HITACHI

GE Hitachi Nuclear Energy

Richard E. Kingston
Vice President, ESBWR Licensing

P.O. Box 780 M/C A-65
Wilmington, NC 28402-0780
USA

T 910.675.6192
F 910.362.6192
rick.kingston@ge.com

MFN 10-117 Docket No. 52-010

March 22, 2010

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555-0001

Subject: **Transmittal of ESBWR DCD Tier 1 and Tier 2 Markups Related to GEH Corrective Action Clarifying HELB Blowout Panel Vent Pathways**

The purpose of this letter is to submit markups to the ESBWR DCD Tier 1 and Tier 2 resulting from GEH corrective action. Inconsistencies were identified in the DCD regarding the description of the vent pathways for high energy line breaks (HELBs). The pathways, which used to relieve through blowout panels on the roof of the Reactor Building (RB), now exit through the side of the RB at a lower elevation. There are no changes to reported dose related values. The DCD is being revised to make this description consistent across all chapters.

Markups are provided for the following DCD sections, tables and figure:

Tier 1, Chapter 5, Table 5.1-1
Tier 2, Chapter 2, Table 2.0-1
Tier 2, Appendix 2A, Table 2A-2
Tier 2, Appendix 2A, Table 2A-3
Tier 2, Appendix 2A, Figure 2A-1 Notes
Tier 2, Appendix 3H, Subsection 3H.3.2
Tier 2, Chapter 6, Subsection 6.2.3.2
Tier 2, Chapter 12, Subsection 12.2.1.2.1

The markup pages in Enclosure 1 will be incorporated into the DCD, Revision 7.

If you have any questions or require additional information, please contact me.

Sincerely,

Richard E. Kingston

Richard E. Kingston
Vice President, ESBWR Licensing

Enclosure:

1. Transmittal of ESBWR DCD Tier 1 and Tier 2 Markups Related to GEH Corrective Action Clarifying HELB Blowout Panel Vent Pathways – DCD Markups

cc:	AE Cubbage	USNRC (with enclosure)
	JG Head	GEH/Wilmington (with enclosure)
	DH Hinds	GEH/Wilmington (with enclosure)
	TL Enfinger	GEH/Wilmington (with enclosure)
	eDRF Sections	0000-0114-5864
		0000-0115-4332

Enclosure 1

MFN 10-117

Transmittal of ESBWR DCD Tier 1 and Tier 2 Markups Related to GEH Corrective Action Clarifying HELB Blowout Panel Vent Pathways

DCD Markups

Note: Changes associated with this transmittal are enclosed within boxes.

Table 5.1-1
Envelope of ESBWR Standard Plant Site Parameters (continued)

Meteorological Dispersion (X/Q):	EAB X/Q:		
	0-2 hours:	2.00E-03 s/m^3	
	LPZ X/Q:		
	0-8 hours:	1.90E-04 s/m^3	
	8-24 hours:	1.40E-04 s/m^3	
	1-4 days:	7.50E-05 s/m^3	
	4-30 days:	3.00E-05 s/m^3	
* First value is for unfiltered inleakage. Second value is for air intakes (emergency and normal)	Control Room X/Q: *		
	Reactor Building		
	0-2 hours:	1.90E-03 s/m^3	1.50E-03 s/m^3
	2-8 hours:	1.30E-03 s/m^3	1.10E-03 s/m^3
	8-24 hours:	5.90E-04 s/m^3	5.00E-04 s/m^3
	1-4 days:	5.00E-04 s/m^3	4.20E-04 s/m^3
	4-30 days:	4.40E-04 s/m^3	3.80E-04 s/m^3
	Passive Containment Cooling System / Reactor Building Roof		
	0-2 hours:	3.40E-03 s/m^3	3.00E-03 s/m^3
	2-8 hours:	2.70E-03 s/m^3	2.50E-03 s/m^3
	8-24 hours:	1.40E-03 s/m^3	1.20E-03 s/m^3
	1-4 days:	1.10E-03 s/m^3	9.00E-04 s/m^3
	4-30 days:	7.90E-04 s/m^3	7.00E-04 s/m^3
	HELB Blowout Panels/Reactor Building ~~Roof~~		
	0-2 hours:	7.00E-03 s/m^3	5.90E-03 s/m^3
	2-8 hours:	5.00E-03 s/m^3	4.70E-03 s/m^3
	8-24 hours:	2.10E-03 s/m^3	1.50E-03 s/m^3
	1-4 days:	1.70E-03 s/m^3	1.10E-03 s/m^3
	4-30 days:	1.50E-03 s/m^3	1.00E-03 s/m^3
	Turbine Building		
	0-2 hours:	1.20E-03 s/m^3	1.20E-03 s/m^3
	2-8 hours:	9.80E-04 s/m^3	9.80E-04 s/m^3
	8-24 hours:	3.90E-04 s/m^3	3.90E-04 s/m^3
	1-4 days:	3.80E-04 s/m^3	3.80E-04 s/m^3
	4-30 days:	3.20E-04 s/m^3	3.20E-04 s/m^3
	Fuel Building		
	0-2 hours:	2.80E-03 s/m^3	2.80E-03 s/m^3
	2-8 hours:	2.50E-03 s/m^3	2.50E-03 s/m^3
	8-24 hours:	1.25E-03 s/m^3	1.25E-03 s/m^3
	1-4 days:	1.10E-03 s/m^3	1.10E-03 s/m^3
	4-30 days:	1.00E-03 s/m^3	1.00E-03 s/m^3

Table 2.0-1

Envelope of ESBWR Standard Plant Site Parameters[1] (continued)

Meteorological Dispersion (X/Q): *(11)*	*EAB X/Q:*		
	0-2 hours:	*2.00E-03 s/m³*	
	LPZ X/Q:		
	0-8 hours:	*1.90E-04 s/m³*	
	8-24 hours:	*1.40E-04 s/m³*	
	1-4 days:	*7.50E-05 s/m³*	
	4-30 days:	*3.00E-05 s/m³*	
* *First value is for unfiltered inleakage. Second value is for air intakes (emergency and normal)*	*Control Room X/Q: **		
	Reactor Building		
	0-2 hours:	*1.90E-03 s/m³*	*1.50E-03 s/m³*
	2-8 hours:	*1.30E-03 s/m³*	*1.10E-03 s/m³*
	8-24 hours:	*5.90E-04 s/m³*	*5.00E-04 s/m³*
	1-4 days:	*5.00E-04 s/m³*	*4.20E-04 s/m³*
	4-30 days:	*4.40E-04 s/m³*	*3.80E-04 s/m³*
	Passive Containment Cooling System / Reactor Building Roof		
	0-2 hours:	*3.40E-03 s/m³*	*3.00E-03 s/m³*
	2-8 hours:	*2.70E-03 s/m³*	*2.50E-03 s/m³*
	8-24 hours:	*1.40E-03 s/m³*	*1.20E-03 s/m³*
	1-4 days:	*1.10E-03 s/m³*	*9.00E-04 s/m³*
	4-30 days:	*7.90E-04 s/m³*	*7.00E-04 s/m³*
	HELB Blowout Panels / Reactor Building ~~Roof~~		
	0-2 hours:	*7.00E-03 s/m³*	*5.90E-03 s/m³*
	2-8 hours:	*5.00E-03 s/m³*	*4.70E-03 s/m³*
	8-24 hours:	*2.10E-03 s/m³*	*1.50E-03 s/m³*
	1-4 days:	*1.70E-03 s/m³*	*1.10E-03 s/m³*
	4-30 days:	*1.50E-03 s/m³*	*1.00E-03 s/m³*
	Turbine Building		
	0-2 hours:	*1.20E-03 s/m³*	*1.20E-03 s/m³*
	2-8 hours:	*9.80E-04 s/m³*	*9.80E-04 s/m³*
	8-24 hours:	*3.90E-04 s/m³*	*3.90E-04 s/m³*
	1-4 days:	*3.80E-04 s/m³*	*3.80E-04 s/m³*
	4-30 days:	*3.20E-04 s/m³*	*3.20E-04 s/m³*

Table 2A-2

Onsite Receptor/Source Locations

Receptors	*Designation*
Control Building Louvers on the West face of the Control Building	CBL
Emergency Air Intakes on the East face of Control Building near the North end	EN
Emergency Air Intakes on the East face of Control Building near the South end	ES
Normal Air Intake on South face of Control Building	N
Intake for Train A of the Technical Support Center (TSC) HVAC on East face of Electrical Building near the North end	TSCA
Intake for Train B of the Technical Support Center (TSC) HVAC on North face of Electrical Building near the East end	TSCB
Sources	***Designation***
Reactor Building	RB
Passive Containment Cooling System (Vent on Reactor Building Roof)	PCCS
Turbine Building	TB
Turbine Building Truck Doors on the West side of the TB near the North end	TB-TD
Fuel Building	FB
Radwaste Building	RW
Reactor Building/Fuel Building Ventilation Stack	RB-VS
Turbine Building Ventilation Stack	TB-VS
Radwaste Building Ventilation Stack	RW-VS
North RB HELB blowout panel near the East edge of the Reactor Building ~~Roof~~ [1]	BPN
South RB HELB blowout panel near the East edge of the Reactor Building ~~Roof~~ [1]	BPS

Note:

[1] There are four HELB blowout panels near the corners of the Reactor Building ~~roof~~. ARCON96 parameters for the two blowout panels nearest to the Control Building are included in Table 2A-3 as they are bounding based on the minimum distance criterion with respect to the receptors.

Table 2A-3

ARCON96 Design Inputs Used for the Determination of On-Site X/Q Values

Source/Receptor	Source Type	Distance (m)	Release Height (m)	Building Area (m^2) [2]	Intake Height (m)	Total Height (m) [3]	Total Width (m) [3]	σ_{Y0} [4]	σ_{Z0} [4]
BPN to CBL	Point	27	~~47.8~~26.5	2945	2.5	N/A	N/A	N/A	N/A
BPN to EN	Point	40	~~47.8~~26.5	2945	7.5	N/A	N/A	N/A	N/A
BPN to ES	Point	49	~~47.8~~26.5	2945	7.5	N/A	N/A	N/A	N/A
BPN to N	Point	50	~~47.8~~26.5	2945	7.5	N/A	N/A	N/A	N/A
BPS to CBL	Point	27	~~47.8~~26.5	2945	2.5	N/A	N/A	N/A	N/A
BPS to EN	Point	49	~~47.8~~26.5	2945	7.5	N/A	N/A	N/A	N/A
BPS to ES	Point	41	~~47.8~~26.5	2945	7.5	N/A	N/A	N/A	N/A
BPS to N	Point	36	~~47.8~~26.5	2945	7.5	N/A	N/A	N/A	N/A

Notes for Table 2A-3:

[1] These are diffuse source widths determined in accordance with Regulatory Position 3.2.4.5 of Regulatory Guide 1.194 and are used to calculate σ_{Y0}.

[2] The building vertical cross-sectional areas perpendicular to the wind for the building that has the largest impact on building wakes as described in the fifth item listed in Table A-2 of Regulatory Guide 1.194.

[3] Building heights and widths are not directly used by ARCON96. They are used to calculate the lateral and vertical plume spread parameters (σ_{Y0} and σ_{Z0}).

[4] Values calculated using Formulas 3 and 4 of RG 1.194.

The following designations are shown on Figure 2A-1.

Plant Structures

1 Reactor Building

2 Fuel Building

3 Control Building

4 Turbine Building

5 Electrical Building

6 Radwaste Building

Control Building Receptor Locations

CBL	Control Building Louvers on the west face of the Control Building (CB)
EN	Normal and Emergency Air Intakes on the east face of CB near the north end
ES	Normal and Emergency Air Intakes on the east face of CB near the south end
N	Normal Air Intake on the south face of Control Building
TSCA	Intake for Train A of the Technical Support Center HVAC on the east face of Electrical Building near the north end
TCSB	Intake for Train B of the Technical Support Center HVAC on the north face of Electrical Building near the east end

Source Locations

RB	Reactor Building[1]
TB	Turbine Building[1]
FB	Fuel Building[1]
PCCS	Passive Containment Cooling System (Vents from the Reactor Building Roof)
RW	Radwaste Building (Assumed on the Radwaste Building Roof)
RB-VS	Reactor Building/Fuel Building Ventilation Stack
TB-VS	Turbine Building Ventilation Stack
RW-VS	Radwaste Building Ventilation Stack
BPN	Blowout panel on the northeast corner of Reactor Building ~~Roof~~
BPS	Blowout panel on the southeast corner of Reactor Building ~~Roof~~
TB-TD	Turbine Building Truck Doors on the north side of the TB near the west end

[1] There are 16 unique diffuse source/receptor pairs in Table 2A-3 all of which cannot be represented on Figure 2A-1. The planes shown in Figure 2A-1 are only graphical representations of typical ESBWR diffuse source planes.

- Reactor Building outside containment

The region inside the RB surrounding the containment encloses penetrations through the containment. The Control Room Habitability Area (CRHA) includes the main control room and areas adjacent to the control room containing operator facilities. Also located in the CB are safety-related Distributed Control and Information System (DCIS) rooms, located at elevation -7400 mm. Major equipment zones are shown on the RB arrangement drawing (Figures 1.2-1 to 1.2-9).

3H.3 ENVIRONMENTAL CONDITIONS

Table 3H-1 contains a cross listing of the environmental data tables arranged by location and by type of condition.

3H.3.1 Plant Normal Operating Conditions

Tables 3H-2 through 3H-4 define the thermodynamic conditions (pressure, temperature and humidity) for normal operating conditions for areas containing safety-related equipment. Figures showing equipment location and system configurations are referenced in each table. Section 12.3 defines the radiation conditions for the Reactor Building and Control Building for normal operating conditions. Table 3H-5 specifies the radiation environmental conditions inside the containment vessel for normal operating conditions. Specific radiation environment conditions for equipment are determined through the equipment qualification program based on actual location. Section 9.4 defines the Fuel Building thermodynamic conditions for normal operating conditions.

3H.3.2 Accident Conditions

Thermodynamic conditions for safety-related equipment in the containment vessel, CB and RB are presented in Tables 3H-8 through 3H-10 for accident conditions. Heat loads for the evaluated post accident periods are specified in Table 3H-12. In general, the most severe environmental conditions result from a postulated reactor coolant line break inside the containment, Loss-Of-Coolant-Accident (LOCA) (bounding case) plus Loss Of Offsite Power (LOOP), see Chapter 6 for detailed information. However, accident conditions were also considered for ruptures occurring in the steam tunnel and breaks in the RWCU/SDC System outside the containment, High Energy Line Break (HELB) plus LOOP, see Chapter 6 for detailed information. Tables 3H-6 and 3H-7 list typical radiation environmental qualification conditions inside the RB and the CB. Table 3H-11 specifies the radiation environment conditions inside the containment vessel. The EQ program confirms explicit radiation and thermodynamic conditions during accidents. The limiting thermodynamic conditions in the Fuel Building results from the boiling of the spent fuel pool. The thermodynamic conditions during an accident when the spent fuel pool boils is a limiting temperature of 104°C (219°F), with 100% relative humidity and a limiting pressure consistent with the full tornado pressure drop described in Section 3.3.2.2~~of 14 kPaG (2.0 psig)~~.

3H.3.2.1 Transient Room Temperature Analysis

The performance evaluation for environmental qualification show conformance to the requirements identified in Section 3.11. The maximum temperature Control Building and doors are provided with position indicators and alarms that are monitored in the control room.

- Detection and isolation capability for high-energy pipe breaks within the RB is provided.
- The compartments within the RB are designed to withstand the maximum pressure due to a High Energy Line Break (HELB). Each line break analyzed is a double-ended break. In this analysis, the rupture producing the greatest blowdown of mass and enthalpy in conjunction with worst-case single active component failure is considered. Blowout panels between compartments provide flow paths to relieve pressure.
- The RB is capable of periodic testing to assure that the leakage rates assumed in the radiological analyses are met. The radiological analyses assume the RB CONAVS served areas form this boundary.

6.2.3.2 Design Description

The RB is a reinforced concrete structure that forms an envelope completely surrounding the containment (except the basemat). The boundary of the clean areas and the RB are shown in Figure 6.2-17.

During normal operation, the RB potentially contaminated areas are maintained at a slightly negative pressure relative to adjoining areas by the CONAVS portion of the RBVS (Subsection 9.4.6). This assures that any leakage from these areas is collected and treated before release. Airflow is from clean to potentially contaminated areas. RB effluents are monitored for radioactivity by RB/Fuel Buidling (FB) stack radiation monitors. If the radioactivity level rises above set levels, the discharge can be routed through RB HVAC online purge Exhaust Filter Unit system for treatment before further release.

Penetrations through the RB envelope are designed to minimize leakage. All piping and electrical penetrations are sealed for leakage. The RBVS is designed with safety-related isolation dampers and tested for isolation under various accident conditions.

HELBs in any of the RB compartments do not require the building to be isolated. These breaks are detected and the broken pipe is isolated by the closure of system isolation valves (Subsection 7.4.3). There is no significant release of radioactivity postulated from these types of accidents because reactor fuel is not damaged.

The RB is equipped with passively acting pressure relief devices that allow the refuel floor to vent to the environment if cooling is lost to the auxiliary pools during an outage. The devices open at a high-pressure set point equivalent to the full tornado pressure drop described in Section 3.3.2.2.

The following paragraphs are brief descriptions of the major compartments in the ESBWR design.

Reactor Water Cleanup (RWCU) Equipment and Valve Rooms

The two independent RWCU divisions are located in the 0–90° and 270-0° quadrants of the RB. The RWCU equipment (pumps, heat exchangers, and filter/demineralizers) is located on floor elevations -11500 mm and -6400 mm with separate rooms for equipment and valves. The RWCU piping originates at the reactor pressure vessel. High energy piping leads to the RWCU divisions through a dedicated, enclosed, pipe chase. The steam/air mixture resulting from a HELB in any RWCU compartment is directed through adjoining compartments and pipe chase to HELB blowout panels on the side of the RB (not connected to the operating floor. Figure 6.2-18 shows the model of the RB compartments with the interconnecting flow paths for a typical analysis. The design basis break for the RWCU system compartment network is a double-ended break. The selected break cases are identified in Table 6.2-11. Figures 6.2-19 through 6.2-27 provide the pressure profiles due to all postulated RWCU/SDC system break cases for each individual room/region. The envelope profile represents the calculated maximum pressure response values for the given room/region due to all postulated RWCU/SDC system pipe breaks. No margin is included in these pressure profiles. Figure 6.2-18a to Figure 6.2-18c show the mass and energy release for the break cases analyzed.

Isolation Condenser (IC) System

The isolation condensers are located in the RB at the 27000 mm elevation. The IC steam supply line is connected directly to the RPV. The supply line leads to a steam distribution header, which feeds four pipes. Each pipe has a flow limiter to mitigate the consequences of an IC line break. The IC design basis break is a double-ended break in the piping after the steam header and flow restrictors. The IC/PCCS pool is vented to atmosphere to remove steam generated in the IC pools by the condenser operation. In the event of an IC break, the steam/air mixture is expected to preferentially exhaust through hatches in the refueling floor (Figure 1.2-9) and into the RB operating area with portions of the steam directed through the pool compartments to the RB/FB stack, which is vented to the atmosphere. Because the vent path through the hatches leads to the refueling floor area, which is a large open space with no safety implications, this event was excluded from the pressurization analysis.

Main Steam (MS) Tunnel

The RB main steam tunnel is located between the primary containment vessel and the turbine building (TB). The limiting break is a main steam line longitudinal break. The main steam lines originate at the RPV and are routed through the steam tunnel to the TB. The steam/air mixture resulting from a main steam line break is directed to the TB through the steam tunnel. The pressure capability of the steam tunnel compartment is discussed in Subsection 3G.1.5.2.1.10. No blowout panels are required in the steam tunnel because the flow path between the steam tunnel and the TB is open.

6.2.3.3 Design Evaluation

Fission Product Containment

There is sufficient water stored within the containment to cover the core during both the blowdown phase of a LOCA and during the long-term post-blowdown condition. Because of this continuous core cooling, fuel damage and fission product release is a very low probability event. If there is a release from the fuel, most fission products are readily trapped in water. Consequently, the large volume of water in the containment is expected to be an effective fission product scrubbing and retention mechanism. Also, because the containment is located entirely within the RB, multiple structural barriers exist between the containment and the environment. Therefore, fission product leakage from the RB is mitigated.

Reactor Startup Source

The Cf-252 reactor startup source is shipped to the site in a special cask designed with shielding. The source is transferred under water while in the cask and loaded into a stainless steel source holder. This is then loaded into the reactor while remaining under water. The source and source holder are removed from the reactor during the first refueling outage and moved to a designated location in the spent fuel pool (SFP). Operations and radiation protection personnel determine placement and duration of residence for the Cf-252 source and holder in the SFP.

12.2.1.2 Reactor Building and Fuel Building Source Terms

This section provides a summation of the significant radioactive source terms found in the ESBWR Reactor Building. These source terms consist of those elements which are found to contain significant quantities of radioactive materials, but do not include sources due to incidental contamination such as sources in valves and pipes due to deposition of corrosion or fission products species on the surfaces of the components.

The Reactor Building (RB) is divided into three specific zones:

- Containment
- Contaminated areas
- Clean areas

Radioactive Sources in the Reactor Water Cleanup/Shutdown Cooling System

A description of the RWCU/SDC System is given in Subsection 5.4.8. Radioactive sources contained in this system are the result of contamination of components by transit of reactor water through this system and accumulation of radioisotopes removed from the water. Components for this system include regenerative and non-regenerative heat exchangers, pumps, valves, and demineralizers. The accumulated sources in this system are given in Tables 12.2-6a through 12.2-7. The sources present in the demineralizers are present in all modes of operation. Therefore, backwashing capability is provided to remove residual activity with clean water plus chemical decontamination for effective radwaste handling.

12.2.1.2.1 Other Sources

Radioactive Sources in the Fuel and Auxiliary Pools Cooling System (FAPCS)

A description of the FAPCS is given in Subsection 9.1.3. The FAPCS is designed to service the fuel pools, suppression pool, Gravity Driven Cooling System (GDCS) pool, and Isolation Condenser/Passive Containment Cooling System (IC/PCCS) pools on a rotating basis. The accumulated activity in this system is the result of the accumulation of residual activity in each of the above pools. The filters are backwashed into a backwash receiving tank, which is then routed to the Radwaste Building (RW) systems. The sources for the FAPCS are given in Tables 12.2-8 through 12.2-9. Clean water connections are provided for this system to flush lines prior to switching between pools as necessary to prevent ancillary contamination between pools.

Radioactive Sources in the Spent Fuel Pool

The radiation sources in the SFP core are given in Table 12.2-3 Part B C in terms of MeV/sec-MWt. Water concentration is assumed as 1% of normal reactor water concentration (Section 11.1).

Radioactive Sources in the HVAC System

The Heating, Ventilation and Air Conditioning (HVAC) System is described in Section 9.4 and employs a bypass high efficiency particulate air (HEPA) filter train for use in the event of airborne contamination of the RB or controlled purge of the RB containment. The HEPA train is capable of removing all large particulate releases and up to 70% of small particulate releases.

Radioactive Sources in the Main Steam and Feedwater Lines

All radioactive material in the main steam system results from radioactive sources carried over from the reactor core during plant operations. In most components carrying live steam, N-16 is the dominant source of radioactivity (Section 11.1). Otherwise, under conditions where sufficient decay time has removed the N-16 source, noble radiogases become the dominant source term (Section 11.1). Flow in the feedwater lines is dominated by corrosion and fission products and is the result of the residual activity of reactor steam after treatment in the condenser filter-demineralizer system.

Post-Accident Radioactive Sources

The ESBWR design limits potential radiation exposure from accidents both to plant personnel and to the public by the use of passive safety features, containment and treatment of potential accident sources. The following describes those features of the ESBWR germane to post-accident radiation sources in the RB containment and the RB.

The RB containment is an inert steel-lined pressure boundary capable of containing all accident sources with minimal leakage to the environment or other plant areas. The containment is provided with redundant passive cooling systems (Subsections 5.4.6 and 6.2.2) to ensure within a reasonable probability that this primary boundary does not exceed design criteria. Drywell spray provides additional capability to control pressure. Therefore, for all but the most improbable accident scenarios requiring massive failures of all major systems including passive systems, radioactive sources from the pressure vessel are adequately contained in the RB containment.

Surrounding the containment on all sides, the ESBWR employs a RB that provides a secondary holdup volume (Subsection 6.2.3) to trap containment penetration and valve leakage except direct bypass leakage via such lines as the main steam lines and feedwater lines. All major connections from the containment, except the ICS steam lines and condensate lines and the main steam lines and feedwater lines requiring isolation valves, terminate with the second isolation valve in the RB. The RWCU/SDC System is the only high energy line in the containment and RB that could produce potential releases in the containment or RB. High energy line rupture releases in the containment are isolated by the HVAC system for holdup and treatment, except potential high energy breaks, which are then routed for release via the Reactor Building/Fuel Building (RB/FB) stack. High energy line rupture releases in the RB are routed through adjoining compartments and pipe chases to blowout panels on the side of the RB (not connected to the operatingto the refueling floor where a rupture disk relieves the overpressure). See Section 15.4 for discussions of line break releases.