Entergy

Entergy Operations, Inc.
River Bend Station
5485 U S Highway 61
P O Box 220
St Francisville, LA 70775
Tel 225 336 6225
Fax 225 635 5068

Rick J King
Director
Nuclear Safety Assurance

RBG - 46081

February 19, 2003

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

SUBJECT: River Bend Station, Unit 1
Docket No. 50-458
Supplement 3 to Amendment Request
Full-Scope Application of NUREG-1465 Alternative Source Term Insights, TAC No. MB5021.

REFERENCES:
1. Letter RBG-45930 dated April 24, 2002 from Entergy to USNRC, "License Amendment Request, Full Scope Application of NUREG-1465 Alternative Source Term Insights."
2. Letter RBG-45989 dated July 18, 2002 from Entergy to USNRC, "Supplement to License Amendment Request, Full Scope Application of NUREG-1465 Alternative Source Term Insights."
3. Letter RBG-46052 dated December 18, 2002 from Entergy to USNRC, "License Amendment Request, Revised Full Scope Application of NUREG-1465 Alternative Source Term Insights."
4. Letter RBG-46053 dated December 20, 2002 from Entergy to USNRC, "Supplement 2 to Amendment Request, Full-Scope Application of NUREG-1465 Alternative Source Term Insights."

Dear Sir or Madam:

By Reference 1, Entergy Operations, Inc. (Entergy) proposed a change to the River Bend Station, Unit 1 (RBS) Operating License and Technical Specifications (TSs) associated with a full scope application of NUREG-1465, Alternative Source Terms. References 2 and 4 provided supplemental information, while Reference 3 withdrew or revised some of the proposed TS changes.

On December 17, 2002, Entergy received five additional questions concerning meteorological data and atmospheric dispersion factors used in the analyses performed to support the proposed amendment. Entergy's response to the five questions is contained in Attachment 1.

A001

Entergy is also making changes to correct certain values reported in Reference 3. The changes, provided in Attachment 2, have been discussed with NRC staff. Entergy is also enclosing a Compact Disk (CD) which contains electronic files that have been updated from those previously included with Reference 3.

Reference 4 included supplemental information on the control room habitability design and operational features that justify the validity of the assumed unfiltered air in-leakage. The letter contained a commitment to quantify the leakage across two smoke removal system isolation dampers to confirm that this potential source of unfiltered in-leakage was small. Entergy has completed the leakage test and found the leakage to be substantially less than 10 cfm at a pressure of 1.15 inches water gauge. This confirms that the in-leakage assumptions are conservative.

The original no significant hazards considerations included in Reference 1 is not affected by any information contained in this supplemental letter.

There are no new commitments contained in this letter.

If you have any questions or require additional information, please contact Greg Norris at 225-336-6391.

I declare under penalty of perjury that the foregoing is true and correct. Executed on February 19, 2003.

Sincerely,

RJK/rwb
Attachments:
1. Response to Request For Additional Information
2. Corrected pages for RBG-46052

Enclosure:
1) CD containing updated electronic files requested by the NRC staff.

cc: U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011

NRC Senior Resident Inspector
P. O. Box 1050
St. Francisville, LA 70775

U.S. Nuclear Regulatory Commission
Attn: Mr. Michael K. Webb MS O-7D1
Washington, DC 20555-0001

Mr. Prosanta Chowdhury
Program Manager – Surveillance Division
Louisiana Department of Environmental Quality
Office of Radiological Emergency Plan and Response
P. O. Box 82215
Baton Rouge, LA 70884-2215

Attachment 1

To

RBG – 46081

Response to Request for Additional Information

Response to Request for Additional Information Related to Full Scope Application of Alternate Source Terms

Question:

1. Meteorological Measurement Program

Confirm that, overall, the 1995 through 1998 and 2000 meteorological data used in the assessment are of high quality, representative of long term conditions, and suitable for use in the assessment of atmospheric dispersion to which it was applied. The intent of these questions is to assess the overall quality of the meteorological data as collected and as processed for use in the atmospheric dispersion calculations.

During the period of data collection did the measurement program meet the guidelines of Regulatory Guide 1.23, "Onsite Meteorological Programs?" Was the tower base area on the natural surface (e.g., short natural vegetation) and tower free from obstructions (e.g., trees, structures) and micro-scale influences to ensure that the data were representative of the overall site area? In the case of possible obstructions, were trees, structures, etc., at least 10 times their height away from the meteorological tower? Were calibrations properly performed and systems found to be within guideline specifications? What types of quality assurance audits were performed on the meteorological measurement systems to ensure that data were of high quality, to identify any problems and questionable data, and correct problems in a timely manner? What additional checks and at what frequency were the checks performed on data following collection and prior to archival? If deviations occurred, describe the deviations and why the data are still deemed to be adequate. A detailed response for each individual data point is not expected.

Were the data compared with other site historical or regional data? If so, what were the findings? What additional reviews of the data were performed prior to input into the atmospheric dispersion calculations? Were checks made between the data in the ARCON format and the raw data to ensure that reformatting, conversions, etc., were properly performed?

Response:

The meteorological data utilized in the off-site and main control room atmospheric dispersion factor (X/Q) calculations was obtained using the on-site meteorological tower. As discussed in USAR Table 1.8-1 and USAR Section 2.3.3.1.5, River Bend Station's (RBS) meteorological program meets the criteria set forth in Regulatory Guide 1.23 with one minor exception (concerning accuracy of instruments for wind speeds of $\geq$5.0 mph). The meteorological monitoring instrumentation is maintained in accordance with RBS Technical Requirement Manual (TRM) Surveillance Requirements (TSR) as outlined in TRM Section 3.3.12. TSR 3.3.12.1 requires a CHANEL CHECK to be performed once every 24 hours, and TSR 3.3.12.2 requires a CHANNEL CALIBRATION every 184 days. The data obtained is provided to the NRC as part of the "Annual Effluent Report" in accordance with regulatory requirements.

The area around the meteorological tower is kept clear of obstructions which could potentially impact wind data. Operator rounds are performed which results in plant operators visiting that area of the plant 4 times a day. The environmental department typically checks the meteorological data each working day. Finally, System Engineering

typically performs walkdowns of the meteorological tower twice a year (coincident with the calibration of the instrumentation).

RBS has procedural controls which establish a requirement for the 90% joint frequency recovery for the meteorological parameters used for atmospheric dispersion modeling and plume tracking in conjunction with assessment of radiation exposures in unrestricted areas. The meteorological monitoring system has an uninterruptible power supply, redundant sensors/signal processors for the critical parameters, and three types of data recording equipment. Validation and recovery of data consists of cursory examination of data for continuity and/or abnormalities, periodic intercomparisons among sensor channels and recording systems, review of hourly-averaged digital data, and update/revision of the data base as appropriate. Procedural guidance provides for the acceptance criteria for the data.

Since the data was collected in accordance with the RBS onsite meteorological program which meets the Regulatory Guide 1.23 guidance, no additional detailed data review was deemed necessary. However the annual hours in each stability class were compared to demonstrate data consistency from year to year.

The data in the ARCON format was manually spot checked against the raw data to ensure conversions and reformatting were properly performed. The only data conversion performed was the conversion of wind speeds in mph to wind speeds in m/sec. This wind speed data in m/sec was then rounded to two significant figures and then multiplied by 10 to meet the ARCON input requirements. Any wind speed data reported as calm, or with a wind speed below the starting wind speed of the instrumentation, was treated as a calm in the ARCON input file. As noted below in response to question 2, a more detailed review of the ARCON data revealed a computer code error that affected the conversions of the 1995 data. This error was not found during the initial spot checks, but has been corrected as noted in the response to question 2 below.

The stability class and wind directions were unchanged from the raw data. The only other change between the raw data and the ARCON format data was the replacement of bad or missing data with 9's to comply with the ARCON input requirements.

Question:

2. Meteorological Data

The wind speed maxima for both levels during 1995 are reported as 4.5 m/s. It seems unlikely that the maxima would be identical at both heights and 4.5 m/s is lower than the maxima at either level for the other years. Further, a cursory staff review indicates that the lower level wind speed is reported to be faster than the upper level wind speed more than 15 percent of 1995, and the upper level speed reported as less than or equal to 1 m/s more than 15 percent of the year.

A spot check between the ARCON formatted and raw data indicates that, for at least part of the year, the wind speed conversions at both levels do not appear to be correct and the upper level wind data appear to be offset by one hour. Do you agree with these observations?

With regard to the reported wind speed maxima during 1997, on day 93 there are three reported wind speed values that are in excess of the maxima for other years and do not appear to be well supported by either the temporal wind speed profile at the measurement level or the concurrent wind speed at the other level. To what is this attributed?

During the five-year period there are some intervals when the reported values of one or more parameters did not change from hour to hour at one or both measurement levels as would be expected due to typical meteorological processes. For example, the cursory staff review indicated that the lower level wind speed was reported to be the same for two or more consecutive hours about 10 percent of the time. In some cases, it appears that a value is repeated, perhaps because the measurement system failed to record a new valid measurement. Do you agree with these observations? If so, under what conditions does this occur and what is the estimated frequency of occurrence?

Year-to-year and height correlations of wind direction measurements do not appear to be as strong as at some locations in the USA with a very homogenous exposure. Although the terrain near the River Bend site is fairly flat, discuss its effects and other possible influences on wind direction at both measurement levels.

Data files for all years should be checked, amended, if appropriate, and any impact on the resultant relative concentration (X/Q) and dose estimates assessed and provided to the NRC. If you do not agree with the staff observations, provide a discussion to demonstrate that the data as originally provided are of high quality.

Response:

Entergy agrees with the staff's observation of the apparent anomalies in the 1995 wind speed data. These anomalies have been determined to be the result of a computer code error associated with the conversion of the 1995 data for use in the ARCON program. This error only affects the Main Control Room (MCR) X/Q values. Corrected calculations show that the affect on the atmospheric dispersion factors for the MCR are inconsequential. The X/Q results for the MCR were listed in Table 1 of Attachment 6 to letter RBG-46052 (Reference 3). Corrections to the X/Q results are provided in Attachment 2. The previously reported dose consequences are not affected by these corrections. Review of the ARCON data also indicates that the upper level wind speed data is offset by one hour as observed. This offset caused the data conversion program to artificially insert calm data for some of the 1996 data. The error has no significant impact on the calculated results, but has also been corrected.

The reported wind speeds for 1997 do appear to be anomalous but they were not reported as bad data in the raw data file. As discussed above, the hourly data is reviewed in accordance with site procedures prior to storage. Since the data was not rejected at that time they were retained for the actual analysis. The use of these values in the ARCON input file will have an insignificant effect on the results since this data is only 3 hours out of approximately 48,000 hours of data.

The acceptance criteria provided in RBS procedures requires that the wind speeds for the various sensors are within ±1 mph for wind speeds ≥3.0 mph and the wind direction is within ±10°. If wind speed at a given sensor height remains constant (i.e., varies ≤0.5

mph) for six consecutive hours, with average wind speeds greater than three mph, the data is questioned. Similarly, if wind direction at a given sensor height remains essentially constant (i.e., varies less than 10°) the data is questioned. Any deviation from the criteria listed above is documented as a nonconformance. The data is investigated to determine if a physical (maintenance) and/or clerical (data base revision) corrective action is necessary.

Entergy reviewed the meteorological data files but did not find any evidence of invalid measurements. Consecutive constant or calm wind speeds were rare and slight changes in lower level wind speeds were consistent with changes at the independent upper level instruments.

Therefore, the data utilized in the off-site and main control room X/Q calculations was deemed to be of high quality due to the redundant instrumentation design with an uninterruptable power supply, the programmatic controls in place during the time period of data collection, the immediate data review required by plant procedures, and subsequent review of the data as discussed above.

Question:

3. Offsite Relative Concentration Estimates

For new calculations, provide a copy of the input joint frequency distributions used in the PAVAN calculations. For previously approved relative concentration estimates, provide a citation of the approval.

Response:

This information was provided in the revised submittal (See Enclosure 1 [CD-ROM] of Reference 3).

Question:

4. Onsite Relative Concentration Estimates

Effective X/Q values were calculated for use in the dose assessment based upon credit for manual selection using dual intakes. When was such credit for dual intakes approved by the NRC to become part of the licensing basis and is such credit still appropriate?

For previously approved X/Q estimates, provide a citation of the approval.

Should the flow biased value for the 4 - 30 day time period listed on page 4, Attachment 9, of the April 24, 2002 letter be 1.16E-04 s/m^3?

Response:

NUREG-0989, *River Bend Station Safety Evaluation Report,* Section 6.4, discusses the RBS control room design. It states that "Widely separated air intakes are available, each with redundant radiation monitors, so that control room operators are able to select that intake exposed to the least contamination." Review of historical RBS calculations indicate that RBS credited the dual air intakes in the LOCA dose analysis as early as 1985. Also, dual air intakes are credited in all of the current LOCA, FHA, and CRDA analyses which were included in the power uprate amendment. Credit for dual air

intakes has never been credited in the MSLB analysis for RBS (that analysis assumes a "puff" release).

The credit for dual manual air intakes was taken in accordance with the N.R.C. Standard Review Plan (SRP), Section 6.4. The section of the SRP was not revised in support of AST. Review of SRP, Section 15.0.1, "Radiological Consequence Analysis Using Alternative Source Terms," does not provide additional guidance and/or restrictions concerning dual air intakes for the main control room. Nor does Regulatory Guide 1.183 provide any additional requirements and/or restriction concerning the main control room intakes. Therefore, the guidance contained in SRP 6.4 remains applicable, and it continues to be appropriate for use by RBS.

The X/Q values utilized in the FHA analysis were previously utilized in the analyses to support TS Amendments 35 (approval of opening up to 12 vent & drain lines in support of local leakage rate testing), 85 (Opening of containment personnel air locks), and 110 (Unreviewed Safety Question due to Radial Peaking Factor).

Review of the subsequent NRC Safety Evaluation Reports for each of the Amendments listed above indicates the NRC explicitly utilized the value corresponding to the Main Air Intake in the Amendment 85 SER. Also, the values listed for the off-site locations (EAB and LPZ) in the NRC analysis are identical to those utilized in the AST analysis.

The "flow biased" X/Q value for the 4-30 day time period should be 1.16E-04 s/m^3. Revision 1 (Reference 2) to the Amendment lists the correct value.

Question:

5. What release/receptor location pairs are assumed to be the most limiting for each of the design basis accidents?

Response:

Loss of Coolant Accident:

- Containment and Secondary releases are based on the Standby Gas Treatment release point (main plant stack).
- Main Steam Isolation Valve and Secondary Containment Bypass leakage terms assume a Turbine Building release point.
- Engineered Safety Features liquid leakage releases are based on the Standby Gas Treatment release point (main plant stack).

Control Rod Drop Accident:
The releases for both scenarios are based on a turbine building release point.

Main Steam Line Break (MSLB):
The MSLB assumes a release from the main steam tunnel blowout panel.

Fuel Handling Accident (FHA):
The FHA assumes a release from the primary containment building, however, the values are consistent with those used in the current FHA analyses (See Amendments 25, 85, and 114), i.e., the values are based on the Murphy-Campe methodology. Confirmatory calculations were performed which demonstrate that the Murphy-Campe values are conservative.

Attachment 2

To

RBG – 46081

Corrected pages for RBG-46052

Discussion of Changes

This attachment contains pages from letter RBG-46052 (reference 3) that have been revised to reflect the correction of analysis data. The changes correct the following errors:

1) An incorrect chemical form was used in RADTRAD model for Engineered Safety Feature (ESF) leakage resulting in a non-conservative dose consequence.
2) An incorrect, but conservative main control room X/Q value was used for the 96 to 720 hour time step.
3) Incorrect Main Control Room (MCR) X/Q values were used for secondary containment bypass, containment leakage, and ESF leakage models in the DBA-LOCA calculation due to an error associated with the metrological data conversion. This error resulted in non-conservative dose consequences.
4) Incorrect, but conservative direction and distance were used to calculate MCR X/Q values for turbine building releases.

The correction of these errors resulted in changes to the following tables of RBG-46052:

Table 1, Main Control Room Atmospheric Dispersion Factors - ARCON96 Inputs, included on pages 4 and 5 of Attachment 6,

Table 2, Control Room 5% Probability Level X/Q Values, included on page 6 of Attachment 6,

Table 2, Main Control Room Flow Biased X/Q Values, included on page 7 of Attachment 7,

Table 3, X/Q Values Used in LOCA Analysis, also included on page 7 of Attachment 7,

Table 6, Loss of Coolant Accident (LOCA) Radiological Dose Consequences, included on page 12 of Attachment 7

The cumulative affect of these errors was an overall reduction in the calculated DBA-LOCA dose for the main control room, and a slight increase in the Low Population Zone (LPZ) and the Exclusion Area Boundary (EAB) doses. The decrease in MCR dose is due mainly to the reduction in the turbine building (secondary containment bypass leakage) X/Qs. This reduction is due to a conservative error in both direction and distance between the source and the receptor. While errors associated with the conversion of the metrological data generally tended to increase the MCR X/Q values, the cumulative affect of all the X/Q errors were smaller turbine to MCR X/Q values.

The Main Steam Line Break (MSLB) calculation, control rod drop accident analysis (CRDA), and the fuel handling accident (FHA) analysis were reviewed for impact due to the revision of the MCR X/Q values. While the MCR X/Q value for release from the main steam tunnel were impacted, there was no affect on the doses calculated due to the small change in the X/Q values. The CRDA analysis used conservative turbine building release X/Q, therefore, the existing calculated doses are bounding. The FHA calculation does not use the affected MCR X/Q values, therefore, there is no affect to the FHA analysis.

REVISED PAGE 4 OF ATTACHMENT 6 TO LETTER RBG-46052

Table 1
Main Control Room Atmospheric Dispersion Factors - ARCON96 Inputs

Parameter	Main Plant Stack	Main Steam Tunnel Blowout Panel	Contain. Eq. Hatch	Turbine Building (worst point)	Fuel Handling Building	Comments
Lower Meas. Height, m	9.1	9.1	9.1	9.1	9.1	Lower instrument is 30' above grade.
Upper Meas. Height, m	45.7	45.7	45.7	45.7	45.7	Upper instrument is 150' above grade.
Wind Speed Units	m/s	m/s	m/s	m/s	m/s	
Release Height – MAI, m	58.8	22.5	2.5	18.0	22.9	
Release Height – RAI, m	58.8	22.5	2.5	9.0	3.0	
Building Area – MAI, m^2	2,121	1,006	2,121	909.5	838	
Building Area – RAI, m^2	2,121	911.5	2,121	911.5	838	
Vertical Velocity, m/s	0	0	0	0	0	Point releases – set to 0 per DG-1111, Table A-1
Stack Flow, m^3/s	0	0	0	0	0	Flow not credited – Set to 0 per DG-1111, Table A-1
Stack Radius, m	0	0	0	0	0	Set to 0 per DG-1111, Table A-1
Distance to Main Intake, m	61.9	61.7	56.7	44.1	67.4	See Figure 1 for release points (Note 1).
Distance to Remote Intake, m	118.2	151.2	119.7	141.8	72.7	See Figure 1 for release points (Note 1).
Main Intake Height, m	18.0	18.0	18.0	18.0	18.0	
Remote Intake Height, m	9.0	9.0	9.0	9.0	9.0	
Elevation Difference (MAI), m	0.0	0.0	0.0	1.1	1.1	
Elevation Difference (RAI), m	1.1	1.1	1.1	0.0	0.0	

REVISED PAGE 5 OF ATTACHMENT 6 TO LETTER RBG-46052

Parameter	Main Plant Stack	Main Steam Tunnel Blowout Panel	Contain. Eq. Hatch	Turbine Building (worst point)	Fuel Handling Building	Comments
Direction to Source (MAI), °	255	214	274	202	281	
Direction to Source (RAI), °	099	111	090	119	091	
Surface Roughness Length, m	0.2	0.2	0.2	0.2	0.2	DG-1111, Table A-1
Wind Direction Window, °	90	90	90	90	90	DG-1111, Table A-1
Min. Wind Speed, m/s	0.5	0.5	0.5	0.5	0.5	DG-1111, Table A-1
Avg. Sector Width Constant	4.3	4.3	4.3	4.3	4.3	DG-1111, Table A-1
Initial Diffusion Coefficients, m	0	0	0	0	0	Point releases – set to 0 per DG-1111, Table A-1
Hours in Averages	Default	Default	Default	Default	Default	Default values used per DG-1111, Table A-1
Minimum Number of Hours	Default	Default	Default	Default	Default	Default values used per DG-1111, Table A-1

Note 1: The fuel building assumes releases through the FB ventilation system for the Main Air Intake and assumes a release through the truck bay doors for the remote air intake.

REVISED PAGE 6 OF ATTACHMENT 6 TO LETTER RBG-46052

Table 2

Control Room 5% Probability Level χ/Q Values (Sec/m^3)

Time Period	Standby Gas Treatment System		Main Steam Tunnel Blowout Panel		Containment Equipment Hatch	
	Main Air Intake	Remote Air Intake	Main Air Intake	Remote Air Intake	Main Air Intake	Remote Air Intake
0 to 2 hours	1.09E-03	4.30E-04	1.42E-03	2.65E-04	1.21E-03	3.45E-04
2 to 8 hours	7.78E-04	3.53E-04	1.08E-03	2.17E-04	7.46E-04	2.27E-04
8 to 24 hours	3.44E-04	1.38E-04	4.57E-04	9.16E-05	3.39E-04	9.58E-05
1 to 4 days	2.46E-04	1.19E-04	3.50E-04	6.67E-05	2.63E-04	7.75E-05
4 to 30 days	2.18E-04	8.58E-05	2.58E-04	4.80E-05	2.19E-04	5.76E-05

Time Period	Turbine Building Vent		Fuel Handling Building Door	
	Main Air Intake	Remote Air Intake	Main Air Intake	Remote Air Intake
0 to 2 hours	2.70E-03	2.85E-04	1.09E-03	8.57E-04
2 to 8 hours	2.23E-03	2.29E-04	6.82E-04	5.53E-04
8 to 24 hours	9.67E-04	1.03E-04	3.17E-04	2.41E-04
1 to 4 days	7.43E-04	7.38E-05	2.33E-04	1.89E-04
4 to 30 days	5.49E-04	5.13E-05	1.94E-04	1.41E-04

REVISED PAGE 7 OF ATTACHMENT 7 TO LETTER RBG-46052

TABLE 2

MAIN CONTROL ROOM FLOW BIASED X/Q VALUES

Time Period	Main Air Intake	Remote Air Intake	More favorable	MF/4	Effective
SGTS					
0 to 2 hours	1.09E-03	4.30E-04	4.30E-04	1.08E-04	2.55E-04
2 to 8 hours	7.78E-04	3.53E-04	3.53E-04	8.83E-05	1.92E-04
8 to 24 hours	3.44E-04	1.38E-04	1.38E-04	3.45E-05	8.09E-05
1 to 4 days	2.46E-04	1.19E-04	1.19E-04	2.98E-05	6.22E-05
4 to 30 days	2.18E-04	8.58E-05	8.58E-05	2.15E-05	5.09E-05
Turbine Building					
0 to 2 hours	2.70E-03	2.85E-04	2.85E-04	7.13E-05	4.66E-04
2 to 8 hours	2.23E-03	2.29E-04	2.29E-04	5.73E-05	3.83E-04
8 to 24 hours	9.67E-04	1.03E-04	1.03E-04	2.58E-05	1.67E-04
1 to 4 days	7.43E-04	7.38E-05	7.38E-05	1.85E-05	1.27E-04
4 to 30 days	5.49E-04	5.12E-05	5.12E-05	1.28E-05	9.32E-05

TABLE 3

X/Q VALUES USED IN LOCA ANALYSIS

Release Point	EAB*	LPZ	MCR
SGTS/Containment			
0-2 hours	6.05E-4	7.49E-5	2.55E-4
2-8 hours	6.05E-4	7.49E-5	1.92E-4
8-24 hours	6.05E-4	5.02E-5	8.09E-5
1-4 days	6.05E-4	2.10E-5	6.22E-5
4-30 days	6.05E-4	6.13E-6	5.09E-5
Turbine Building			
0-2 hours	7.51E-4	7.79E-5	4.66E-4
2-8 hours	7.51E-4	7.79E-5	3.83E-4
8-24 hours	7.51E-4	5.23E-5	1.67E-4
1-4 days	7.51E-4	2.21E-5	1.27E-4
4-30 days	7.51E-4	6.40E-6	9.32E-5

Note *: The 0 – 2 hour values will conservatively be assumed to last for the duration of the accident to ensure the "maximum" 2 hour dose is calculated as required per RG 1.183.

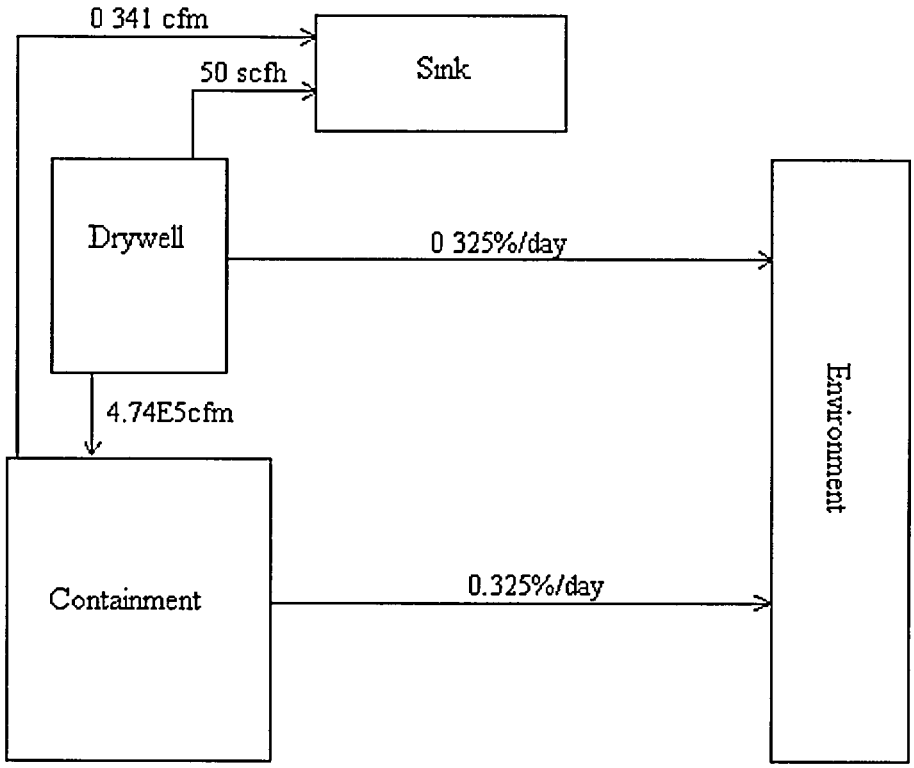
REVISED PAGE 12 OF ATTACHMENT 7 TO LETTER RBG-46052

TABLE 6

LOCA RADIOLOGICAL CONSEQUENCES

Release Descriptions	EAB	LPZ	MCR
Containment/Secondary Containment	2.6	1.7	0.4
Secondary Containment Bypass/MSIV	12.3	5.4	2.5
ESF Liquid Leakage	0.4	0.6	0.2
Total	**15.3**	**7.7**	**3.1**
Regulatory Limit	***25.0***	***25.0***	***5.0***

Figure 1a
Primary and Secondary Containment Releases: 0 – 10 Minutes



Note *: The times referred to in Figures 1 through 3 are post-break times rather than AST time (i.e., time after the onset of fuel damage). This was done for convenience and to avoid confusion. In reality the input decks generated by RBS were done in AST time and neglect the first 2 minutes.
Note **: The "sink" node was used to contain radioactivity which is evaluated elsewhere. This was necessary to apply the appropriate dispersion factors to different release paths. Specifically, for the primary and secondary containment releases the SCB and MSIV leakage paths are evaluated in a separate input deck (as depicted in Figures 2a through 2e).