMBER	FUNCTION
V. Valves Which Operate Automatically on an ESFAS Signal (The Safety Function for the valves in this section is the actuated position.) (Continued)		
4. Emergency Feedwater Actuation Signal (EFAS)		
1	MS MVAAA401A	Steam to Emergency Steam Generator Feed Pump Turbine
2	MS MVAAA401B	Steam to Emergency Steam Generator Feed Pump Turbine
VI. Valves Whose Safety Function is 'OPEN'		
1	MS MVAAA116A	Atmospheric Steam Dump
2	MS MVAAA116B	Atmospheric Steam Dump
12	CVRMVAAA101	Vacuum Relief
13	CVRMVAAA201	Vacuum Relief
27	CVCMVAAA209	CVCS Charging Line
27	CVCMVAAA218B	CVCS Charging Line
27	CVCMVAAA218A	CVCS Charging Line
53	CVRMVAAA301A	~~Instrument H&V~~ CVR Essential Instrument Line
	CVRMVAAA302A	CVR Essential Instrument Line
65	CVRMVAAA301B	~~Instrument H&V~~CVR Essential Instrument Line
	CVRMVAAA302B	CVR Essential Instrument Line

PART B - 10CFR50.59 SAFETY SCREENING

Activity Title: LDCR 97-0047 - Location of Cabinets C-3A(B) and C-4 Outside the CVAS Boundary - Rev. 1

Does the proposed change or activity represent:

YES X NO ___ (1) A change to the facility which alters, or has the potential to alter, the information, operation, function, or ability to perform the function of a system, structure, or component as described in the SAR? Explain:

The proposed change will prescribe Local Leak Rate requirements to penetrations 53 & 65 to address these potential bypass leakage paths. The FSAR will be updated by placing these lines (passing through penetrations 53 & 65) for LRT or Type C testing as applicable. Additionally, the FSAR will be clarified to designate the CVR sensing lines as a closed system for instrument lines outside containment.

YES ___ NO X (2) A change to a procedure which alters, or has the potential to alter, a procedure as described, outlined or summarized in the SAR? Explain:

There are no procedural changes involved.

YES ___ NO X (3) A test or experiment not described in the SAR or which requires that a system be operated in an abnormal manner that is not described or previously analyzed in the SAR? Explain:

This change is not a test or experiment and does not involve operation of a system in an abnormal manner.

YES X NO ___ (4) A potential to cause either an uncontrolled, unplanned, or unmonitored radioactive effluent release? Explain:

The postulated rupture of the sensing line outside of the CVAS boundary in the switchgear room during normal operation has the potential to cause an unmonitored release. However, the source term during normal operation is negligible.

PART C - ENVIRONMENTAL IMPACT SCREENING

Activity Title: LDCR 97-0047 - Location of Cabinets C-3A(B) and C-4 Outside the CVAS Boundary - Rev. 1

Does the proposed change or activity represent:

YES ___ NO X (1) A change to the Environmental Protection Plan (EPP)? Provide the basis for the answer below:

There will be no changes to the environmental protection plan as a result this change.

YES ___ NO X (2) Measurable non-radiological effects not confined to onsite areas previously disturbed during site preparation and construction? Provide the basis for the answer below:

There are no non-radiological effects associated with this change.

PART D - RADIOACTIVE WASTE SYSTEMS SCREENING

Activity Title: LDCR 97-0047 - Location of Cabinets C-3A(B) and C-4 Outside the CVAS Boundary - Rev. 1

Does the proposed change or activity:

YES ___ NO X (1) Alter or affect a radioactive waste system (e.g., Gaseous, Liquid, Resin, or Solid Waste Management)? Provide the basis for the answer below:

This does not affect any radioactive waste systems.

YES ___ NO X (2) Significantly increase the amount of radioactive waste stored or processed? Provide the basis for the answer below:

There are no hardware changes associated with this change and no radioactive waste is being generated.

YES ___ NO X (3) Affect the potential for an unplanned or unmonitored release from a radioactive waste system? Provide the basis for the answer below:

There are no hardware changes associated with this change and no radioactive waste system is being affected.

10CFR50.59 SAFETY EVALUATION

Activity Title: LDCR 97-0047 - Location of Cabinets C-3A(B) and C-4 Outside the CVAS Boundary - Rev. 1

Safety Evaluation Questions

YES__ NO X (1) Does the proposed change or activity increase the probability of occurrence of an accident previously evaluated in the SAR?

A. List accidents in the SAR that may be caused or affected by the proposed change or activity or justify that there is no effect.

B. For each accident, discuss the effect of the proposed change or activity on the likelihood of the accident occurring.

Reg. Guide 1.11 provides guidance on design requirements for instrument lines penetrating primary reactor containment. It states that in the absence of an isolation valve inside containment, that there be a high degree of assurance that the piping from the containment up to and including the outside valve retain its integrity during normal reactor operation and under all Design Basis Accident conditions. At Waterford 3 this is accomplished by locating the valve as close to the containment as practical and by adopting a conservative approach in the design of this section of piping (Seismic Category I, Safety Class 2) and supports.

ASME Code Class 2 and 3 stainless tubing for the sensing line has been designed and built to meet seismic category I criteria of LOU-1564-B-430 which defines support spans for weight, seismic, and thermal expansion and movements. The monitoring line tubing from containment up to the excess flow check valves are ASME Code Class 2, Seismic Category I. The remaining of the monitoring lines are non-seismic, non-safety tubing. The position of the containment isolation valves for the monitoring lines, CVR-401A(B), was changed to normally closed per OP-002-010.

The sensing line tubing is rated for a design pressure in excess of 4,500 psig at 300 °F in accordance with the manufacturers data. The system design for this section of tubing is 44 psig at 300 °F. Therefore, the tubing design conditions are approximately 1% of its rated capacity. Even though the expected MSLB temperature inside the containment peaks above 300 °F, it should be noted that the containment will be above 300 °F for a very short period of time, and the instrument tubing is not expected to reach this temperature due to delayed heat transfer.

The tubing support/span criteria used at Waterford 3, limits bending stresses in the tubing to less than 50% of the allowable. This fact, combined with the extremely low internal pressure stress gives a combined stress well below the break exclusion criteria.

All safety related instrument tubing at Waterford 3 was purchased to ASME Class 2 requirements. Cabinets C-3A(B) are seismic Category I and safety related. The instruments are Safety Class 1E and have a static pressure rating of 1000 psig. The sensing lines and valves downstream of CVR-302A(B) are designed to ASME Class 3 and meet the requirements for a closed system for instrument lines outside containment based on the following:

1) Per ANSI/ANS-56.2/N271-1976, the CVR sensing lines are fabricated to withstand the maximum containment test pressure of the structural integrity test, the maximum containment temperature, and are protected from missiles and dynamic effects.
2) ISA 67.02-1980 requires the sensing lines downstream of the isolation valves meet ANSI B31.1 Seismic Category I design requirements.
3) Draft Reg. Guide - Instrument Sensing Lines endorse ISA 67.02-1980 except that the sensing line downstream of the containment isolation valves must meet ASME Class 3 design requirements.

The Waterford 3 design meets Reg. Guide 1.11 requirements up to the downstream isolation valves and meets the requirements of ANSI/ANS-56.2/N271-1976, ISA 67.02-1980 and the Draft Reg. Guide - Instrument Sensing Lines as a closed system for instrument lines outside containment. The proposed change incorporates required testing criteria to ensure acceptable leakage rates associated with potential bypass leakage paths. The proposed change does not increase the probability of occurrence of an accident evaluated in the SAR.

YES__ NO X (2) Does the proposed change or activity increase the consequences of an accident previously evaluated in the SAR?

A. List the accidents in the SAR that may have radiological release consequences altered by the proposed change or activity, or justify that no accidents are affected.

B. For each accident, discuss the effect of the proposed change or activity on the radiological release consequences. Include the effect of the proposed change or activity on mitigating system performance and analysis assumptions credited in the accident analysis.

C. If applicable, provide the results of a new analysis that accounts for the proposed change or activity.

The Containment Vacuum Relief (CVR) system protects the containment vessel by maintaining the pressure differential across the vessel lower than the design value. The CVR system acts to equalize pressure across the containment during an inadvertent spray which lowers containment pressure. The CVR penetrations 53 and 65 each contain two instrument lines. One senses differential pressure across the containment vessel and provides a signal to actuate the CVR system and the other monitors the differential pressure and provides an input to the plant computer and containment purge. The monitoring line contains an excess flow check valve and a solenoid operated globe valve that will close automatically on a CIAS. The sensing line contains a manually operated valve and an excess flow check valve, both located outside containment. Due to its primary safety function, the sensing instrument lines of the CVR system are designated as "essential" thus, not requiring automatic containment isolation.

The CVR system penetrations are GDC 56 penetrations. They connect directly to the containment atmosphere. Waterford 3 has applied the recommendations of RG 1.11 to demonstrate that the design of penetrations 53 & 65 (as described above) is acceptable on "some other defined bases".

The licensing basis indicates that the leakage testing of the instrument lines for penetrations 53 & 65 is not required because these lines form a closed system outside containment, are seismically qualified, and terminate in an area filtered or exhausted by the CVAS. However, contrary to the above, a small portion (less than 10%) of these lines do not terminate within the CVAS boundary. Also, although seismically supported, the monitoring line downstream of the isolation valve is not classified as seismic category I.

This proposed change will correct the FSAR to include the instrumentation passing through penetration 53 & 65 in Type C or LRT testing as appropriate and clarify the CVR sensing lines as a closed system for instrument lines outside containment in accordance with ANSI/ANS-56.2/N271-1976 and ISA-67.02-1980.

The sensing lines form a seismically qualified, closed system outside containment. The instrument tubing is safety class 2 up to and including CVR-302A(B), and the tubing and valves downstream of the containment isolation valve up to the instruments is safety class 3. The instruments are safety related class 1E. The lines are capable of withstanding containment design pressure and temperature, and protected against a high energy line break outside containment. Therefore, the CVR sensing lines meet the requirements of ANSI/ANS-56.2/N271-1976 and ISA-67.02-1980 as a closed system for instrument lines outside containment.

As previously stated, for the containment isolation function, one isolation barrier is required after the occurrence of a single active failure. The single failure analysis for these instrument lines is consistent with ANSI N658-1976, Single Failure Criteria for PWR Fluid Systems (this ANSI Standard is also used as indicated in FSAR 6.3.3.8, Post LOCA Maintenance Considerations). Pursuant to ANSI N658 the single failure during the first 24 hours of the event is limited to an active failure. During the long-term, the single failure may be active or passive. However , pursuant to paragraph 3.6 passive failures in the sensing instrument lines are limited to leakage, such as from valve stems, rather than a complete severance of the line. In light of the above the proposed change incorporates the sensing line into the administrative program described in FSAR Section 1.9.37 to reduce leakage from systems outside containment that could contain highly radioactive fluids during a serious transient or accident.

The dose contribution due to a rupture in the monitoring line and a single failure to close of the isolation valve in the line does not have to be considered since OP-002-010 changed CVR-401A(B)'s normal position to closed.

Due to the above, this penetration will be added to TRM Table 3.6-1, Containment Leakage Paths, for Type C leak testing pursuant to 10CFR50 Appendix J, and the excess flow check valves will be added to TRM Table 3.6-2, Containment Isolation Valves. The proposed changes described above will ensure that leakage within the acceptance limits, will not have an unacceptable impact on offsite dose and control room dose limits. Therefore, the proposed change will not increase the consequences of an accident previously evaluated in the SAR.

YES__ NO X (3) Does the proposed change or activity increase the probability of occurrence of a malfunction of equipment important to safety previously evaluated in the SAR?

A. Identify the equipment important to safety that could be affected by the proposed change or activity, or justify why no equipment important to safety is affected.

B. Discuss the effect of the proposed change or activity may have on equipment important to safety. Include a determination of whether the likelihood of malfunction will increase.

There are no design changes, and the function or operation of any equipment important to safety will not be effected as a result of this change. Therefore, the probability of occurrence of a malfunction remains unchanged.

YES__ NO X (4) Does the proposed change or activity increase the consequences of a malfunction of equipment important to safety previously evaluated in the SAR?

A. List the accidents for which the equipment important to safety in 3A above is required to perform a safety function.

B. For each accident, discuss how the consequences may be different if the equipment in 3A above were to malfunction.

The function of the instrument lines in containment penetrations 53 & 65 or any of its components is not affected by this change. The integrity of the instrument tubing remains in compliance with Reg. Guide 1.11 and the CVR sensing lines meet the requirements of ANSI/ANS-56.2/N271-1976 and ISA 67.02-1980 as a closed system for instrument lines outside containment. Therefore, the consequences of a malfunction of equipment important to safety remains within acceptable limits as described in question 2 of the safety evaluation.

YES__ NO X (5) Does the proposed change or activity create the possibility of an accident of a different type than previously evaluated in the SAR?

A. Discuss new system interactions or connections that previously did not exist.

B. Discuss how these new system interactions or connections could or could not create a new accident.

There are no design/hardware changes, no new system interaction or connections being created that could create a new accident. Therefore, no new accidents will occur as a result of this change.

YES__ NO X (6) Does the proposed change or activity create the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR?

A. Identify new methods of failure that the proposed change or activity could create.

No new modes of failure or accident initiators is introduced as a result of this change. Therefore, the proposed change will not create the possibility of a malfunction of equipment important to safety other than those evaluated in the SAR.

YES_ NO X (7) Does the proposed change or activity reduce the margin of safety as defined in the basis for any technical specification or the appropriate safety analysis?

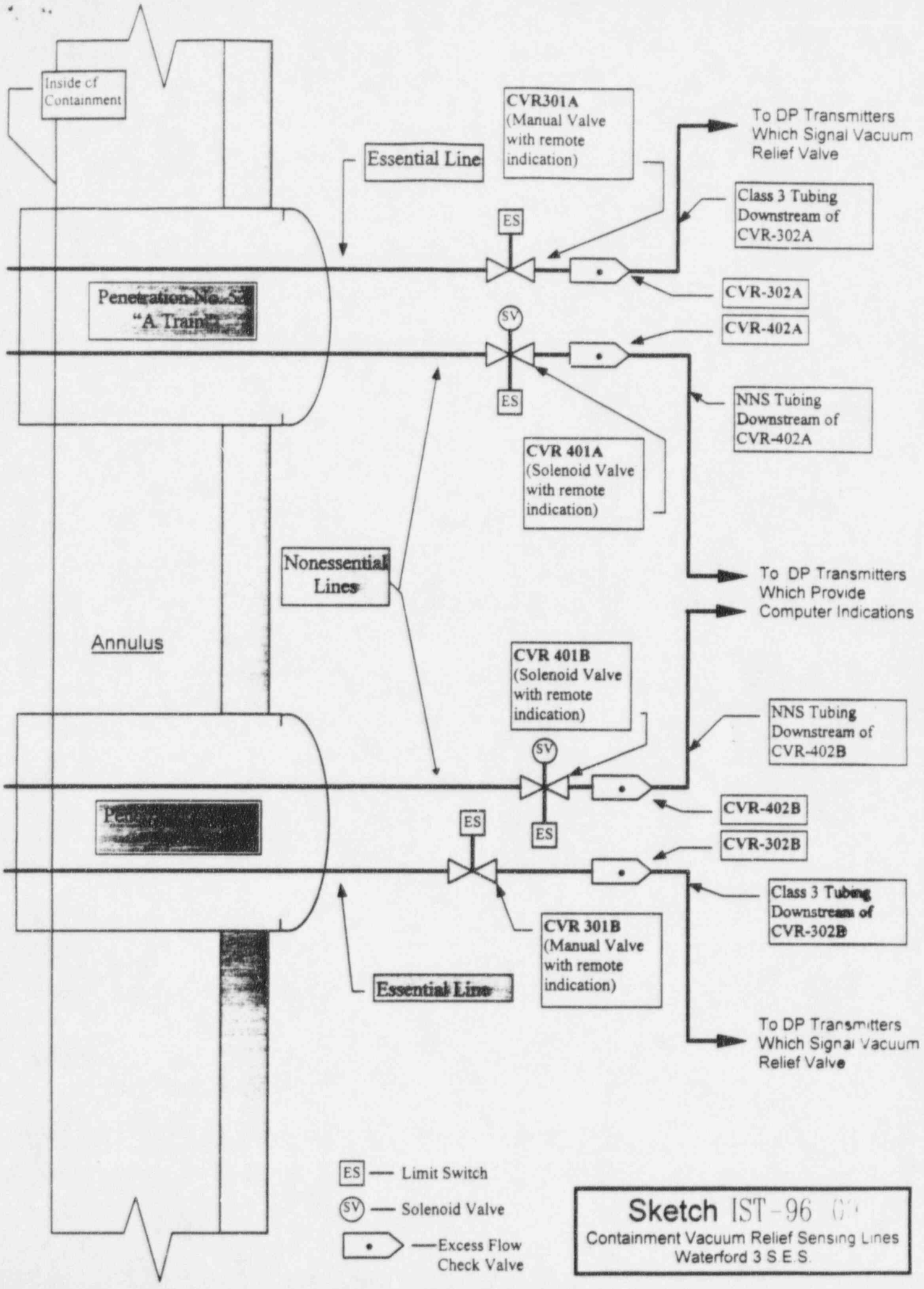
A. If the change is to a protective boundary, discuss how the boundary is affected.

B. Identify the margins of safety (related to boundary performance) that may be affected by the proposed change or activity.

C. Discuss how the accident response, as affected by the proposed change or activity, relates to the appropriate acceptance limits.

D. If applicable, provide the results of an analysis that accounts for the proposed change or activity and shows the impact on margin of safety.

The proposed change corrects the FSAR by incorporating appropriate leak testing requirements for identified potential bypass leakage paths associated with penetrations 53 & 65. The margin of safety related to the containment boundary and offsite dose limits is potentially affected, however CVR-401A(B) will remain normally closed per OP-002-010 . This will ensure the radiological releases remain within the acceptance limits for offsite and control room dose. This evaluation for the sensing lines shows that the containment barrier's margin of safety is not reduced since Penetrations 53 and 65 meet Reg. Guide 1.11 and the sensing lines meet the requirements of ANSI/ANS-56.2/N271-1976 and ISA 67.02-1980 as a closed system for instrument lines outside containment. The proposed change will provide for appropriate leak testing which ensures specified leakage limits are maintained to preserve the margin of safety.


Inside of Containment
CVR301A (Manual Valve with remote indication)
To DP Transmitters Which Signal Vacuum Relief Valve
Essential Line
Class 3 Tubing Downstream of CVR-302A
ES
Penetration No. 34 "A Train"
CVR-302A
SV
CVR-402A
ES
NNS Tubing Downstream of CVR-402A
CVR 401A (Solenoid Valve with remote indication)
Nonessential Lines
To DP Transmitters Which Provide Computer Indications
Annulus
CVR 401B (Solenoid Valve with remote indication)
NNS Tubing Downstream of CVR-402B
SV
Pe
CVR-402B
ES
ES
CVR-302B
Class 3 Tubing Downstream of CVR-302B
CVR 301B (Manual Valve with remote indication)
Essential Line
To DP Transmitters Which Signal Vacuum Relief Valve
ES — Limit Switch
SV — Solenoid Valve
— Excess Flow Check Valve
Sketch IST-96
Containment Vacuum Relief Sensing Lines
Waterford 3 S.E.S.