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G3NO-2008-00023

December 1, 2008

U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001
Attention: Document Control Desk

DOCKET: No. 52-024

SUBJECT: Responses to NRC Requests for Additional Information, Letter No. 19 (GG3 COLA)

REFERENCE: NRC Letter to Entergy Nuclear, *Request for Additional Information Letter No. 19 Related to the SRP Section 13.03 for the Grand Gulf Combined License Application*, dated October 30, 2008 (ADAMS Accession No. ML083040249).

Dear Sir or Madam:

In the referenced letter, the NRC requested additional information on seventy-one items to support the review of certain portions of the Grand Gulf Unit 3 Combined License Application (GG3 COLA). The responses to the following Requests for Additional Information (RAIs) in the referenced letter are provided in Attachments 1 through 71 to this letter as follows:

1. RAI Question 13.03-1, ETE-1: Estimated Population Growth
2. RAI Question 13.03-2, ETE-1: Estimated Population Growth
3. RAI Question 13.03-3, ETE-1: Estimated Population Growth
4. RAI Question 13.03-4, ETE-2: Site Location and Emergency Planning Zone
5. RAI Question 13.03-5, ETE-2: Site Location and Emergency Planning Zone
6. RAI Question 13.03-6, ETE-3: ETE General Assumptions
7. RAI Question 13.03-7, ETE-3: ETE General Assumptions
8. RAI Question 13.03-8, ETE-3: ETE General Assumptions
9. RAI Question 13.03-9, ETE-3: ETE General Assumptions
10. RAI Question 13.03-10, ETE-3: ETE General Assumptions
11. RAI Question 13.03-11, ETE-3: ETE General Assumptions
12. RAI Question 13.03-12, ETE-4: ETE Methodology
13. RAI Question 13.03-13, ETE-4: ETE Methodology
14. RAI Question 13.03-14, ETE-5: Demand Estimation, Permanent Residents
15. RAI Question 13.03-15, ETE-6: Demand Estimation, Transient Populations
16. RAI Question 13.03-16, ETE-6: Demand Estimation, Transient Populations
17. RAI Question 13.03-17, ETE-7: Demand Estimation, Special Facility Population

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18. RAI Question 13.03-18, ETE-7: Demand Estimation, Special Facility Population
19. RAI Question 13.03-19, ETE-7: Demand Estimation, Special Facility Population
20. RAI Question 13.03-20, ETE-7: Demand Estimation, Special Facility Population
21. RAI Question 13.03-21, ETE-7: Demand Estimation, Special Facility Population
22. RAI Question 13.03-22, ETE-7: Demand Estimation, Special Facility Population
23. RAI Question 13.03-23, ETE-7: Demand Estimation, Special Facility Population
24. RAI Question 13.03-24, ETE-7: Demand Estimation, Special Facility Population
25. RAI Question 13.03-25, ETE-7: Demand Estimation, Special Facility Population
26. RAI Question 13.03-26, ETE-7: Demand Estimation, Special Facility Population
27. RAI Question 13.03-27, ETE-7: Demand Estimation, Special Facility Population
28. RAI Question 13.03-28, ETE-7: Demand Estimation, Special Facility Population
29. RAI Question 13.03-29, ETE-7: Demand Estimation, Special Facility Population
30. RAI Question 13.03-30, ETE-8: Demand Estimation, Emergency Planning Zone
31. RAI Question 13.03-31, ETE-8: Demand Estimation, Emergency Planning Zone
32. RAI Question 13.03-32, ETE-8: Demand Estimation, Emergency Planning Zone
33. RAI Question 13.03-33, ETE-9: Traffic Capacity, Evacuation Roadway Network
34. RAI Question 13.03-34, ETE-9: Traffic Capacity, Evacuation Roadway Network
35. RAI Question 13.03-35, ETE-10: Traffic Capacity, Roadway Segment Characteristics
36. RAI Question 13.03-36, ETE-10: Traffic Capacity, Roadway Segment Characteristics
37. RAI Question 13.03-37, ETE-10: Traffic Capacity, Roadway Segment Characteristics
38. RAI Question 13.03-38, ETE-10: Traffic Capacity, Roadway Segment Characteristics
39. RAI Question 13.03-39, ETE-10: Traffic Capacity, Roadway Segment Characteristics
40. RAI Question 13.03-40, ETE-10: Traffic Capacity, Roadway Segment Characteristics
41. RAI Question 13.03-41, ETE-11: Analysis of Evacuation Times, Report Format
42. RAI Question 13.03-42, ETE-11: Analysis of Evacuation Times, Report Format
43. RAI Question 13.03-43, ETE-12: Analysis of Evacuation Times, Methodology, Total Evacuation Times
44. RAI Question 13.03-44, ETE-12: Analysis of Evacuation Times, Methodology, Total Evacuation Times
45. RAI Question 13.03-45, ETE-12: Analysis of Evacuation Times, Methodology, Total Evacuation Times
46. RAI Question 13.03-46, ETE-12: Analysis of Evacuation Times, Methodology, Total Evacuation Times
47. RAI Question 13.03-47, ETE-13: Analysis of Evacuation Times, Methodology, Distribution Functions
48. RAI Question 13.03-48, ETE-13: Analysis of Evacuation Times, Methodology, Distribution Functions
49. RAI Question 13.03-49, ETE-13: Analysis of Evacuation Times, Methodology, Distribution Functions
50. RAI Question 13.03-50, ETE-13: Analysis of Evacuation Times, Methodology, Distribution Functions
51. RAI Question 13.03-51, ETE-13: Analysis of Evacuation Times, Methodology, Distribution Functions
52. RAI Question 13.03-52, ETE-14: Analysis of Evacuation Times, Methodology, Traffic Congestion
53. RAI Question 13.03-53, ETE-15: Analysis of Evacuation Times, Methodology, Maximum Evacuation Times
54. RAI Question 13.03-54, ETE-16: Other Requirements, Confirmation of Evacuation
55. RAI Question 13.03-55, ETE-17: Other Requirements, Specific Recommendations
56. RAI Question 13.03-56, ETE-18: Other Requirements, Draft Review

57. RAI Question 13.03-57, SITE-1: Medical and Public Health Support and SITE-11: Assignment of Responsibility
58. RAI Question 13.03-58, SITE-2: Public Education and Information
59. RAI Question 13.03-59, SITE-2: Public Education and Information
60. RAI Question 13.03-60, SITE-3: Radiological Emergency Response Training
61. RAI Question 13.03-61, SITE-3: Radiological Emergency Response Training
62. RAI Question 13.03-62, SITE 4: Protective Response
63. RAI Question 13.03-63, SITE-5: Accident Assessment
64. RAI Question 13.03-64, SITE-6: Emergency Communications
65. RAI Question 13.03-65, SITE-6: Emergency Communications
66. RAI Question 13.03-66, SITE-7: Protective Response
67. RAI Question 13.03-67, SITE-8: Part 2, FSAR
68. RAI Question 13.03-68, SITE-9: Emergency Plan
69. RAI Question 13.03-69, SITE-10: Exercises and Drills
70. RAI Question 13.03-70, SITE-10: Exercises and Drills
71. RAI Question 13.03-71, SITE-13: Emergency Facilities and Equipment

Should you have any questions, please contact me or Mr. Tom Williamson of my staff. Mr. Williamson may be reached as follows:

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This letter contains commitments, as identified in Attachment 72.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on December 1, 2008.

Sincerely,

TLW/ghd

Attachments:

1. Response to RAI Question No. 13.03-1
2. Response to RAI Question No. 13.03-2
3. Response to RAI Question No. 13.03-3
4. Response to RAI Question No. 13.03-4
5. Response to RAI Question No. 13.03-5
6. Response to RAI Question No. 13.03-6
7. Response to RAI Question No. 13.03-7
8. Response to RAI Question No. 13.03-8
9. Response to RAI Question No. 13.03-9
10. Response to RAI Question No. 13.03-10
11. Response to RAI Question No. 13.03-11
12. Response to RAI Question No. 13.03-12
13. Response to RAI Question No. 13.03-13
14. Response to RAI Question No. 13.03-14
15. Response to RAI Question No. 13.03-15
16. Response to RAI Question No. 13.03-16
17. Response to RAI Question No. 13.03-17
18. Response to RAI Question No. 13.03-18
19. Response to RAI Question No. 13.03-19
20. Response to RAI Question No. 13.03-20
21. Response to RAI Question No. 13.03-21
22. Response to RAI Question No. 13.03-22
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24. Response to RAI Question No. 13.03-24
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50. Response to RAI Question No. 13.03-50

51. Response to RAI Question No. 13.03-51
52. Response to RAI Question No. 13.03-52
53. Response to RAI Question No. 13.03-53
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56. Response to RAI Question No. 13.03-56
57. Response to RAI Question No. 13.03-57
58. Response to RAI Question No. 13.03-58
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62. Response to RAI Question No. 13.03-62
63. Response to RAI Question No. 13.03-63
64. Response to RAI Question No. 13.03-64
65. Response to RAI Question No. 13.03-65
66. Response to RAI Question No. 13.03-66
67. Response to RAI Question No. 13.03-67
68. Response to RAI Question No. 13.03-68
69. Response to RAI Question No. 13.03-69
70. Response to RAI Question No. 13.03-70
71. Response to RAI Question No. 13.03-71
72. Regulatory Commitments

Enclosure: 1. CD-ROM Containing the Electronic Files Listed Below:

- RAI_LTR19_Supp1_ETE.pdf (2,899 KB) – Publically Available
- RAI_LTR19_Figure_1-2.pdf (3,887 KB) – Publically Available

cc (email unless otherwise specified; w/o enclosure unless otherwise specified):

NRC

NRC Project Manager – Grand Gulf Unit 3 COLA (w/enclosure)
NRC Project Manager – North Anna Unit 3 COLA
NRC Director – Division of Construction Projects (Region II)
NRC Regional Administrator - Region IV
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Mr. B. R. Johnson (GE-Hitachi)
Mr. P. Smith (DTE)

ATTACHMENT 1

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-1

RAI QUESTION NO. 13.03-1

NRC RAI 13.03-1

ETE-1: Estimated Population Growth
Acceptance Criterion: 11, 17
Regulatory Basis: Regulatory Guide 1.206, Appendix 4 to NUREG-0654 Section II.A

A. Section 2.1.1, "Data Estimates," (page 2-1) states population estimates are based on the 2000 census data that were extrapolated to 2007. The footnote to Table 6-4, "Vehicle Estimates for Various Combinations of Regions and Scenarios," (page 6-6) states permanent resident and shadow populations were not extrapolated to 2007. Explain why the permanent resident and shadow populations were not extrapolated to 2007 as stated in Section 2.1.1.

Entergy Response

A. The "*" footnote to Table 6-4 on page 6-6 of the Evacuation Time Estimate (ETE) report has been changed to footnote 2; see the response to RAI 13.03-014 for discussion of footnote 1. All "*" in Table 6-4 have been revised to "[2]". The second sentence of footnote 2 on Page 6-6 of the ETE report is revised in Supplement 1 to the Grand Gulf ETE report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter) to read, "...have not been extrapolated to 2015." The final sentence of footnote 2 is revised in the errata submittal to read, "Comparison of the 2000 Census and 2005 Census estimates indicate that population is actually decreasing within the EPZ (See Table 3-1), and within the Shadow Region (See page 7-2)...". Footnote 2 pertains only to the vehicle estimates for the two "special event" Scenarios 11 and 12 that are marked with a "[2]". As the footnote indicates, the permanent resident and shadow populations have been decreasing during recent history. As a conservative basis, the 2007 population estimates were applied for 2015 rather than extrapolating from 2007 with a negative growth rate which would result in a lower population estimate for 2015. This is further explained on Page 3-3 of the ETE report under the discussion of Special Events. The permanent resident and shadow populations were extrapolated to 2007 as shown in Tables 3-1 and 3-2 of the ETE report, using the methodology outlined in Section 2.1.1 and on Page 3-2 of the ETE report.

   The text of Assumption #1 on page 2-1, the discussion on Page 3-3 and the footnote on page 6-6 of the ETE report are revised in Supplement 1 to the ETE report.

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Change the reference to 2004 census estimates on Page 2-1 to 2005 census estimates.

2. Change the reference to 2006 census estimates on Page 3-3 to 2005 census estimates.

3. Change the second sentence of the footnote on Page 6-6 to read, "...have not been extrapolated to 2015."

4. Change the third sentence of the footnote on Page 6-6 to read, "Comparison of the 2000 Census and 2005 Census estimates indicate that population is actually decreasing within the EPZ (See Table 3-1), and within the Shadow Region (See page 7-2)..."

5. The "*" footnote to Table 6-4 is revised to footnote 2. All "*" in the table have been updated accordingly.

ATTACHMENT 2

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-2

RAI QUESTION NO. 13.03-2

NRC RAI 13.03-2

ETE-1: Estimated Population Growth
Acceptance Criterion: 11, 17
Regulatory Basis: Regulatory Guide 1.206, Appendix 4 to NUREG-0654 Section II.A

B. County-specific projections are based on growth rates estimated by comparing the 2000 census data with the 2004 census data. The data show that the population inside of the plume exposure pathway Emergency Planning Zone (EPZ) has decreased by 3.5%. However, in COL Application Part 3: Grand Gulf Nuclear Station Environmental Report [ER] Section 2.5.1, "Demography," (page 93) which states population estimates for the counties in Mississippi and parishes in Louisiana show increasing trends. Clarify which growth rate is correct and make the appropriate changes to the Evacuation Time Estimate.

Entergy Response

B. The population trend estimates cited in the RAI, and provided within the Evacuation Time Estimate (ETE) report and the Environmental Report (ER), detail trends calculated over different time periods and different geographical areas. The ETE report discusses population trends within the plume exposure pathway Emergency Planning Zone (EPZ), while the ER discusses population trends in a 14 county area comprising the ingestion exposure pathway zone. Therefore, the population growth rates would not be expected to be the same. Specifically, ETE Table 3-1 presents population information for the EPZ, which includes portions of Tensas Parish, LA and Claiborne County, MS. The ER Section 2.5.1 information, cited in the RAI, pertains to trends in a considerably larger portion of Mississippi, including a number of relatively higher population centers, such as Jackson, MS and Vicksburg, MS. Both representations are considered to be accurate for the area and time period noted. Additional detail is provided below.

Claiborne County. As stated on page 3-2 of the ETE report, 2000 census data were compared with estimates for the year 2005 in order to obtain a county-specific growth rate. The data from the census website (www.census.gov) indicated estimated populations for Claiborne County of 11,831 on April 1, 2000 and 11,492 on July 1, 2005. This represents a growth rate of (-)0.55 percent per year. This rate was used to extrapolate the 2000 population within the *Claiborne County portion* of the EPZ to the year 2007.

Tensas Parish. The data from the census website indicated estimated populations for Tensas Parish of 6,618 on April 1, 2000 and 6,125 on July 1, 2005. This represents a growth rate of (-)1.41 percent per year. This rate was used to extrapolate the 2000 population within the *Tensas Parish portion* of the EPZ to the year 2007.

Thus, the collective impacts of a declining population projection for Claiborne County and Tensas Parish, along with an expected increase in ERPA 6 related to Alcorn State University, indicate an overall decrease of -3.5 percent for the EPZ is predicted and shown in Table 3-1 of the ETE report.

Page 2-93 of the ER (Section 2.5.1) identifies 14 Mississippi counties within 50 miles of the Grand Gulf Nuclear Station (GGNS) early site permit (ESP) site that were affected by Hurricane Katrina. The ER indicates that the average population change for these 14 counties was a 0.6 percent increase between July 1, 2005 and January 1, 2006. ER Section 2.5 Reference 201 (www.census.gov/Press-Release/www/emergencies/gulfcoast_impact_estimates.xls) provides the population data for each of these 14 counties for July 1, 2005 and January 1, 2006. These population data were used to develop the average population increase of 0.6 percent between July 1, 2005 and January 1, 2006 for these 14 counties.

The latest Census data were investigated for Claiborne County (http://quickfacts.census.gov/qfd/states/28/28021.html) and Tensas Parish (http://quickfacts.census.gov/qfd/states/22/22107.html). The latest estimates provided are for the year 2006. The data for Claiborne County indicate a percent change in population of (-) 2.9 percent from April 1, 2000 to July 1, 2006. The data for Tensas Parish indicate a percent change in population of -7.3 percent from April 1, 2000 to July 1, 2006. Based on these data, there is no change to the population growth rates used to extrapolate to year 2007 in the ETE report and there are no changes to the evacuation time estimates.

Proposed COLA Revisions

None

ATTACHMENT 3

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-3

RAI QUESTION NO. 13.03-3

NRC RAI 13.03-3

ETE-1: Estimated Population Growth
Acceptance Criterion: 11, 17
Regulatory Basis: Regulatory Guide 1.206, Appendix 4 to NUREG-0654 Section II.A

C. Section 2.1.1, "Data Estimates," (page 2-1) states county-specific projections are based upon growth rates estimated by comparing the 2000 census data with 2004 census data. The footnote to Table 6-4, "Vehicle Estimates for Various Combinations of Regions and Scenarios," (page 6-6) states comparisons were made between the 2000 census and the 2006 census. Explain which census data were compared to determine county specific growth rates.

Entergy Response

C. As discussed in the response to RAI 13.03-2 the 2005 census estimates were compared with the 2000 census data to determine county-specific growth rates. The text on page 3-2 of the Evacuation Time Estimate (ETE) report is correct. Pages 2-1, 3-3 and 6-6 of the ETE report are revised in Supplement 1 to the Grand Gulf ETE report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter) to indicate the 2005 census estimates.

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Change the reference to 2004 census estimates on Page 2-1 to 2005 census estimates.

2. Change the reference to 2006 census estimates on Page 3-3 to 2005 census estimates.

3. Change the reference to 2006 census estimates on Page 6-6 to 2005 census estimates.

ATTACHMENT 4

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-4

RAI QUESTION NO. 13.03-4

NRC RAI 13.03-4

ETE-2: Site Location and Emergency Planning Zone
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section I.A.

A. Figure 1-1, "Grand Gulf Site Location," (page 1-6) contains a map of the area showing the plant location, but does not identify road networks, topographical features or political boundaries. Figure 3-1, "Grand Gulf Nuclear Station EPZ [plume exposure pathway Emergency Planning Zone] ERPAs [Emergency Response Planning Areas]," (page 3-4) shows the location of the station with ERPA boundaries but transportation networks and political boundaries are not identified. The entire transportation network is laid out in Figure 1-2, "Grand Gulf Link-Node Analysis Network," (page 1-10) but sufficient detail is not provided to identify the important features of the surrounding areas. Provide detailed maps that clearly identify topographical features, political boundaries, and the transportation network.

Entergy Response

A. Labels have been added to Figure 1-1 to indicate the major roads, lakes, rivers, and the communities in the area. County boundaries were identified and labeled in Figure 1-1 of the Evacuation Time Estimate (ETE) report. Figure 1-1 is revised in Supplement 1 to the Grand Gulf ETE report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter) to include major roads, lakes, rivers, and communities in the area.

   A large-scale (48 inch by 36 inch) PDF file of Figure 1-2 is provided as Enclosure 1, RAI_LTR19_Figure_1-2.pdf, to this letter as discussed in the response to RAI 13.03-35. Sector and quadrant boundaries are delineated on that figure. Major roadways, communities, lakes, and rivers are also labeled in the map.

   Labels have been added to Figures 3-1 and 6-1 identifying the major roads, lakes, rivers, and communities in the area. County boundaries have been added and labeled in these figures. Figures 3-1 and 6-1 are revised in Supplement 1 to the Grand Gulf ETE report.

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Revise Figures 1-1 (Page 1-6), 3-1 (Pages ES-7 and 3-4) and 6-1 (Page 6-3) of the ETE report to indicate major roads, lakes, rivers, and the communities in the area.

ATTACHMENT 5

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-5

RAI QUESTION NO. 13.03-5

NRC RAI 13.03-5

ETE-2: Site Location and Emergency Planning Zone
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section I.A.

B. Section 1.2, "Grand Gulf Nuclear Station Site Location," (page 1-6) states Figure 1-1 shows surrounding communities, but they are not identified on the map. Provide additional information on the location of communities surrounding the Grand Gulf Nuclear Station.

Entergy Response

B. The communities within the study area have been labeled on the revised Figure 1-1, as discussed in the response to RAI 13.03-4. Figure 1-1 is revised in Supplement 1 to the Grand Gulf Evacuation Time Estimate (ETE) report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter).

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Revise Figure 1-1 of the ETE report per the response to RAI 13.03-4.

ATTACHMENT 6

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-6

RAI QUESTION NO. 13.03-6

NRC RAI 13.03-6

ETE-3: ETE General Assumptions
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Sections I.B, Section II.C, Section III.A, IV.A.1

A. Section 2.2., "Study Methodological Assumptions," (page 2-2) assumption #4, states: "Regions (i.e., of the EPZ) are defined by the underlying "keyhole" or circular configurations as specified in NUREG 0654. These Regions, as defined, display irregular boundaries reflecting the geography of the zones included within the underlying configurations." Additionally, in Figure 2-1, "Voluntary Evacuation Methodology," (page 2-3) it shows the "key-hole" region as a two mile circle and going downwind to 5 miles. However, NUREG 0654 does not show the "key-hole" staying at a 2 mile circle and going downwind to 5 miles. Discuss the apparent discrepancy between the text in Assumption #4 and the graphic in Figure 2-1, with respect to the "key-hole" configuration.

Entergy Response

A, The text in Assumption #4 is incorrect in its reference to NUREG-0654; the text should reference NUREG/CR-6863. The text of Assumption #5 of Section 2.2 is accurate and reflects the evacuation percentages that were input to the model for each evacuation Region. Figure 2-1 provides an example of a Region with an evacuation of the 2-mile ring and a sector extending to 5 miles. To clarify, Figure 2-1 (also Figure 7-1) is modified as shown in this response to display idealized examples of all possible evacuation Regions, and the evacuation percentages within the Emergency Planning Zone (EPZ) and Shadow Region associated with these Regions. Figures 2-1 and 7-1 are revised in Supplement 1 to the Grand Gulf Evacuation Time Estimate (ETE) report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter). Also, Table H-1, included in this response, is added to Appendix H of the ETE report via Supplement 1. This table provides the evacuation percentage used for each Emergency Response Planning Area (ERPA) for each Region.

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Change the titles of Figures 2-1 and 7-1 on Page iii of the Table of Contents to "Assumed Regional Evacuation Percentages".

2. Change reference to NUREG-0654 in Assumption 4 on Page 2-2 of Section 2.2 to reference NUREG/CR-6863.

3. Revise Figures 2-1 and 7-1 to show assumed regional evacuation percentages, matching the text of Assumption #5 in Section 2.2.

4. Add new Table H-1 to Appendix H, Page H-11.

5. Change the title of Appendix H to "Evacuation Regions".

6. Revise sentence on Page H-1 to read, "This appendix presents a table indicating the percent of ERPA population evacuating for each Evacuation Region, as well as maps of all Evacuation Regions."

7. Change the title of Appendix H in the Table of Contents, Page ii, to "Evacuation Regions"

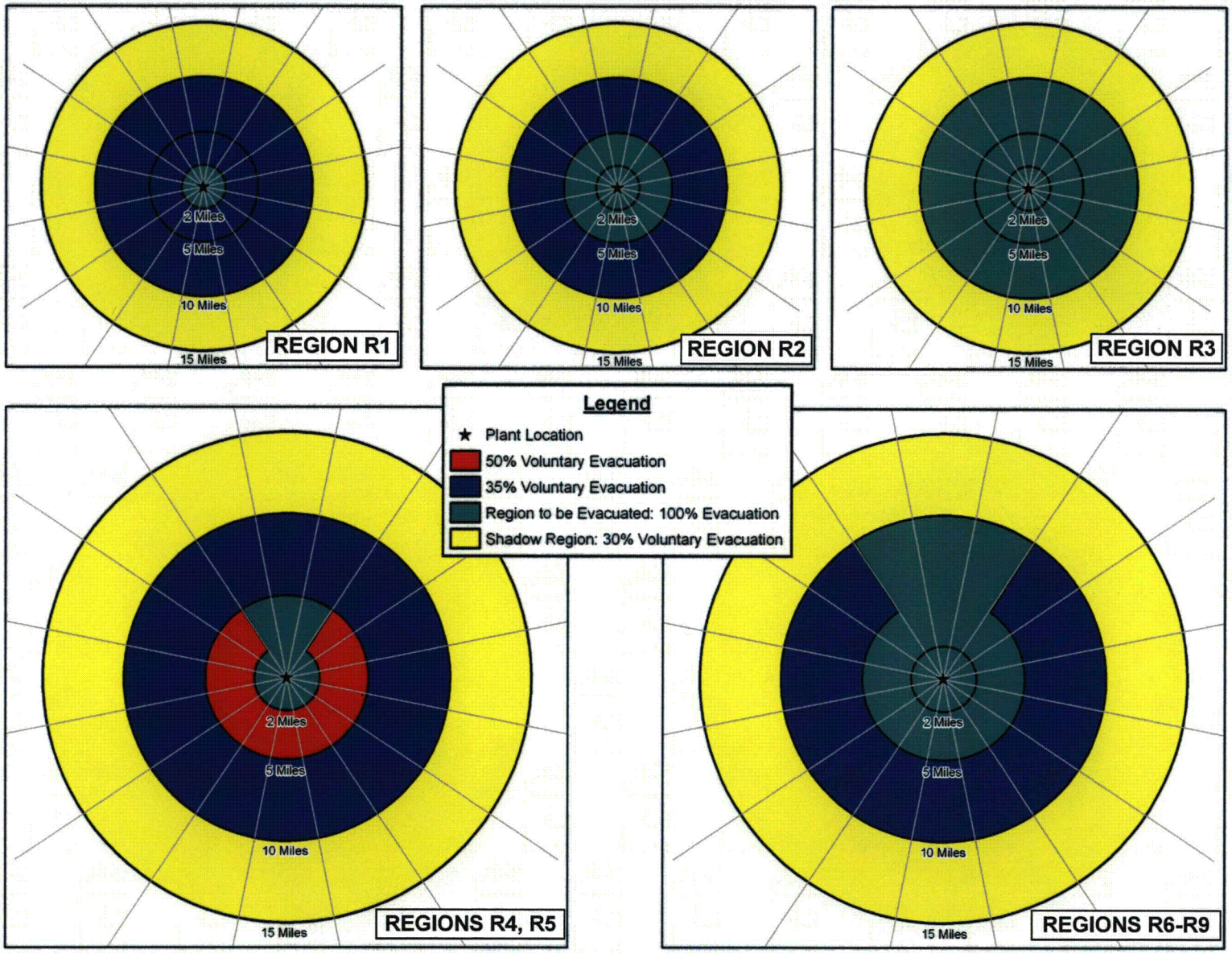


Figure 2-1. Assumed Regional Evacuation Percentages

Table H-1. Percent of ERPA Population Evacuating for Each Region									
	REGION								
	2-Mile Ring, 5-Mile Ring, Entire EPZ			2-Mile Radius and Downwind to 5-Miles		5-Mile Radius and Downwind to EPZ Boundary			
ERPA	R1	R2	R3	R4	R5	R6	R7	R8	R9
1	100%	100%	100%	100%	100%	100%	100%	100%	100%
2A	35%	100%	100%	100%	50%	100%	100%	100%	100%
2B	35%	35%	100%	35%	35%	100%	50%	50%	50%
3A	35%	100%	100%	50%	100%	100%	100%	100%	100%
3B	35%	35%	100%	35%	35%	50%	100%	50%	50%
4A	35%	100%	100%	50%	100%	100%	100%	100%	100%
4B	35%	35%	100%	35%	35%	50%	100%	50%	50%
5A	35%	100%	100%	50%	100%	100%	100%	100%	100%
5B	35%	35%	100%	35%	35%	50%	100%	50%	100%
6	35%	35%	100%	35%	35%	50%	100%	50%	100%
7	35%	35%	100%	35%	35%	100%	50%	100%	50%
8	35%	35%	100%	35%	35%	50%	50%	100%	50%
9	35%	35%	100%	35%	35%	50%	50%	100%	50%
10	35%	35%	100%	35%	35%	50%	50%	50%	100%
11	35%	35%	100%	35%	35%	50%	50%	50%	100%
12	35%	35%	100%	35%	35%	50%	50%	100%	50%

ATTACHMENT 7

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-7

RAI QUESTION NO. 13.03-7

NRC RAI 13.03-7

ETE-3: ETE General Assumptions
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Sections I.B, Section II.C, Section III.A, IV.A.1

B. Section 2.3, "Study Assumptions," (page 2-5) assumption #2, states everyone within the group of Emergency Response Planning Areas (ERPAs) forming a Region will evacuate. ERPAs extend to 10 miles from the plant. However, Figure 2-1, "Voluntary Evacuation Methodology," (page 2-3) indicates that the area to evacuate 100% extends to 5 miles from the plant. Clarify whether 100% of the people out to 10 miles are included in the ETE calculation. If so, Figure 2-1 may need to be modified to be representative of the evacuation assumptions.

Entergy Response

B. Figure 2-1 (also Figure 7-1) is revised as discussed in the response to RAI 13.03-6. As the revised figure illustrates, 100% of all people within the Emergency Planning Zone (EPZ) are evacuated for Region R03. For any Region that is advised to evacuate, it is assumed that 100% of the people within that Region will evacuate. It is assumed that a portion of those persons within the EPZ but outside the Region advised to evacuate, will elect to "voluntarily" evacuate. The percentages of these voluntary evacuees (either 35% or 50%) are shown in the revised Figure 2-1 (also Figure 7-1). A 30% voluntary evacuation within the Shadow Region (between the EPZ boundary and the 15-mile ring) is assumed for all Regions.

Proposed COLA Revisions

The following changes will be made to the evacuation time estimate (ETE) report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Change the titles of Figures 2-1 and 7-1 on Page iii of the Table of Contents to "Assumed Regional Evacuation Percentages."

2. Revise Figures 2-1 and 7-1 to show assumed regional evacuation percentages, matching the text of Assumption #5 in Section 2.2.

ATTACHMENT 8

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-8

RAI QUESTION NO. 13.03-8

NRC RAI 13.03-8

ETE-3: ETE General Assumptions
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Sections I.B, Section II.C, Section III.A, IV.A.1

C. Section 2.3, "Study Assumptions," (page 2-5) assumption #3, states schools may be evacuated prior to notification of the general public. Table 8-5A, "School Evacuation Time Estimates-Good Weather," (page 8-19) estimates that it will take on average of 2 hours and 15 minutes to evacuate the schools in the EPZ. If the assumption is correct the general public would not be notified until 2.25 hours after the emergency has been declared. Provide clarification of assumption #3.

Entergy Response

C. Assumption #3.a in Section 2.3 does not influence the evacuation time estimate (ETE) calculations or results. The Planning Basis for this ETE is defined in the report on Pages ES-2 and ES-3. The ETE calculation is based on a rapidly escalating accident at the plant that quickly assumes the status of General Emergency such that the Advisory to Evacuate is virtually coincident with the siren alert. Given this planning basis, the assumption of early school evacuation is not feasible. Therefore, Assumption #3.a will be removed as indicated in Supplement 1 to the Grand Gulf ETE report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter).

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Remove Assumption #3.a from Page 2-5 of the ETE report.

ATTACHMENT 9

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-9

RAI QUESTION NO. 13.03-9

NRC RAI 13.03-9

ETE-3: ETE General Assumptions
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Sections I.B, Section II.C, Section III.A, IV.A.1

D. In Figure 2-1, "Voluntary Evacuation Methodology," (page 2-3) clarify whether the voluntary and shadow evacuation is needed for the calculation of evacuation of the 5-mile ring when adjacent ERPAs extend to the 10-mile EPZ boundary. Would 30% or 35% be assumed for a voluntary/shadow evacuation in the area between the 10- and 15-mile rings?

Entergy Response

D. As noted in the response to RAI 13.03-007, 30 percent voluntary evacuation is assumed within the Shadow Region (the area between the Emergency Planning Zone (EPZ) boundary and a 15-mile radius circle centered at the plant) for all Evacuation Regions. This assumption is also stated in the first paragraph on page 7-2 of the Evacuation Time Estimate (ETE) report; the Shadow Region is shown in Figure 7-2. As shown in the revised Figure 2-1, included in Supplement 1 to the Grand Gulf ETE report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter), and as discussed in the response to RAI 13.03-006, an evacuation of the 5-mile ring (Region R2) would assume 35 percent of those in external Emergency Response Planning Areas (ERPAs) voluntarily evacuate.

Proposed COLA Revisions

None

ATTACHMENT 10

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-10

RAI QUESTION NO. 13.03-10

NRC RAI 13.03-10

ETE-3: ETE General Assumptions
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Sections I.B, Section II.C, Section III.A, IV.A.1

E. Section 2.3, "Study Assumptions," (page 2-5) assumption #3, states that 39% of households will await the return of a family member prior to evacuating. Appendix F, "Telephone Survey," (page F-9) states 67% of households would await the return of a family member. Explain what percent of households is expected to await the return of a commuter.

Entergy Response

E. Figure F-6 of the Evacuation Time Estimate (ETE) report indicates that 39 percent of the households within the Emergency Planning Zone (EPZ) have no commuters; therefore, 61percent of the households within the EPZ have at least one commuter. As indicated on Page F-9, 67 percent of those households with commuters would await the return of the commuter prior to evacuating. Thus, 41 percent (61% x 67%) of households within the EPZ, and not 67 percent, will await the return of a commuter prior to evacuating. Assumption #3 of Section 2.3 has been revised accordingly as indicated in Supplement 1 to the Grand Gulf ETE report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter).

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Revise the text of Assumption #3 in Section 2.3 of the ETE report to correct the percentage of households that would await the return of a commuter.

ATTACHMENT 11

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-11

RAI QUESTION NO. 13.03-11

NRC RAI 13.03-11

ETE-3: ETE General Assumptions
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Sections I.B, Section II.C, Section III.A, IV.A.1

F. Section 2.3.3, "Study Assumptions," (page 2-5) assumption #5, states traffic control points will be staffed over time and the number and location will depend on the Region being evacuated and available resources.

1. Provide information on changes that would have to be implemented due to lack of resources or regions being evacuated.

2. Clarify whether there is an affect on the ETE if these traffic control points are not established.

Entergy Response

F. The evacuation time estimate (ETE) calculation is for the full Emergency Planning Zone (EPZ) and does not rely upon any of the traffic control measures outlined in Appendix G of the ETE report. Because the ETE does not factor in traffic control points (TCP) for the full EPZ, there is no need to factor in TCPs for specific regions. The estimates of capacity, which are used by the IDYNEV model and are documented in Appendix K of the ETE report, are based upon the factors described in Section 4 of the ETE report and upon the observations made during the road survey. It is assumed that these capacity estimates are neither enhanced nor compromised by establishing a TCP at an intersection. As detailed in Section 9 of the ETE report, the functions to be performed in the field at TCPs are to (1) facilitate evacuating traffic movements; and (2) discourage those movements that would move travelers closer to the power station. The personnel manning these TCPs will also serve a surveillance function to inform the Emergency Operations Center (EOC) of any problems that occur in the vicinity or are reported to them by evacuees.

Figure 1, included with this attachment, illustrates that the ETE for the GGNS EPZ is dictated by the mobilization time. The figure was developed from ETE data for a typical scenario (i.e., Scenario 1). The analysis and conclusions provided here are considered applicable to all scenarios and regions. The figure shows percent of total vehicles against the overall evaluation time. Trip generation time (defined on p. 5-5 of the ETE report) is the total time from notification to leaving for evacuation. The horizontal distance between the trip generation curve and the ETE curve represents the travel time to the EPZ boundary. The short travel times indicate there is no pronounced traffic congestion within the EPZ delaying the departure of evacuees from the EPZ. Therefore, establishing TCPs strictly to manage traffic congestion would be of little benefit to overall evacuation performance.

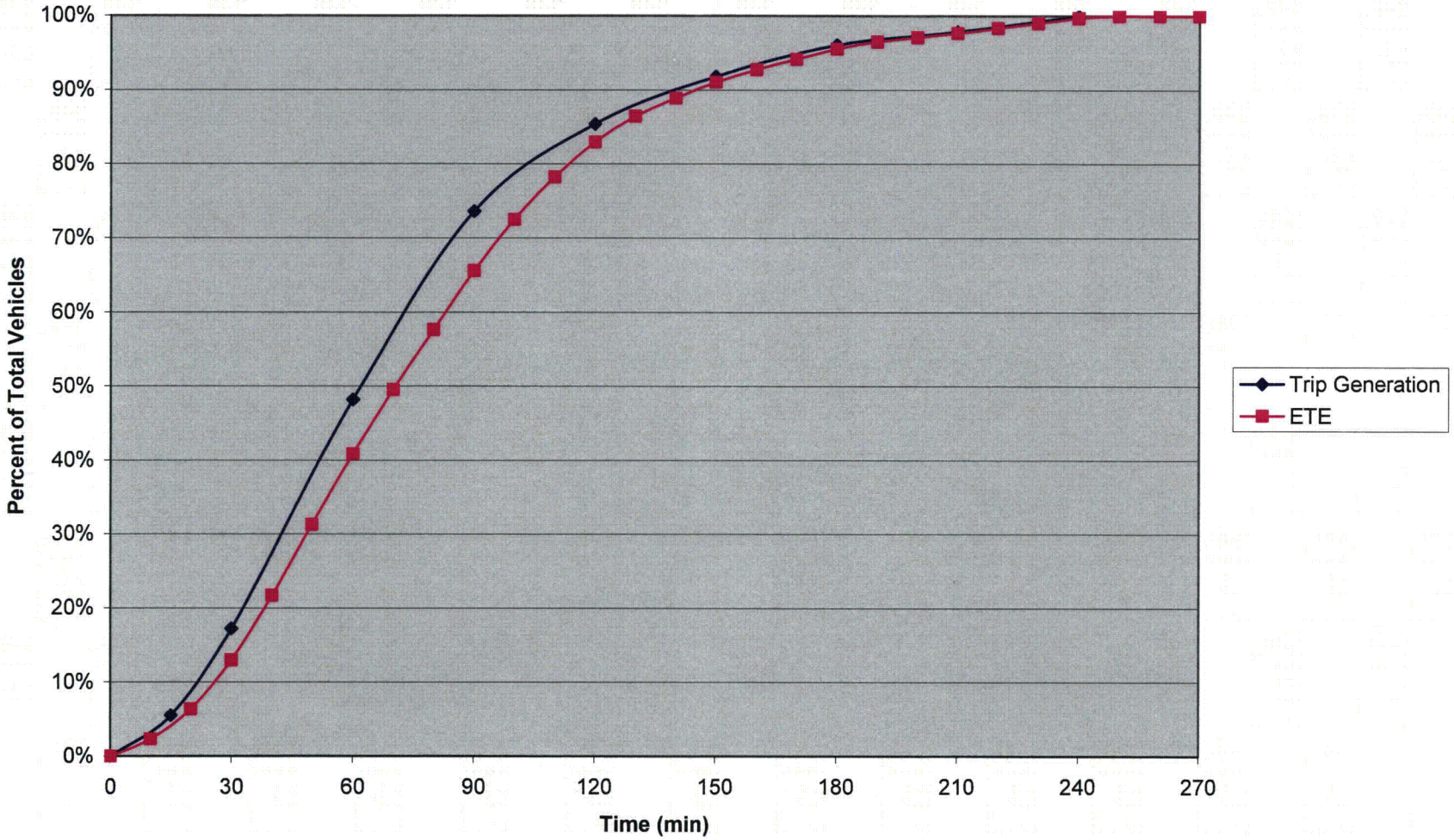
Based on the above discussion, there would be no significant effect on ETE if TCPs were not established (because of a lack of resources or any other reason) in any of the regions. Thus, no changes to the ETE report are required in order to account for this possibility. As

noted above, however, establishing TCPs is recommended to provide guidance and reassurance to evacuees, and to provide for fixed point surveillance.

Proposed COLA Revisions

None

Figure 1. Comparison of ETE and Trip Generation Time
Grand Gulf Nuclear Station
Evacuation of Region R03, Scenario 1



ATTACHMENT 12

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-12

RAI QUESTION NO. 13.03-12

NRC RAI 13.03-12

ETE-4: ETE Methodology
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section I.C.

A. Appendix B, "Traffic Assignment Model," describes the computer model used to analyze evacuation scenarios. Appendix C, "Traffic Simulation Model," discusses the traffic simulation model, PC-DYNEV. Only a few underlying algorithms of the system have been included. Provide a general description of other important algorithms used in the PC-DYNEV traffic simulation model.

Entergy Response

A. Appendices B through D of the Evacuation Time Estimate (ETE) report provide additional detail on the IDYNEV system and its use in computing ETEs. Traffic routing is computed by the TRAD model described in Appendix B. Discussion of traffic control is presented in the response to Part 1 of RAI 13.03-13. Further detail of the PCDYNEV simulation model is found in NUREG/CR-4873, "Benchmark Study of the I-DYNEV Evacuation Time Estimate Computer Code", and NUREG/CR-4874, "The Sensitivity of Evacuation Time Estimates to Changes in Input Parameters for the I-DYNEV Computer Code". These two reports document studies undertaken to assess the validity of the PCDYNEV model for use in calculating ETEs. The discussions in the two cited references are at a level of technical detail and complexity which are considered to be outside the needs of an ETE report. Additional references to papers describing other algorithms are provided as a footnote on Page 4-3 of the ETE report.

Proposed COLA Revisions

None

ATTACHMENT 13

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-13

RAI QUESTION NO. 13.03-13

NRC RAI 13.03-13

ETE-4: ETE Methodology
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section I.C.

B. With respect to the lane capacity equation in Section 4, "Capacity Estimations on Approaches to Intersections," (page 4-2):

1. Provide an explanation of the parameters, including "Mean Duration of Green Time" and "Mean Queue Discharge." Were these values estimated or field verified?

2. Clarify whether this equation is applicable for manned intersections.

3. Explain how the equation is affected by traffic control at intersections.

4. Discuss whether the modeling, or the equation presented, address traffic through intersections using traffic control.

5. Discuss the assumptions and inputs for the nodes and segments with respect to the field survey.

6. Provide additional information on the various known factors (F) influencing h_m.

Entergy Response

B.1. The "Mean Duration of Green Time" (G_m in the equation on Page 4-2), is the amount of time (in seconds) per signal cycle (C) that the signal indication is "green" and services vehicles entering the intersection to perform movement (m) from an approach to the intersection.

"Mean queue discharge headway" (h_m in the equation on Page 4-2) as defined on Page 7-8 of the Highway Capacity Manual 2000 (HCM2000), is "the time between the passage of the front axle of one vehicle and of the front axle of the next vehicle over a given cross-section of the roadway" (e.g. at a stop-bar).

The mean "lost time" (L in equation on Page 4-2) is defined on Page 10-12 of HCM2000 as "the time during which an intersection is not used effectively by any movement; it is the sum of clearance lost time plus start-up lost time."

Clearance lost time is "the time between signal phases during which an intersection is not used by any traffic," and start-up lost time is "the additional time consumed by the first few vehicles in a queue at a signalized intersection above and beyond the saturation headway, because of the need to react to the initiation of the green phase and to accelerate."

The headway (h) is definitionally related to the saturation flow rate, s, by Equation (7-9) of HCM2000: $s = 3600 \div h$, where h is in seconds per vehicle and s is in vehicles per hour.

The values of s were estimated (see Appendix K) from the field survey [Section 1.3 of the Evacuation Time Estimate (ETE) report], and h was computed using Equation (7-9).

The green times for each approach and for each intersection are input to PCDYNEV to represent the reasonable responses of evacuees on the competing approaches. These green times are adjusted during the iterative procedure described above until the queues on the competing approaches dissipate at comparable times; no attempt is made to "optimize" these inputs.

This adjustment of green times was undertaken by applying the I-DYNEV system as an analysis tool rather than as a single "pass-through" calculation of an ETE. This tool was used to identify points of congestion and locations where traffic control points (TCPs) could be helpful to the evacuating public. Detailed results of the simulation were analyzed to identify locations where the green time was specified to realistically service the competing traffic volumes under evacuation conditions. The model was executed iteratively to provide assurance that the allocation of "effective green time" appropriately represents the operating conditions of an evacuation. See the response to B.6 below.

B.2 – B.4 The equation applies to both signalized and manually-controlled intersections. The iterative procedure described in the response to B.1 above does not attempt to "optimize" traffic operations at an intersection, but rather represents a reasonably efficient operation under evacuation conditions. Establishing a TCP at an intersection would likely provide greater operational performance than that represented by the calibrated PCDYNEV model. Thus, if TCPs are manned in a timely manner by experienced personnel, it is possible that the ETEs predicted by the model might be somewhat longer than achievable in the real world under these ideal circumstances. ETEs should represent reasonable rather than optimal expectations. Therefore, no allowance is made for TCP operations. Figure 1, provided with the response to RAI 13.03-6, indicates that for the GGNS Emergency Planning Zone (EPZ), the mobilization time distribution, not congestion or traffic control, dictates evacuation time.

When there are competing traffic movements at an intersection or juncture, the real estate within the intersection must be time-shared by these competing movements in order to afford safe passage. This is the situation during normal conditions as well. This process is implemented in the simulation model by the analyst determining the allocation of effective green time as described above. Thus, depending upon circumstances, one or more of the competing traffic flows may be delayed at the intersection as it would be in normal conditions, thereby influencing the travel time of evacuees. Figures 7-3 through 7-5 of the ETE report illustrate the resulting queuing that can take place as a result of this time-sharing process when the traffic demand exceeds the intersection capacity at the indicated locations and times.

B.5 As indicated in the response to RAI 13.03-4 and 13.03-35, a large-scale version of Figure 1-2 with the nodes labeled is provided as Enclosure 1, RAI_LTR19_Figure_1-2.pdf, of this letter. The table of link characteristics provided in Appendix K of the ETE report can be cross-referenced with this large-scale map.

During development of the ETE, the entire highway system within the EPZ and for some distance outside was visually surveyed. A tablet personal computer equipped with Geographical Information Systems (GIS) software was used during the road survey to

acquire and record data. The characteristics of each section of highway were recorded. These characteristics include: number and estimated width of lanes, shoulder type and estimated width, intersection configuration, lane channelization, roadway geometrics, posted speed, actual free speed, abutting land use, traffic control devices, street parking and signage.

In addition, video and audio recording equipment were used to capture a permanent record of the highway infrastructure. No attempt was made to measure attributes such as lane width and shoulder width. Rather, estimates of these attributes based on visual observation and recorded images, were considered appropriate for the purpose of estimating the capacity of highway sections. For example, Exhibit 20-5 in HCM2000 indicates that a reduction in lane width from 12 feet (the "base" value) to 10 feet at any shoulder width can reduce free flow speed (FFS) by 1.1 mph – not a material difference – for two lane highways. Exhibit 12-15 in HCM2000 shows no sensitivity for the estimates of service volumes at level of service (LOS) E (near capacity), with respect to FFS. The terrain of the highway (e.g., level, rolling, mountainous) is a far more important factor than lane and shoulder width when estimating capacity.

The data from the audio and video recordings were used to create detailed GIS shapefiles and databases of the roadway characteristics and of the traffic control devices observed during the road survey; this information was referenced while preparing the input stream for the IDYNEV system. The information obtained during the road survey was input for the links and nodes shown in Figure 1-2 in order to ensure that the link-node analysis network replicates the actual roadway network surrounding the plant.

As documented in Chapter 20 of the HCM2000 on Page 20-3, the capacity of a two-lane highway is 1700 passenger cars per hour for each direction of travel. For freeway sections, a value of 2250 vehicles per hour per lane is assigned. The road survey conducted during development of the ETE identified several segments which are characterized by adverse geometrics which are reflected in reduced values for both capacity and speed. These estimates reflect the service volumes for LOS E presented in HCM2000 Exhibit 12-15. These links, with reduced estimates of saturation flow rates, are identified in Appendix K. Link capacity is an input to IDYNEV which calculates the ETE. The locations of these sections may be identified by reference to the large-scale map showing the link-node diagram with the nodes identified. A listing of simulation model inputs is presented in Exhibit 31-4 of HCM2000.

No assumptions are invoked in creating the analysis network of links (segments) and nodes. Nodes generally represent intersections and ramp junctures; sometimes nodes represent locations where some feature(s) change (e.g., terrain, land use, free speed, capacity). Links represent highway segments that exhibit reasonably consistent geometries and abutting land use characteristics.

B.6 The variables F1 and F2 formally represent the factors that influence the turn movement specific flow rates through an intersection. These factors are detailed in Chapters 16 and 17 of HCM2000; Exhibit 16-17 summarizes the factors influencing saturation flow rate. A further (overlapping) list of factors is presented and identified in Equation 16-4 on Page 16-9 of HCM2000. These two chapters contain detailed technical discussions which extend over more than 250 pages. This level of detail is not appropriate for inclusion in an ETE report.

Chapter 31 of HCM2000 provides further discussion of simulation models and their relationship with HCM2000. Note that models such as DYNEV are described as "operational simulation models" in the sense that they do not replicate the procedures of HCM2000, but describe the operational performance of traffic in a manner that is consistent with the HCM2000 analysis. Thus, there is no facility-specific LOS calculation embodied within such simulation models that describe the flow process throughout the analysis network over time and compute flow statistics known as "measures of effectiveness." Calibration of these operational models (and of PCDYNEV, in particular) relates to the procedures of HCM2000. As stated on Page 31-2 of HCM2000, traffic simulation models use numerical techniques on a digital computer to create a description of how traffic behaves over extended periods of time for a given transportation facility or system.

Proposed COLA Revisions

None

ATTACHMENT 14

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-14

RAI QUESTION NO. 13.03-14

NRC RAI 13.03-14

ETE-5: Demand Estimation, Permanent Residents
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section II.A.

Table 6.4, "Vehicle Estimates by Scenario," (page 6-6) presents the number of vehicles modeled for each scenario.

1. Clarify whether this table represents the total number of vehicles for a full plume exposure pathway Emergency Planning Zone evacuation.

2. Discuss why the numbers are different for each of the scenarios.

Entergy Response

1. The vehicle estimates presented in Table 6-4 are for a 100 percent evacuation of the entire plume exposure pathway Emergency Planning Zone (EPZ) (Region R3). The vehicle estimates are lower for all the other smaller Regions. The responses to RAIs 13.03-6 and 13.03-7 provide additional details regarding evacuation percentages. The estimates for Region R3 are shown in Table 6-4 because they represent an upper-bound of the number of vehicles evacuating for each scenario. Footnote 1 is added to Table 6-4 via Supplement 1 to the Grand Gulf Evacuation Time Estimate (ETE) report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter) to indicate that the numbers provided are for an evacuation of the full plume exposure pathway EPZ.

   The inputs to the simulation model (PCDYNEV) were reviewed and it was determined that external-external (through) trips continue for 90 minutes after the Advisory to Evacuate. The ETEs are correct as presented in Tables 7-1 A through D of the ETE report, but the text in the final paragraph of Page 3-19 is revised in Supplement 1 to properly document the inputs to PCDYNEV. A revised Table 6-4 will be included in Supplement 1 and is attached to this response. Table 6-4 has been updated to properly document the number of vehicles input to PCDYNEV for each scenario.

2. As discussed in Section 3 of the ETE report, the vehicle estimates for transients and employees are peak estimates. These peak estimates are modified by the scenario percentages in Table 6-3, as the EPZ population varies temporally. For example, there will be more transients visiting Lake Bruin State Park during the summer than during the winter. Furthermore, there will be more transients visiting on weekends than during the week. There are more employees commuting into the EPZ to work during the week than on weekends. Applying the varying scenario percentages in Table 6-3 to the peak vehicle estimates results in different vehicle totals for the different scenarios. Note that the vehicle estimates are not affected by weather conditions; for example the estimates are the same for Scenarios 1 and 2, and for Scenarios 3 and 4.

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Modify the final paragraph of Page 3-19 to properly document the inputs to PCDYNEV.

2. Update Table 6-4 with added Footnote 1 indicating that the vehicle estimates presented are for an evacuation of the entire plume exposure pathway EPZ (Region R3).

Table 6-4. Vehicle Estimates for Various Combinations of Regions and Scenarios[1]

Scenarios	Residents with Commuters	Residents without Commuters	Employees	Transients	Shadow	Special Events	School Buses	Transit Buses	External Traffic	Total Scenario Vehicles
1	4,458	2,754	1,909	637	934	-	12	38	2,700	13,442
2	4,458	2,754	1,909	637	934	-	12	38	2,700	13,442
3	446	6,766	955	1,274	837	-	-	38	2,700	13,016
4	446	6,766	955	1,274	837	-	-	38	2,700	13,016
5	446	6,766	199	319	759	-	-	38	1,620	10,147
6	4,458	2,754	1,989	191	943	-	124	38	2,700	13,197
7	4,458	2,754	1,989	191	943	-	124	38	2,700	13,197
8	446	6,766	955	319	837	-	-	38	2,700	12,061
9	446	6,766	955	319	837	-	-	38	2,700	12,061
10	446	6,766	199	127	759	-	-	38	1,620	9,955
11	446[2]	6,766[2]	955	319	837[2]	9,925	-	38	2,700	21,986
12	4,458[2]	2,754[2]	1,909	637	934[2]	2,925	12	38	2,700	16,367

[1] The vehicle estimates presented are for an evacuation of the entire plume exposure pathway EPZ (Region R3).
[2] The projected construction year is 2015. Based on discussion with Enercon Services, the permanent resident population and shadow population have not been extrapolated to 2015. Comparison of the 2000 Census and 2005 Census estimates indicate that population is actually decreasing within the EPZ (See Table 3-1), and within the Shadow Region (see Page 7-2); however, the 2007 population estimates have been maintained for 2015 as a conservative basis.

ATTACHMENT 15

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-15

RAI QUESTION NO. 13.03-15

NRC RAI 13.03-15

ETE-6: Demand Estimation, Transient Populations
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Sections II.B, II.E, IV.B.5

A. Table 3-3, "Summary of Transient Population and Transient Vehicles," (page 3-12) is not consistent with the text. The peak day attendance at Lake Bruin State Park is listed as 519 but the text on page 3-10 lists it as 350. The table also lists peak evacuation vehicles used as 192 and the text as 128. Explain which values for peak day attendance and evacuating vehicles are correct.

Entergy Response

A. As indicated on Page 3-10 of the GGNS Evacuation Time Estimate (ETE) report, the annual attendance at Lake Bruin State Park is 36,000 visitors. As stated on Page 3-9 of the ETE report, it is assumed that these visitors are evenly distributed amongst the 52 weeks of the year. It is further assumed that 75 percent of this weekly estimate are present during the peak day. Finally, it is also assumed that those traveling to the park travel as a family in a single vehicle. Based on the average household size (from telephone survey), this yields 2.71 persons per vehicle. The correct peak day attendance and vehicles for Lake Bruin State Park are 519 transients (36000 ÷ 52 x 75%) and 192 vehicles (519 ÷ 2.71), respectively.

   The inputs to the simulation model (PCDYNEV) were reviewed, and it was determined that the correct value of 192 vehicles was input as the transient loading for Lake Bruin State Park. Therefore, the ETEs are correct as presented in Tables 7-1 A through D of the ETE report. The text describing transient activity at Lake Bruin State Park, on Page 3-10 of the ETE report, is revised in Supplement 1 to the Grand Gulf ETE report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter) to reflect the correct values for peak day attendance and evacuating vehicles.

   The data for Lake Bruin State Park in the "State Parks & Overnight Camps" table on Page E-2 of the ETE report will be revised to 135 persons and 75 vehicles. The data for the Lake Bruin Motel & Grill in the "Hotels/Motels" table on Page E-4 of the ETE report will be revised to 30 persons and 11 vehicles, and the data for Shilo Lake Bruin Resort will be revised to 354 persons and 106 vehicles. Thus, there are 519 (135 + 30 + 354) transient persons and 192 (75 + 11 + 106) transient vehicles loaded into the PCDYNEV model for the Lake Bruin area.

   The tables presented in Appendix E of the ETE report were cross-checked with the tables provided in Section 3 and Section 8 of the report to ensure consistency.

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Revise the discussion of Lake Bruin State Park on Page 3-10 to indicate 519 transients and 192 vehicles at peak times.

2. Revise data for Lake Bruin State Park in "State Parks & Overnight Camps" table on Page E-2 to 135 persons and 75 vehicles. Revise sub-totals and totals for the table accordingly.

3. Revise data for Lake Bruin Motel & Grill and Shilo Lake Bruin Resort in the "Hotels/Motels" table on Page E-4 to 30 persons/11 vehicles and 354 persons/106 vehicles, respectively. Revise sub-totals and totals for the table accordingly.

4. Revise major employers table on Page E-4 in Appendix E for consistency with Table 3-4 on page 3-16 of the ETE report.

5. Change "N.A." TO "0" for the Port Gibson Police Department in the "Correctional Facilities" table on Page E-2; data provided by the facility on September 24, 2007 indicated that the facility has a capacity of 6 inmates, but that it was not in use at that point in time.

6. Delete "N.A. = Not Available" below the "Correctional Facilities" table on Page E-2.

ATTACHMENT 16

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-16

RAI QUESTION NO. 13.03-16

NRC RAI 13.03-16

ETE-6: Demand Estimation, Transient Populations
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Sections II.B, II.E, IV.B.5

B. Figure 5-1,"Events and Activities Preceding the Evacuation Trip," (page 5-7) shows transients will be notified, become aware of the incident, and then evacuate the area. The figure suggests that transients will not be returning to their "residence" prior to evacuation. Explain why the possibility for transients to return to a location to gather belongings was not considered in the evacuation time estimate.

Entergy Response

B. If the emergency occurs during the daytime, it is reasonable to expect that at least some of those who stay overnight at lodging facilities will leave their personal belongings in their respective rooms. Others, who want to have access to their belongings during the day (or are on their last day), will have their belongings with them. Those of the former group have two choices:

- Evacuate immediately, leaving their belongings in the room for subsequent retrieval; or
- Return to the lodging facility to gather their belongings and then evacuate.

The mobilization distribution for transients extends over a period of 2 hours, as shown in Table 5-8 of the Evacuation Time Estimate (ETE) report. Those who elect to return to their "residence" or lodging to pick up their belongings will be able to do so and then begin their evacuation trip within this time frame.

Figure 5-1 of the ETE report has been revised in Supplement 1 to the Grand Gulf ETE report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter) to indicate that transients may elect to return to their "residence" or lodging prior to evacuation.

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Revise Figure 5-1 to indicate that transients may elect to return to their "residence" prior to evacuation.

ATTACHMENT 17

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-17

RAI QUESTION NO. 13.03-17

NRC RAI 13.03-17

ETE-7: Demand Estimation, Special Facility Population
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Sections II.C, II.E, III.A, IV.B.4, IV.B.5

A. In Table 8-1, "Transit-Dependent Estimates," (page 8-16) the transit-dependent population definition does not include individuals with special needs that may require assistance to evacuate. Clarify whether this special needs population exists.

Entergy Response

A. To support this response, interviews were conducted with Claiborne County and Tensas Parish Emergency Management officials to quantify the extent of home-bound special needs persons in households that are not equipped to evacuate such persons. This inability to evacuate a special needs person may reflect the unavailability of a privately owned vehicle and the absence of ridesharing opportunities, or the need for special transport (e.g., an ambulance). In such situations, members of the public are asked, through yearly emergency information mailings to EPZ residents, to register with the local emergency response organizations so that an appropriate vehicle may be dispatched during the emergency to provide evacuation transport. Discussions with emergency management officials indicate that the following number of persons have registered:

- A total of 4 persons in Tensas Parish.
- A total of 6 persons in Claiborne County.

It is conservatively assumed that one or more household members will accompany the special needs person. Analysis of the raw data collected during the ETE telephone survey (ETE Report, Appendix F) indicates that the average household size for those households of 2 or more persons with no cars is about 4 persons. Given the above data on registered persons and assuming one special needs person per household, it is estimated that a total of 16 persons in Tensas Parish and 24 persons in Claiborne County will require pick-up service and transport in the event of an evacuation.

To compute ETE for this service, it is assumed:

- One bus is required for each community.
- These buses will be assigned after they deliver the school children to the reception center.

The components of ETE for good weather are:

Community	Buses Available (hr:min)	Unload School Buses (min)	Driver Rest (min)	Travel back to EPZ (min)	Number of Stops	Travel between each Stop(min)	Loading per Stop (min)	Travel to EPZ Boundary (min)
Claiborne County	3:00	5	15	50	6	6	2	10
Tensas Parish	2:40	5	15	28	4	6	2	10

The ETE (rounded up to the nearest 5 minutes) are:

Good Weather:

- Claiborne County: 3:00 + 5 + 15 + 50 + 6 x (6 + 2) + 10 = 5:10
- Tensas Parish: 2:40 + 5 + 15 + 28 + 4 x (6 + 2) + 10 = 4:10

Rain:

- Claiborne County: 3:25 + 10 + 15 + 55 + 6 x (7 + 2) + 12 = 5:55
- Tensas Parish: 3:00 + 10 + 15 + 31 + 4 x (7 + 2) + 12 = 4:45

The time buses are available is the minimum time presented in the final column of Table 8-5A for each county/parish, as those will be the first buses available to return to the EPZ. Unload time and driver rest time are 5 minutes and 15 minutes, respectively, as shown in Table 8-6 (unload time is 10 minutes in rain). The estimated travel time back to the EPZ from the reception center is the same as the average travel time to the reception center; see next to last column in Table 8-5A. Traffic within the EPZ is free-flowing at 3 hours after the advisory to evacuate (see Figure 7-5 of the ETE report). Therefore, an estimate of 6 minute travel between stops translates to an average separation of 4 miles at 40 mph. Normally, bus loading time for 4 persons, including the delay associated with stopping and starting is on the order of 1 minute (see the response to RAI 13.03-21). The loading time of 2 minutes used here takes into account special needs factors. The travel time to the EPZ boundary of 10 minutes implies a distance of about 7 miles at 40 mph. Travel speed is diminished by 10% in rain (see page 2-6 of the ETE report) resulting in a speed of 36 mph; travel time between stops is 7 minutes and travel time to the EPZ boundary is 12 minutes, in rain.

It is possible that a special needs person may require a specially-equipped medical vehicle (e.g., an ambulance or wheelchair van). This population is addressed in the response to RAI 13.03-28. Local emergency management agencies maintain and update a roster of homebound special needs persons, as this roster and the transport needs may change as resident relocate into, out of, and within the EPZ. The yearly distribution of informational calendars within the EPZ, which include special needs registration cards, accomplishes this goal.

This special needs population was not considered in the ETE Report and will be added via Supplement 1.

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. A new sub-heading "Evacuation of Transit-Dependent Special Needs Population" has been added before the "Evacuation of Ambulatory Persons from Special Facilities" sub-heading on page 8-11. The discussion above will be added under the new sub-heading.

ATTACHMENT 18

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-18

RAI QUESTION NO. 13.03-18

NRC RAI 13.03-18

ETE-7: Demand Estimation, Special Facility Population
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Sections II.C, II.E, III.A, IV.B.4, IV.B.5

B. Section 8-4, "Evacuation Time Estimates [ETEs] for Transit-Dependent People," (page 8-7) states if the impacted region is other than Region 3, there will likely be ample transit resources. Clarify whether there are enough buses available to evacuate all schools simultaneously and begin the bus routes for transit-dependent residents. If not, explain the effect multiple bus trips will have on the ETE.

Entergy Response

B. A review of the school populations and transportation resources indicates that sufficient buses are available locally and via agreements with neighboring jurisdictions to evacuate all schools in a single wave, as discussed below.

In preparation of this response, the schools within the Emergency Planning Zone (EPZ) were reviewed. The following information was obtained through telephone discussions with local officials and Internet searches:

- Tensas Charter School closed in 2003.
- Davidson High School and Tensas High School are the same school.
- Newellton High School closed and merged with Davidson/Tensas High School 3 years ago. Newellton Elementary School now occupies the old high school building previously occupied by Newellton High School.

Tables 3-4, 8-2, 8-3, 8-5A and 8-5B have been updated to reflect this new information. Also, the table of schools presented on Page E-6 of the Evacuation Time Estimate (ETE) report has been updated. The revised tables are attached and are also included in Supplement 1 to the Grand Gulf ETE report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this Entergy letter).

Discussions with officials in Claiborne County and Tensas Parish ascertained that bus resources would be sufficient for a one-wave school evacuation (see updated Table 8-2):

- Claiborne County: 30 buses are in daily use. A memorandum of understanding (MOU) with neighboring Warren County would provide the additional 9 buses estimated in the ETE report.
- Tensas Parish: 8 buses are in daily use. There are letters of agreement with Madison, Franklin and Concordia Parish school systems that could provide as many as 20 additional buses within 2 hours; thus, the additional 9 buses needed are available.

Tables 8-5A and 8-5B (updated as attached) and Table 8-6 provide for at least 2 hours for buses to mobilize and travel to the EPZ which is consistent with the information provided above. Thus, schools can be evacuated in a single wave. The potential need for a second wave of transit-dependent persons was discussed on pages 8-10 and 8-11 of the ETE report, with Table 8-6 presenting the ETE for two waves.

The changes in Tensas school information have the net impact of reducing the school enrollment and staff levels, and slightly reducing the total required evacuee population. Thus, as noted in updated Tables 8-5A and 8-5B, the ETE to reception center times remain just under 2 hours, 45 minutes and are essentially unchanged.

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Add the third paragraph and the first two sentences of the fourth paragraph to this response before the paragraph beginning "Table 8-3..." on page 8-6 of the ETE report.

2. Replace Tables 3-4, 8-2, 8-3, 8-5A, and 8-5B and the table on page E-6 of the ETE report with the attached tables.

3. Table A4-2 of the GGNS Unit 3 Emergency Plan, which reproduces ETE Report Table 8-5A, will also be updated consistent with the updates to the attached ETE Report Table 8-5A.

Table 3-4. Summary of Non-EPZ Employees and Employee Vehicles						
Facility	**County**	**ERPA**	**Total Employees**	**Max Shift Employees**	**Non-EPZ Employees**	**Employee Vehicles**
GGNS Workforce	Claiborne	1	750	750	443	418
Claiborne County Hospital	Claiborne	4A	35	35	21	20
Port Gibson High School Faculty	Claiborne	4A	60	60	35	33
Port Gibson Middle School Faculty	Claiborne	4A	47	47	28	26
Watson Elementary School Faculty	Claiborne	4A	89	89	53	50
Chamberlain-Hunt Academy Faculty	Claiborne	4A	58	58	34	32
Claiborne Educational Foundation Faculty	Claiborne	4A	9	9	5	5
Alcorn State University Faculty	Claiborne	6	205	205	121	114
Alcorn State University Commuting Students	Claiborne	6	1,242	1,242	1,242	1,172
Piggly Wiggly	Claiborne	4A	25	25	15	14
M&M Superstore	Claiborne	4A	16	12	7	7
Claiborne County Nursing Home	Claiborne	3A	82	34	20	19
Tensas Elementary School Faculty	Tensas	11	52	52	26	25
Tensas/Davidson High School Faculty	Tensas	11	18	18	9	8
Tensas Academy Faculty	Tensas	11	26	26	13	12
Newellton Elementary School Faculty	Tensas	9	30	30	15	14
Newellton Christian Academy Faculty	Tensas	9	6	6	3	3
J.B. Evans Correctional Center	Tensas	9	15	15	8	8
Tensas Care & Rehab Center	Tensas	9	68	20	10	9
TOTALS:			**2,833**	**2,733**	**2,108**	**1,989**

Table 8-2. School Population Demand Estimates							
ERPA	Distance (miles)	Direction	School Name	Municipality	Enroll-ment	Staff	Bus Runs Req'd
Claiborne County Schools							
2B	7.5	ESE	Reachout Foundation	Port Gibson	10	3	1
4A	4.2	SE	A.W. Watson Elementary School	Port Gibson	889	89	13
4A	5.5	SE	Chamberlain-Hunt Academy	Port Gibson	101	58	3
4A	5.7	SE	Claiborne Educational Foundation	Port Gibson	36	9	1
4A	5.2	SE	Port Gibson High School	Port Gibson	578	60	12
4A	5.4	SE	Port Gibson Middle School	Port Gibson	431	47	9
				Claiborne County Totals:	2,045	266	39
Tensas Parish Schools							
9	11.9	WNW	Newellton Christian Academy	Newellton	36	6	1
9	12.3	WNW	Newellton Elementary	Newellton	225	52	4
11	12.6	WSW	Tensas Academy	Saint Joseph	194	26	4
11	12.9	WSW	Tensas Elementary	Saint Joseph	202	13	3
11	12.8	WSW	Tensas/Davidson High School	Saint Joseph	225	35	5
				Tensas Parish Totals:	882	132	17
				EPZ Totals:	**2,927**	**398**	**56**

* It is assumed that students attending colleges will have their own transportation

Table 8-3. School Reception Centers				
School	Reception Center	Address	Municipality	State
All Claiborne County Schools	Hazlehurst High School	101 S Haley St	Hazlehurst	MS
Tensas Academy	Ferriday High School	801 E Wallace Blvd	Ferriday	LA
Tensas Elementary				
Tensas/Davidson High School				
Newellton Elementary	Tallulah High School	600 Bayou Dr	Tallulah	LA
Newellton Christian Academy				

Table 8-5A. School Evacuation Time Estimates - Good Weather

School	Driver Mobilization Time(min)	Travel Time from Depot (min)	Loading Time (min)	Dist. to EPZ Boundary (mi.)		Travel Time to EPZ Bdry (min)	ETE (hr:min)	Dist. EPZ Bndry to R.C.		Travel Time EPZ Bdry to RC (min)	ETE to R.C. (hr:min)
				Major Road	Local Road			Major Road	Local Road		
Claiborne County Schools											
A.W. Watson Elementary School	90	30	5	4.2	2.8	11	2:20	38.1	0.7	48	3:05
Chamberlain-Hunt Academy	90	30	5	3.9	0.8	7	2:15	41.1	0.7	51	3:05
Claiborne Educational Foundation	90	30	5	3.9	0.6	6	2:15	41.1	0.7	51	3:05
Port Gibson High	90	30	5	4.2	2.2	10	2:15	38.1	0.7	48	3:05
Port Gibson Middle School	90	30	5	3.9	1.0	7	2:15	41.1	0.7	51	3:05
Reachout Foundation	90	30	5	2.6	0.3	4	2:10	38.1	0.7	48	3:00
						Average ETE:	**2:15**		**Average:**	**50**	**3:04**
Tensas Parish Schools											
Tensas/Davidson High School	90	30	5	3.1	0.2	5	2:10	27.6	0	34	2:45
Newellton Christian Academy	90	30	5	7.5	1.3	12	2:20	17.2	0	21	2:40
Newellton Elementary	90	30	5	7.5	0.8	11	2:20	17.2	0	21	2:40
Tensas Academy	90	30	5	3.1	0.2	5	2:10	27.6	0	34	2:45
Tensas Elementary	90	30	5	2.4	0.2	4	2:10	27.6	0	34	2:45
						Average ETE:	**2:14**		**Average:**	**29**	**2:43**

Table 8-5B. School Evacuation Time Estimates - Rain

School	Driver Mobilization Time(min)	Travel Time from Depot (min)	Loading Time (min)	Dist. to EPZ Boundary (mi.)		Travel Time to EPZ Bdry (min)	ETE (hr:min)	Dist. EPZ Bndry to R.C.		Travel Time EPZ Bdry to RC (min)	ETE to R.C. (hr:min)
				Major Road	Local Road			Major Road	Local Road		
Claiborne County Schools											
A.W. Watson Elementary School	100	35	10	4.2	2.8	12	2:40	38.1	0.7	53	3:30
Chamberlain-Hunt Academy	100	35	10	3.9	0.8	7	2:35	41.1	0.7	57	3:30
Claiborne Educational Foundation	100	35	10	3.9	0.6	7	2:35	41.1	0.7	57	3:30
Port Gibson High	100	35	10	4.2	2.2	11	2:40	38.1	0.7	53	3:30
Port Gibson Middle School	100	35	10	3.9	1.0	8	2:35	41.1	0.7	57	3:30
Reachout Foundation	100	35	10	2.6	0.3	5	2:30	38.1	0.7	53	3:25
					Average ETE:		**2:35**		**Average:**	**55**	**3:29**
Tensas Parish Schools											
Tensas/Davidson High School	100	35	10	3.1	0.2	5	2:30	27.6	0	37	3:10
Newellton Christian Academy	100	35	10	7.5	1.3	13	2:40	17.2	0	23	3:05
Newellton Elementary	100	35	10	7.5	0.8	12	2:40	17.2	0	23	3:00
Tensas Academy	100	35	10	3.1	0.2	5	2:30	27.6	0	37	3:10
Tensas Elementary	100	35	10	2.4	0.2	4	2:30	27.6	0	37	3:10
					Average ETE:		**2:34**		**Average:**	**31**	**3:07**

ETE Report, page E-6

Grand Gulf EPZ: Schools								
ERPA	**Distance (miles)**	**Dir-ection**	**School Name**	**Street Address**	**Municipality**	**Phone**	**Enrollment**	**Staff**
Claiborne County								
2B	7.5	ESE	Reachout Foundation	1027 Romola Rd	Port Gibson	601-437-9600	10	3
4A	4.2	SE	A.W. Watson Elementary School	880 Antony St	Port Gibson	601-437-5070	889	89
4A	5.5	SE	Chamberlain-Hunt Academy	124 McComb Avenue	Port Gibson	601-437-4291	101	58
4A	5.7	SE	Claiborne Educational Foundation	602 Horton Drive	Port Gibson	601-437-4097	36	9
4A	5.2	SE	Port Gibson High	159 Old Hwy 61	Port Gibson	601-437-4190	578	60
4A	5.4	SE	Port Gibson Middle School	161 Ramsey Drive	Port Gibson	601-437-4251	431	47
						Sub-total	2,045	266
Tensas Parish								
9	11.9	WNW	Newellton Christian Academy	1016 Verona St	Newellton	318-467-5755	36	6
9	12.3	WNW	Newellton Elementary	400 Verona Street	Newellton	318-467-5109	225	52
11	12.6	WSW	Tensas/Davidson High School	720 Plank Rd	Saint Joseph	318-766-3585	225	35
11	12.6	WSW	Tensas Academy	418 Hwy 128	Saint Joseph	318-766-4384	194	26
11	12.9	WSW	Tensas Elementary	192 Hwy 897-6	Saint Joseph	318-766-3346	202	13
						Sub-total	882	132
						Overall Total	**2,927**	**398**

ATTACHMENT 19

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-19

RAI QUESTION NO. 13.03-19

NRC RAI 13.03-19

ETE-7: Demand Estimation, Special Facility Population
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Sections II.C, II.E, III.A, IV.B.4, IV.B.5

C. The mobilization time for the J.B. Evans Correction Center, as discussed on Page 8-14, could range from 4 hours to 5.5 hours depending on the availability of buses. Clarify whether discussions with authorities confirmed that school buses available would be adequate to transport corrections center residents.

Entergy Response

C. The Tensas Parish Office of Homeland Security & Emergency Preparedness provided additional information regarding provisions for evacuating J.B. Evans Correctional Center (JBECC), which is summarized below.

The following provisions exist for evacuating the JBECC inmate population:

- Secure buses are located within Tensas Parish at the Tensas Parish Detention Center in Waterproof, LA, 22 miles from the JBECC.
- These buses can be at the JBECC within 30-45 minutes and evacuate 200 inmates (at a time) to the Tensas Parish Detention Center in Waterproof.
- Additional buses, controlled by sheriffs in neighboring parishes, could be available at the JBECC within 2 hours.
- Inmate census varies between 350 and 485 inmates.

Secure buses from Waterproof, LA would arrive onsite at 45 minutes after the Advisory to Evacuate, board 200 inmates over a 30-minute period, then travel southbound along Route 65 back to Waterproof at an average speed of 40 mph (traffic is free-flowing along Route 65, as shown in Figure 7-3 through 7-5 of the ETE report). The inmates would exit the buses over a 30-minute period.

After a 15-minute rest, these buses can return (traveling at 40 mph) to the JBECC for a second wave evacuation. If the number of inmates exceeds 400, then it is assumed that the necessary additional buses would be requisitioned from neighboring parishes. These buses would arrive prior to those on the second wave from Waterproof. All buses will then evacuate the Emergency Planning Zone (EPZ) with the remaining inmates. The distance from the JBECC to the EPZ boundary southbound along Route 65 is approximately 10 miles; assuming a travel speed of 40 mph, travel time to the EPZ boundary is approximately 15 minutes.

The ETE are computed below:

First Wave					
Mobilization (min)	**Loading Time (min)**	**Travel to Waterproof (min)**	**Unload (min)**	**Driver Rest (min)**	**Total (hr:min)**
45	30	35	30	15	2:35

Second Wave			
Travel back to JBECC (min)	**Loading Time (min)**	**Travel to EPZ Boundary (min)**	**Total (hr:min)**
35	30	15	1:20

The total ETE (hr:min) to evacuate all inmates at JBECC is 2:35 + 1:20 = 3:55.

This additional information regarding the evacuation of JBECC does not alter the overall ETE conclusions.

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Replace the first two paragraphs on page 8-13 under the heading "J.B. Evans Correctional Center" with the following:

   The J.B. Evans Correctional Center (JBECC) is located in ERPA 9 near the northwest boundary of the EPZ, nearly 12 miles from the power station. In the unlikely event that an evacuation of the facility is ordered, it will be necessary to assign transit vehicles to provide transportation.

2. Eliminate the heading "Single Wave" on page 8-13 and the remainder of the text on pages 8-13 and 8-14. Replace the deleted text with the discussion provided above, beginning with "The following provisions exist for evacuating the JBECC inmate population."

ATTACHMENT 20

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-20

RAI QUESTION NO. 13.03-20

NRC RAI 13.03-20

ETE-7: Demand Estimation, Special Facility Population
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Sections II.C, II.E, III.A, IV.B.4, IV.B.5

D. Table 6-3, "Percent of Population Groups for Various Scenarios," (page 6-5) indicates the number of school buses needed to support evacuations.

1. Discuss why 10% of the school buses are planned for use in summer Scenarios 1 and 2 when school is not in session.

2. Discuss why only 10% of the school buses are planned for use as in Scenario 12, which is winter midweek scenario when school is in session.

Entergy Response

D. 1. For Scenarios 1 and 2, the buses are evacuating summer school students. It is assumed that summer school enrollment is approximately 10% of enrollment for the regular school year.

D. 2. The inputs to the simulation model (PCDYNEV) were reviewed and verified to be correct. However, it was determined that due to an editorial error the description of Scenario 12 as a "winter" scenario in the Evacuation Time Estimate (ETE) report is incorrect. Scenario 12 was correctly input to the simulation model as a summer, midweek, midday scenario with good weather, which matches the description of Scenario 1. Therefore, the school bus percentage for Scenario 12 matches Scenario 1 (with the exception of the Special Event scenario percent). 10 percent of school buses are planned for use in Scenario 12 as it is a summer scenario and summer school will be in session. See response to part D.1 above. Corrections to the description of Scenario 12 in the ETE report have no impact on the ETE results or conclusions.

References to Scenario 12 as a "winter" scenario have been revised to "summer" in Supplement 1 to the Grand Gulf ETE report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter). These revisions include the table on page 2-4, Table 6-2, Tables 7-1A through 7-1D and J-1A through J-1D. Also, the title of Figure J-12 will be revised.

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Page 2-4 – Scenarios table - Change Season for Scenario 12 from "Winter" to "Summer".

2. Page 6-4 – Table 6-2 – Change Season for Scenario 12 from "Winter" to "Summer".

3. Pages 7-9 through 7-12 – Tables 7-1A through 7-1D – Change column heading for Scenario 12 from "Winter" to "summer". Make same change to Table 7-1C and 7-1D on Pages ES-11 and ES-12 of the ETE report, respectively. In addition Table A4-1 in Appendix 4 of the GGNS Unit 3 Emergency Plan will be updated to be consistent with the change to Table 7-1D.

4. Pages J-5 through J-8 – Tables J-1A through J-1D - Change column heading for Scenario 12 from "Winter" to "Summer".

5. Page J-21 – Figure J-12 – Change title of plot from "Winter" to "Summer".

ATTACHMENT 21

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-21

RAI QUESTION NO. 13.03-21

NRC RAI 13.03-21

ETE-7: Demand Estimation, Special Facility Population
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Sections II.C, II.E, III.A, IV.B.4, IV.B.5

E. Mobilization times in Section 5, "Estimation of Trip Generation Times," do not include information on transit-dependent people getting to bus routes or waiting for buses. A discussion of this procedure is also not included in Section 8.4, "Evacuation Time Estimates for Transit-Dependent People." Explain how transit-dependent individuals are expected to get from their residences to the bus routes, and if this time was factored into the ETE.

Entergy Response

E. Given that the evacuees in question have no access to private transportation, those who are ambulatory would be expected to walk to the bus routes. As discussed on page 8-10 and shown in Figure 8-2 of the Evacuation Time Estimate (ETE) report, the bus routes considered for the transit-dependent ETE analysis have been designed to service the higher population areas of the Emergency Planning Zone (EPZ) (Port Gibson, St. Joseph and Newellton, MS) where transit-dependents are most likely to be residing. As indicated, an estimated total of 581 transit dependent people are in these areas, requiring 19 bus runs (assuming that about 30 persons will board each bus run on average) to service this demand. On this basis, assuming, on average, that each time the bus stops it will pick up two people, then the bus will make a total of 15 "flag" stops along its route. Assigning an estimate of 1 minute of delay for each stop, which takes into account the bus slowing, stopping, boarding, seating and then accelerating yields a total estimate of 15 minutes for delay, which is included in the ETE calculations.

As discussed on Page 8-9 of the ETE report, it is estimated that the first bus will arrive at the EPZ route 120 minutes after the Advisory to Evacuate (90 + 30 min: see Table 8-6 of the ETE report). The mobilization time estimates indicate that the majority of evacuees will have completed their preparatory activities in that time frame (see Distribution D in Table 5-8 of the ETE report). Based on the use of "flag" stops and the design of the bus routes to pass through higher population areas, the walking distance should be less than ¾ mile. Therefore, the vast majority of the transit-dependent persons will be able to complete their preparation activities and walk to the routes by the time the first bus on the route arrives. Subsequent buses on a route will arrive later to service those who take longer to mobilize. Thus, the time needed for transit-dependent people to walk to the bus routes has been factored into the ETE.

The evacuation of transit-dependent persons who are not ambulatory is discussed in the response to RAI 13.03-17.

The evacuation of transit-dependent school children is discussed in Section 8.2 of the ETE report. In this case the buses would go to the schools to pick up the children. Therefore, getting to the bus route is not a factor in evacuation of the school children.

Proposed COLA Revisions

None

ATTACHMENT 22

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-22

RAI QUESTION NO. 13.03-22

NRC RAI 13.03-22

ETE-7: Demand Estimation, Special Facility Population
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Sections II.C, II.E, III.A, IV.B.4, IV.B.5

F. Section 8, "Transit-Dependent and Special Facility Evacuation Time Estimates," (page 8-1) states transit service may be needed for residents, employees, transients, and child care facilities. It is not clear whether population groups other than residents have been factored into the estimates. Clarify how employees, transients, and child care facilities are included in the transit-dependent population estimate. If not, provide information on how the estimates will be modified to include these population groups.

Entergy Response

F. Since there is no mass transit servicing the area (other than taxis), it is reasonable to expect that virtually all transients and employees will have private vehicles available for evacuation. The evacuation time estimate (ETE) study therefore assumes that employees and transients will not require transit resources for evacuation.

The first paragraph of Section 8 will be revised as follows in Supplement 1 to the Grand Gulf ETE report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter):

> "This section details the analyses applied and the results obtained in the form of evacuation time estimates for transit vehicles (buses). The demand for transit service reflects the needs of two population groups: (1) residents with no vehicles available who do not ride-share; and (2) residents of special facilities such as schools, health support facilities and institutions."

Day care centers are neighborhood facilities that service local children who are dropped off in the morning and subsequently picked up by parents or designees. Since the estimated resident vehicle population is based on household size and on vehicles per household, the vehicles used to pick up the children for evacuation have been included in the estimate of evacuating vehicles. The mobilization time estimates (Section 5 of the ETE report) are based on the telephone survey, which reflects the daily activities of EPZ residents including the picking up of children.

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Revise the first paragraph on Page 8-1 of the ETE report as noted above.

ATTACHMENT 23

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-23

RAI QUESTION NO. 13.03-23

NRC RAI 13.03-23

ETE-7: Demand Estimation, Special Facility Population
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Sections II.C, II.E, III.A, IV.B.4, IV.B.5

G. According to Section 8, "Transit-Dependent and Special Facility Evacuation Time Estimates," (page 8-1) it takes 90 minutes to mobilize drivers and get the buses to their proper locations. This estimate is said to be based on "experience" at other rural plants. Provide information on the "experience" used to establish the mobilization time of 90 minutes for buses.

Entergy Response

G. The experience used to establish the 90 minute mobilization time for buses is the experience of the developers of the Evacuation Time Estimate (ETE). The 90 minute mobilization time is a reasonable and conservative mobilization time that is consistent with the bus mobilization time used by the developers for ETEs for numerous existing and proposed nuclear power plants in the United States. The 90 minute mobilization time is conservative as compared to the mobilization time used in the previous GGNS Unit 1 ETE (1986), which assumed a mobilization period of 15 to 60 minutes following completion of emergency notifications.

Proposed COLA Revisions

None

ATTACHMENT 24

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-24

RAI QUESTION NO. 13.03-24

NRC RAI 13.03-24

ETE-7: Demand Estimation, Special Facility Population
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Sections II.C, II.E, III.A, IV.B.4, IV.B.5

H. Section 8.4, "Evacuation Time Estimates for Transit-Dependent People," (page 8-11) provides an estimation of the amount of time needed to complete a second wave of evacuation. Buses are assumed to travel at an estimated speed of 40 mph. Discuss whether the average inbound bus speed considers that they would have to transverse traffic control points.

Entergy Response

H. As discussed in Section 9 of the Evacuation Time Estimate (ETE) report and in the response to RAI 13.03-34, the primary objectives of traffic control points (TCPs) are to facilitate and guide the flow of evacuating traffic. It is reasonable to expect that incoming transit resources (buses and ambulances), which are needed to evacuate the transit-dependent and special facility populations within the Emergency Planning Zone (EPZ), will have their travel expedited by the personnel at the TCP, rather than hindered. Therefore, while it is reasonable to conclude that the inbound bus speed of 40 mph will be unaffected as buses traverse TCPs, the calculated ETE does not rely upon implementation of the TCPs.

The following statement will be added to the end of Section 9 of the ETE report in Supplement 1 to the Grand Gulf ETE report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter): "All transit trips and other responders entering the EPZ to support the evacuation are assumed to be unhindered by personnel manning TCP."

Section 2.1 of NUREG/CR-6863 states, "To the extent necessary, all major intersections with traffic control, locations of major traffic generators, and locations where the highway geometry changes, should be identified." Section 2.7 of NUREG/CR-6863 extensively discusses the inclusion of traffic control measures in the ETE analysis. Section 9 and Appendix G of the GGNS ETE report have been included based on the guidance provided in NUREG/CR-6863. However, the calculated ETE does not rely upon implementation of the TCPs outlined in Appendix G of the ETE report.

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Add the sentence, "All transit trips and other responders entering the EPZ to support the evacuation are assumed to be unhindered by personnel manning TCP," to Page 9-2 of the ETE report.

ATTACHMENT 25

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-25

RAI QUESTION NO. 13.03-25

NRC RAI 13.03-25

ETE-7: Demand Estimation, Special Facility Population
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Sections II.C, II.E, III.A, IV.B.4, IV.B.5

I. In Section 8.4, "Evacuation Time Estimates for Transit-Dependent People," (page 8-8) it is assumed that it will take 5 minutes to load buses for schools and public transportation in Activity C-D, which references Highway Capacity Manual (HCM) 2000. This would imply that it takes the same amount of time to load high school kids and elementary school kids on a bus. It also implies that people carrying belongings will load at the same speed as children. Provide clarification for the estimated time to load buses for evacuation.

Entergy Response

I. The discussion of "Activity: Board Passengers (C→D)" on Page 8-8 of the Evacuation Time Estimate (ETE) report indicates that the loading time to service passengers boarding a bus to capacity at a single stop (e.g., at a school) is 5 minutes in good weather and 10 minutes in rain. However, for multiple stops along a pickup route (e.g., a transit-dependent bus route) the discussion indicates a loading time of 15 minutes in good weather and 20 minutes in rain. Therefore, the loading time at multiple stops for people carrying belongings is 3 times as long (in aggregate) as the time needed for schoolchildren or other passengers to board a bus at a single stop.

The discussion references the Highway Capacity Manual for 2000, which indicates that passengers can board a bus at headways of 2-4 seconds. Capacities of 50 and 70 students per bus for middle/high schools and elementary schools, respectively, are assumed (see Assumption #10 of Section 2.3). Using the conservative estimate of 4-second headways results in load-to-capacity loading time of 3 minutes, 20 seconds for buses transporting middle and high school students to load to capacity and 4 minutes, 40 seconds for elementary school students. Thus, the assumption of 5-minute loading time for schools is conservative.

The capacity for transit-dependent buses is 30 passengers as discussed on Pages 8-3 and 8-4 of the ETE report. As discussed in the response to RAI 13.03-21, transit-dependent persons will walk to the nearest route and "flag" down a bus traversing the route. It is assumed that the transit-dependent buses will pick up two people per stop with a total of 15 "flag" stops along its route. Assigning an estimate of 1 minute of delay for each stop, which takes into account the bus slowing, stopping, boarding, seating and then accelerating, yields a total estimate of 15 minutes for boarding, which is included in the ETE calculations.

The time to evacuate homebound individuals requiring special vehicles/specially equipped vehicles is assumed to lie within the times to evacuate the general population. Evacuating homebound special needs people will involve trips to the individual homes for those who are not ambulatory, using vehicles that are appropriate. The evacuation of transit-dependent persons who are not ambulatory is discussed in the response to RAI 13.03-17.

Proposed COLA Revisions

None

ATTACHMENT 26

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-26

RAI QUESTION NO. 13.03-26

NRC RAI 13.03-26

ETE-7: Demand Estimation, Special Facility Population
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Sections II.C, II.E, III.A, IV.B.4, IV.B.5

J. Table 8-4, "Special Facility Transit Demand," (page 8-18) does not include all of the special facilities included in Appendix E, "Special Facility Data," such as the day care centers and the correctional facilities. Explain why these facilities are not included in the Special Facility transit demand analysis.

Entergy Response

J. Table 8-4 of the Evacuation Time Estimate (ETE) report would be more appropriately titled "Medical Facility Transit Demand" and is revised in Supplement 1 to the Grand Gulf ETE report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter). The transit resources needed to evacuate other special facilities in the Emergency Planning Zone (EPZ) are included in the other tables and text of Section 8 of the ETE report. Table 8-2 provides the transit demand for schoolchildren within the EPZ; a total of 56 buses are needed to evacuate schools (see response to RAI 13.03-18 for updated table). The transit demand for the J.B. Evans Correctional Center (JBECC) is discussed in the text of Page 8-13; see the response to RAI 13.03-19 for additional discussion on evacuating the JBECC. Appendix E (Page E-2) identifies two smaller correctional facilities within Claiborne County, both of which are housed at police stations. It is assumed that the small inmate population at these facilities is evacuated via patrol cars and vehicles onsite.

A survey of day care centers indicated that some of the larger day care centers have a van or mini-bus. However, the ETE takes no credit for the use of these vehicles. In a worst case scenario, 5 vans, 11 buses and 1 SUV would be added to the evacuation demand by day care centers. If these are used for evacuation, the addition of these relatively few vehicles to evacuating traffic will not impact the ETE of the general population. The table on page E-3 of the ETE report will be revised in Supplement 1 to the ETE report to include transportation assets of the day care centers identified within the EPZ.

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Change title of Table 8-4 to "Medical Facility Transit Demand".

2. Change title of Table 8-4 to "Medical Facility Transit Demand" in the List of Tables on Page vi.

3. Expand the table on page E-3, "Grand Gulf EPZ: Day Care Centers (As of December 2006)", to include transportation assets of the day care centers.

ATTACHMENT 27

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-27

RAI QUESTION NO. 13.03-27

NRC RAI 13.03-27

ETE-7: Demand Estimation, Special Facility Population
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Sections II.C, II.E, III.A, IV.B.4, IV.B.5

K. Table 8-4, "Special Facility Transit Demand," (page 8-18) indicates that 9 ambulance runs and 18 wheelchair bus runs may be required.

1. Discuss why values are based on existing census of the facility and not on capacity.

2. Explain if the transport requirements will increase if capacity values are used.

Entergy Response

K.1. Appendix 4 of NUREG-0654 states that the evacuation time estimate (ETE) must "provide an estimate of the number of people to be evacuated" (Section II, page 4-2). In accordance with this guidance, the ETE is based on estimates of the actual "number of people" in the existing census rather than on the capacity of the facility.

K.2. Using capacity values instead of current census values could increase the transportation requirements. This increase, if any, depends on the "mix" of persons at the facilities: ambulatory, wheel-chair bound and bed-ridden. Specifically, the available data (see attached revised Table 8-4) indicate that there are 27 bedridden persons associated with an aggregate census of 151 persons, equivalent to 17.9 percent. Therefore, if capacity values were used, there would be an estimated 38 bedridden persons (211 x 17.9%) and 19 ambulance runs needed. However, for reasons stated in K.1, the use of actual data, where available, was preferred. These increased transit requirements would not be considered in the ETE.

In development of this response, both Franklin Medical Rural Health Clinic and Tensas Parish Health Unit were contacted in that detailed census data were not available (N/A) when the ETE study was performed (See Table 8-4 of the ETE report). Both facilities were identified as being outpatient facilities. Therefore, transit resources are not needed for these facilities.

In a similar manner, Claiborne County Hospital was contacted because detailed census data was not available when the ETE study was performed. The facility has a capacity and current census of 32 persons – 22 of which are ambulatory and will be evacuated on a bus and 10 of which are bedridden, requiring 5 ambulance runs (2 bed-ridden persons per ambulance as stated in Section 8.3 of the ETE report). It is reasonable to expect that the bus that evacuates the nearby county nursing center could also service all the ambulatory occupants of the hospital. Table 8-4 and the "Medical Facilities & Nursing Homes" table on Page E-5 of the ETE report are revised as attached and in Supplement 1 to the Grand Gulf ETE report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter).

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Revise Table 8-4 as presented in this response.

2. Revise the "Medical Facilities & Nursing Homes" table on Page E-5 as presented in this response.

Table 8-4. Medical Facility Transit Demand												
ERPA	Distance (miles)	Direction	Facility Name	Municipality	Capacity	Current Census	Ambulatory	Wheelchair Bound	Bedridden	Ambulance Runs	Wheelchair Bus Runs	Bus Runs
Claiborne County												
4A	5.5	SE	Claiborne County Hospital	Port Gibson	32	32	22	0	10	5	0	1
4A	4.9	SE	Claiborne County Nursing Center	Port Gibson	77	64	15	38	11	6	10	1
				Claiborne County Totals:	109	96	37	38	21	11	10	2
Tensas Parish												
9	12.4	WNW	Franklin Medical Rural Health Clinic	Newellton	Outpatient Healthcare facility							
9	12.7	WNW	Tensas Care & Rehabilitation Center	Newellton	102	55	25	24	6	3	6	1
11	12.4	WSW	St. Joseph Rural Health Clinic	Saint Joseph	Outpatient Healthcare facility							
11	12.7	WSW	Tensas Community Health Center	Saint Joseph	Outpatient Healthcare facility							
11	12.8	WSW	Tensas Parish Health Unit	Saint Joseph	Outpatient Healthcare facility							
				Tensas Parish Totals:	102	55	25	24	6	3	6	1
				EPZ Totals:	**211**	**151**	**62**	**62**	**27**	**14**	**16**	**3**

N/A = Not Available

ATTACHMENT 28

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-28

RAI QUESTION NO. 13.03-28

NRC RAI 13.03-28

ETE-7: Demand Estimation, Special Facility Population
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Sections II.C, II.E, III.A, IV.B.4, IV.B.5

L. Section 8.4, "Evacuation Time Estimates for Transit-Dependent People," (page 8-12) states that additional ambulance are assumed to travel from major cities to the north if resources in the plume exposure pathway Emergency Planning Zone (EPZ) are not sufficient.

1. Clarify whether there are a sufficient amount of ambulances available to evacuate the current population.
2. Discuss how additional vehicles will be requested and how this might affect the ETE.

Entergy Response

L. Telephone interviews with local emergency management officials were conducted to update Table 8-4 of the Evacuation Time Estimate (ETE) report, which is attached to the response to RAI 13.03-27, and to acquire information on ambulance availability. The survey produced the following results:

- Claiborne County has 2 on-call ambulances at all times. Additional support from the Mississippi State Health Officer guarantees 40 ambulances within 4 hours.

- Tensas Parish has 2 on-call ambulances at all times. Additional support from Northeast Louisiana Ambulance Service, located in the neighboring parish of Franklin, includes an additional 13 ambulances that service several nearby parishes.

The 9 additional ambulances needed in Claiborne County (11 ambulances indicated in Table 8-4 minus 2 on-call ambulances) would be requisitioned from nearby counties. It is reasonable to assume that 9 ambulances would arrive within 2 hours after the Advisory to Evacuate, given that 40 ambulances are guaranteed within 4 hours. Ambulances on-call outside of the Emergency Planning Zone (EPZ) should average at least 50 mph. Ambulances travelling from Vicksburg and Jackson, MS would be traveling less than 100 miles and would therefore be available within 2 hours. According to pages F-3 and F-4 of the Port Gibson/Claiborne County Radiological Emergency Preparedness Plan, the Port Gibson Nursing Home will be evacuated to Natchez Regional Hospital in Natchez, Mississippi, while Claiborne County Hospital (recently changed name to Patient's Choice Medical Center of Claiborne County) will be evacuated to River Region Medical Center in Vicksburg, Mississippi.

Tensas Parish requires one additional ambulance (3 ambulances indicated in Table 8-4 minus 2 on-call ambulances). An arrival time of 2 hours for the nearest ambulance out of the 13 available in neighboring parishes is reasonably expected. A telephone interview with the Tensas Care and Rehabilitation Center indicated that the patients in the facility evacuate to a host facility, Legrand Healthcare and Rehabilitation Center, in Bastrop, Louisiana.

On this basis, the ETE are calculated as follows:

Activity	Claiborne County	Tensas Parish
Arrival	2:00	2:00
Loading	0:30	0:30
Travel to EPZ Boundary	0:20	0:15
ETE (hr:min)	**2:50**	**2:45**

Note: The distance from Claiborne County Hospital to the EPZ Boundary along Route 61 northbound towards the host hospital in Vicksburg is about 12 miles, while the distance from the Claiborne County Nursing Center to the EPZ boundary along Route 61 southbound towards the host hospital in Natchez is about 7 miles Because there is no congestion (see Figure 7-5) at the time ambulances are ready to evacuate (2:30), a conservative speed estimate of 40 mph yields about 20 minutes (12 miles ÷ 40 miles per hour x 60 minutes per hour) of travel time to exit the EPZ for the Claiborne County medical facilities (the distance from Claiborne County Hospital is used as the vehicles evacuating this facility travel the farthest, have a later departure time from the EPZ and will dictate the ETE for medical facilities in Claiborne County). In Tensas Parish, Newellton is about 10 miles from the EPZ boundary along Route 65 southbound towards the host facility in Bastrop; travel time is approximately 15 minutes at 40 mph. Loading time is conservatively assumed to be 30 minutes.

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Replace "Emergency Medical Service (EMS) Vehicles" discussion on page 8-12 of the ETE report with this response.

ATTACHMENT 29

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-29

RAI QUESTION NO. 13.03-29

NRC RAI 13.03-29

ETE-7: Demand Estimation, Special Facility Population
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Sections II.C, II.E, III.A, IV.B.4, IV.B.5

M. Special facilities that are within the plume exposure pathway Emergency Planning Zone (EPZ) are identified in Table 8.4, "Special Facility Transit Demand," (page 8-18) and Appendix E, "Special Facility Data," on an individual basis. A map identifying the physical location of the Special Facilities is not provided. Provide a map identifying the locations of special facilities within the EPZ.

Entergy Response

M. Detailed Geographical Information System (GIS) maps have been created for all special facilities in the Emergency Planning Zone (EPZ) and will be added to Appendix E of the Evacuation Time Estimate (ETE) report as Figures E-2 through E-6 in Supplement 1 to the Grand Gulf ETE report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter). The tables in Appendix E will be updated to include all facilities and data presented in Sections 3 and 8 of the ETE report.

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Add "Figure E-2. Schools within the GGNS EPZ" to Page E-8 in Appendix E.
2. Add "Figure E-3. Day Care Centers within the GGNS EPZ" to Page E-9 in Appendix E.
3. Add "Figure E-4. Medical Facilities within the GGNS EPZ" to Page E-10 in Appendix E.
4. Add "Figure E-5. Major Employers and Lodging Facilities within the GGNS EPZ" to Page E-11 in Appendix E.
5. Add "Figure E-6. Parks, Camps and Correctional Facilities within the GGNS EPZ" to Page E-12 in Appendix E.
6. Replace "Grand Gulf EPZ: State Parks & Overnight Camps" table on Page E-2 of Appendix E.
7. Replace "Grand Gulf EPZ: Day Care Centers (As of December 2006)" table on Page E-3 of Appendix E.
8. Replace "Grand Gulf EPZ: Hotels/Motels" table on Page E-4 of Appendix E.
9. Replace "Grand Gulf EPZ: Major Employers" table on Page E-4 of Appendix E.

ATTACHMENT 30

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-30

RAI QUESTION NO. 13.03-30

NRC RAI 13.03-30

ETE-8: Demand Estimation, Emergency Planning Zone
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section II.D, Section III.B, IV.B.1

A. In Table 6-1 (page 6-2) and Table 7-2 (page 7-13) both titled "Definition of Evacuation Regions", it appears that not all of the Emergency Response Planning Areas (ERPAs) have been assigned to the regions. Provide information to address the following issues:

   1. Discuss why ERPA 7 is not included in R4 as it is within the 5-mile ring.

   2. Discuss why ERPA 2A is not included in R5 as it is within the 5-mile ring.

   3. Discuss why ERPA 8 and 12 are not included in R6 as they are within the 5-mile ring.

   4. Discuss why ERPA 7, 8, and 12 are not included in R7 as they are within the 5-mile ring.

   5. Discuss why ERPA 6 is included in R7 as it is not within the SE region.

   6. Discuss why ERPA 10 is not included in R8 as it is within the 10-mile ring.

   7. Discuss why ERPA 7, 8, and 12 are not included in R9 as they are within the 5-mile ring.

Entergy Response

A. NUREG-0654 and NUREG/CR-6863 discuss Evacuation Regions and the use of quadrant based areas, and 3-sector based keyholes, respectively. The irregular shapes of the Grand Gulf Emergency Response Planning Areas (ERPAs) (e.g., ERPA 8 extends from about 4 miles from the plant to 12.5 miles from the plant) are at a variance with the symmetrical shapes of quadrants and circular areas. As a result, it is possible for a small piece of an ERPA (with little or no population) to lie within a quadrant or circular area. Under these circumstances, situations arose where an ERPA extending to a distance of as much as 12 miles from GGNS could be included with an area within 5 miles of the plant.

   The decision of whether to evacuate an entire ERPA under these circumstances must be based on evaluating the trade-offs between the benefits of evacuating the few people who are located within the subject Region (quadrant or circular area) in contrast to the potential disadvantages of unnecessarily evacuating a much larger population located outside the Region. To address this situation, the following methodology was developed to determine whether to include an ERPA within the subject Region when these circumstances are present.

   The acceptance criteria for including an ERPA in a Region are the following: (1) at least 15 percent of the general population (residents, employees commuting into the EPZ, and transients) within the ERPA must be within the Region; or (2) approximately 75 persons of the general population are within the Region.

Item 5 of Section 1.1 of the Evacuation Time Estimate (ETE) report will be revised in Supplement 1 to the Grand Gulf ETE report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter) to include the discussion presented above.

Furthermore, given the limited size of ERPA 6 (Alcorn State University), its close proximity to ERPA 5B and the use of the same evacuation route (Route 552 eastbound) by evacuees from both ERPA, it is assumed that ERPA 6 should always evacuate when ERPA 5B evacuates. This assumption will be added to Section 2.3 in Supplement 1 to the ETE report.

A.1 A portion of ERPA 7 is geographically located in the indicated Region. The 2000 Census population for ERPA 7 is 3 people. There are also 8 hunting camps within ERPA 7 (see Figure E-1 of the ETE report) with a total population of 80 transients. The Region consisting of the 2-mile ring + the NE quadrant (Region R4) includes no permanent residents and 1 hunting camp from ERPA 7. Applying the acceptance criteria from A, above: (1) 10 people within the keyhole region ÷ 83 people in the ERPA total = 12 percent, which is less than the criterion of 15 percent; (2) there are 10 people within the Region, which is less than the criterion of 75. Therefore, neither acceptance criterion is met, and ERPA 7 is not included within Region R4.

A.2 The general population for ERPA 2A consists of 356 residents (Year 2000) and 579 transients. 30 residents and 10 transients are within the Region R5 keyhole. Applying the acceptance criteria from A, above: (1) (30+10) ÷ (356+579) = 4%, which is less than criterion of 15 percent; (2) 30 +10 = 40 total people within the keyhole, which is less than the criterion of 75. Therefore, neither acceptance criterion is met, and ERPA 2A is not included within Region R5.

A.3 The general population for ERPA 8 consists of 163 residents, no transients, and no employees. There is no population within the Region R6 keyhole; therefore, ERPA 8 is not included within Region R6.

The general population for ERPA 12 consists of 10 transients, no residents, and no employees. There is no population within the Region R6 keyhole; therefore ERPA 12 is not included within Region R6.

A.4 ERPA 7 – general population of 83 (see the response to part A.3); no population within the Region R7 keyhole; ERPA 7 is excluded.

ERPA 8 – general population of 163 (see the response to part A.3); no population within Region R7 keyhole; ERPA 8 is excluded.

ERPA 12 – general population of 12 (see the response to part A.3); no population within the Region R7 keyhole; ERPA 12 is excluded.

A.5 As mentioned above, it is assumed that ERPA 6 always evacuates with ERPA 5B.

A.6 The general population for ERPA 10 consists of 431 residents and 519 transients. There are 54 residents and no transients within the Region R8 keyhole. Applying the acceptance criteria from A, above: (1) 54 ÷ (431+519) = 6%, which is less than the criterion of 15 percent; (2) 54 total people within keyhole, which is less than the criterion of 75. Therefore, neither acceptance criterion is met, and ERPA 10 is not included within Region R8.

A.7 See the response to part A.4. There is no population within the Region R9 keyhole for ERPAs 7, 8 and 12; ERPAs 7, 8 and 12 are not included in Region R9.

The Regional configurations identified in Table 6-1 were all verified. It was discovered that ERPA 5A should not evacuate for Regions R2, R6 and R8. Since ERPA 5A includes only 158 resident vehicles, its exclusion would not materially affect the ETE calculated for these three Regions.

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Revise item 5 of Section 1.1 on Page 1-3 to include the above discussion.

2. Add an assumption (Item 12) that ERPA 6 (Alcorn State University) should always evacuate with ERPA 5B to Page 2-7, Section 2.3.

ATTACHMENT 31

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-31

RAI QUESTION NO. 13.03-31

NRC RAI 13.03-31

ETE-8: Demand Estimation, Emergency Planning Zone
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section II.D, Section III.B, IV.B.1

B. In Table 7-1D, "Time to Clear the Indicated Area of 100% of the Affected Population," (page 7-12) the longest evacuation time for 100% of the population in the Evacuation Time Estimate (ETE) is 4 hours 10 minutes. However, Figure F-11, "Time to Prepare Home for Evacuation, (page F-12) indicates that 360 minutes, or 6 hours, is the time for 100% of the population to "prepare to evacuate." Explain how the maximum evacuation time for 100% of the public was calculated using the data from Figure F-11.

Entergy Response

B. The 100th percentile evacuation time estimate (ETE) includes the evacuation of *all* vehicles within the Emergency Planning Zone (EPZ); however, the mobilization time of a few stragglers (typically less than 2 percent of evacuees) is advanced such that the ETE for the 90th and the 95th percentiles are not skewed by the extended mobilization time of the stragglers. For example, in Figure F-11, 98 percent of respondents complete home preparation within 2½ hours, with the remaining 2 percent requiring up to 3½ additional hours to complete home preparation. The home preparation time of the 2 percent of stragglers was advanced to 2½ hours so that 100 percent of respondents have completed home preparation by that time.

As discussed in Section 7.3 of the ETE report, the flow rate of evacuating vehicles declines rapidly towards the end of the evacuation such that there are very few vehicles moving towards the EPZ boundary over the last hour. This is seen by the fact that the curves of Figure 7-6 of the ETE report are essentially horizontal past an ETE of 2½ hours (zero slope indicates zero flow rate) for the evacuation of the entire EPZ (Region 03) for Scenario 1. Consequently, the time to evacuate 100 percent of the population is indistinct and difficult to quantify.

Given these characteristics, a statistical analysis on the mobilization distributions was performed to quantify a "confidence band" about the distribution. This band serves as the basis for establishing the point in time where the long tail should be truncated by advancing the trip generation times of those whose mobilization time extends well beyond the mobilization time of 99 percent of their neighbors. As a result, the mobilization time is estimated to extend over a period of 4 hours, as shown in Figure 5-3 of the ETE report. Thus, while a small percentage of the population indicated via the telephone survey that their mobilization times may extend out as long as six hours (Figure F-11), the vehicles for this small segment of the population were loaded onto the evacuation network at four hours to provide a conservative estimate of the vehicle flow within the roadway network.

As shown in Figure F-11, about 99 percent of respondents complete the home preparation within 3 hours, with the remaining stragglers requiring another 3 hours. While very few

respondents require 6 hours to prepare to evacuate, it is important to accurately represent the ETE at the 90th and 95th percentiles of the evacuating public.

To that end, truncating the cited distribution at about 2½ hours (see Figure 5-2) ensures that these ETE of interest (i.e. at the 90th and 95th percentiles) are based on a conservative estimate of traffic demand. That is, advancing the departures of the few stragglers in the population to about 2½ hours provides assurance that the evacuating traffic demand includes all evacuees over that time frame when congested conditions could arise. Since traffic flow is generally a first-in-first-out (FIFO) process, any "tail truncation" that occurs well after the 90th and 95th percentile ETE does not influence these values.

As discussed on Page 7-3 and displayed in Figure 7-5, the congestion clears within the EPZ before the trip generation time of 4 hours; thus the ETE for the 100th percentile is dictated by the trip generation time. The congestion within the EPZ has dissipated by 3 hours (As indicated on the revised Figure 7-5, included in Supplement 1 to the GGNS ETE report, there is congestion eastbound on State Hwy 552, but this is outside the EPZ). This discussion references evacuating the entire EPZ (Region R03) for Scenario 11 (Construction of new unit and Alcorn State University football game). Consequently:

- Advancing the tail of the trip generation distribution as described above did not extend congestion within the EPZ beyond 3 hours, well before the trip generation time of 4 hours.
- Traffic within the EPZ was free-flowing at 3 hours, which is after the ETE (2:55) for 95 percent of the population (see Table 7-1C).
- The ETE for 100 percent of the population, 4:10 for Scenario 11 (see Table 7-1D) does not include a few stragglers who could still be within the EPZ.
- The 95th percentile ETE (Table 7-1C) should be used by those emergency response personnel charged with recommending and deciding on protective actions during an emergency.

The tails of the tables in Section 5 were truncated by advancing the responsiveness of the small number of stragglers for each activity. See the discussion above.

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Revise Page 5-13 of Section 5 to include a discussion on mobilization activity distributions.

ATTACHMENT 32

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-32

RAI QUESTION NO. 13.03-32

NRC RAI 13.03-32

ETE-8: Demand Estimation, Emergency Planning Zone
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section II.D, Section III.B, IV.B.1

C. Section 7.3, "Evacuation Rates," (page 7-4) states evacuation is a continuous process according to Figures 7-3 through 7-5. It is not clear how the figures describe this process. Provide an explanation for this statement.

Entergy Response

C. Figures 7-3 through 7-5 illustrate how the areas of traffic congestion evolve during the first three hours after the advisory to evacuate. Figure 7-6 provides a more graphic illustration of vehicle evacuations versus time within the Emergency Planning Zones (EPZs). The first three sentences of Section 7.3 of the Evacuation Time Estimate (ETE) report will be replaced with the following in Supplement 1 to the Grand Gulf ETE report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter):

> "Evacuation is a dynamic process, as illustrated in Figures 7-3 through 7-5. The evolving nature of traffic congestion is shown in Figures 7-3 through 7-5, while Figure 7-6 indicates the rate at which traffic flows out of the indicated areas for the case of an evacuation of the full 10-mile Region R3 (i.e., entire EPZ) under the indicated conditions."

In Figure 7-6, the slopes of the curves – which reflect the rate of traffic flow – are small during the first 30 minutes as much of the EPZ population has not yet mobilized. Between 30 and 150 minutes, the slopes are steeper as more people have completed their mobilization activities and evacuate the region. Between 150 and 240 minutes, the slopes decrease significantly, as only those relatively few people who take significantly longer to mobilize remain to evacuate. For example, 95% of the EPZ population evacuates during the first 170 minutes; however, the remaining 5% of the population requires 80 additional minutes to evacuate (Region R03, Scenario 1). The varying traffic congestion patterns of Figures 7-3 through 7-5 and the continuous curves of Figure 7-6 represent the dynamic evacuation process.

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Replace the first three sentences of Section 7.3 on Page 7-4 with the following: "Evacuation is a dynamic process, as illustrated in Figures 7-3 through 7-5. The evolving nature of traffic congestion is shown in Figures 7-3 through 7-5, while Figure 7-6 indicates the rate at which traffic flows out of the indicated areas for the case of an evacuation of the full 10-mile Region R3 (i.e., entire EPZ) under the indicated conditions."

2. Change the titles of Figures 7-3 through 7-5 on Pages 7-16 through 7-18 to include "(Region R03, Scenario 11)" at the end of the title.

3. Update the titles of Figures 7-3 through 7-5 on Page iii of the Table of Contents.

ATTACHMENT 33

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-33

RAI QUESTION NO. 13.03-33

NRC RAI 13.03-33

ETE-9: Traffic Capacity, Evacuation Roadway Network
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Sections III.A, Section III.B

A. Section 2.3, "Study Assumptions" (page 2-7), assumption #11, states that the Natchez-Trace Parkway will be reserved for the movement of emergency vehicles and will not serve as an evacuation route for the general public.

   1. Discuss whether this was confirmed with local law enforcement.

   2. Discuss how the nodal network in Figure 1-2, "Grand Gulf Link Node Analysis Network," (page1-10), which includes the Natchez-Trace Parkway, was set up in the model to prevent general public use.

Entergy Response

A. 1. Page F-20 of the Mississippi Radiological Emergency Preparedness Plan indicates, "Three additional GE TCPs are established on the Natchez Trace Parkway to limit its use only to emergency vehicles." The National Park Service is the responsible agency for preventing access to the Parkway.

A. 2. There are only 2 access points to the Natchez Trace Parkway within the Emergency Planning Zone (EPZ): ramps from State Highway 18 [see links (102,103) and (103,104) in the large scale map of Figure 1-2, which is provided electronically in response to RAI 13.03-35; and ramps from US Highway 61 [see link (20,21)]. There are 2 additional access points to the Natchez Trace Parkway within the shadow Region: ramps from State Highway 552 near Alcorn [see links (48, 49) and (49, 50)]; and an at-grade intersection with Whittaker Road which was not modeled.

Based on the access points indicated above, vehicles traversing link (380, 20) can make a right turn to access the Parkway; vehicles traversing link (22, 20) can make a left turn to access the Parkway; vehicles traversing link (101, 102) can make a left turn to access the Parkway; and link (56, 48) can make a left turn to access the Parkway.

The turn percentages input to the simulation model were checked: (380, 20) is 100% through; (22, 20) is 100% left; (101, 102) is 100% through; and (56, 48) is 50% left and 50% through. The turn percentages input for links (22, 20) and (56, 48) are incorrect as they allow access to the Natchez Trace Parkway.

A sensitivity study was performed on an evacuation of the entire EPZ (Region R3) under Scenario 1 conditions with the turn percentages for these two links corrected to be 100% through, thereby avoiding the routing of evacuating vehicles onto the Natchez Trace Parkway. The results of the sensitivity study indicate that the evacuation time estimates (ETE) for the 50^{th}, 90^{th}, 95^{th} and 100^{th} percentiles of population are unaffected.

As indicated in the response to RAI 13.03-11, there is no congestion within the EPZ and the ETE is dictated by the mobilization time. There is excess highway capacity within the EPZ to service the evacuation demand; therefore rerouting those who were originally routed onto the Natchez Trace Parkway to other roads does not impact the ETE.

Proposed COLA Revisions

None

ATTACHMENT 34

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-34

RAI QUESTION NO. 13.03-34

NRC RAI 13.03-34

ETE-9: Traffic Capacity, Evacuation Roadway Network
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Sections III.A, Section III.B

B. A traffic management strategy is included in the plan in Section 9, "Traffic Management Strategy." Implementation of this strategy, including access control points and traffic control points, is included in Appendix G, "Traffic Control". It is not clear how these strategies affect the Evacuation Time Estimates (ETEs) or how they are used in the calculations. Explain how the traffic management strategy was applied to ETE.

Entergy Response

B. The evacuation time estimate (ETE) calculations do not rely upon the manning of any of the traffic control points (TCPs) in Appendix G of the ETE report. The estimates of capacity, which are used by the PCDYNEV model and are documented in Appendix K of the ETE report, are based upon the factors described in Section 4 and upon the observations made during the road survey. It is assumed that these capacity estimates are not enhanced nor compromised by the establishment of a TCP at an intersection. As detailed in Section 9 of the ETE report, the functions to be performed in the field at TCPs are to: (1) facilitate evacuating traffic movements; and (2) discourage those movements that would move travelers closer to the power station. The personnel manning these TCPs will also serve a surveillance function to inform the Emergency Operations Center (EOC) of any problems that occur in the vicinity or are reported to them by evacuees.

   Thus, the calculated ETE does not rely upon implementation of the TCPs detailed in ETE Appendix G. The responses to ETE 13.03-11 and ETE 13.03-13, parts 2 through 4, provide additional information on the traffic management strategy and its effect on the ETE.

Proposed COLA Revisions

None

ATTACHMENT 35

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-35

RAI QUESTION NO. 13.03-35

NRC RAI 13.03-35

ETE-10: Traffic Capacity, Roadway Segment Characteristics
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section III.B

A. Appendix K, "Evacuation Roadway Network Characteristics," contains road characteristics for the links and nodes, but there is no reference tying them to the map in Figure 1-2, "Grand Gulf Link Node Analysis Network" (page 1-10). The maps also do not contain sector and quadrant boundaries. Provide an annotated map or maps that include the nodes identified in Appendix K, including sector and quadrant boundaries.

Entergy Response

A. A large-scale 48 inch by 36 inch portable document format (PDF) file of Figure 1-2 is provided electronically as Enclosure 1, RAI_LTR19_Figure_1-2.pdf, to this letter. The file was exported at a resolution of 400 dpi from the original Geographical Information Systems (GIS file). The node numbers (from Appendix K) are labeled in the map. Sector and quadrant boundaries have also been provided in the map.

Proposed COLA Revisions

None

ATTACHMENT 36

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-36

RAI QUESTION NO. 13.03-36

NRC RAI 13.03-36

ETE-10: Traffic Capacity, Roadway Segment Characteristics
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section III.B

B. Appendix K, "Evacuation Roadway Network Characteristics," lists lane widths as 1 or 2 inferring two-lane roads and highways. The actual width of the lane is not provided.

1. Explain how lane widths were measured and if they are one consistent width.

2. Provide the values used for the lane width.

Entergy Response

B. Appendix K of the Evacuation Time Estimate (ETE) report does not list lane widths. The column entitled "Full Lanes" lists the number of lanes that extend the full length of the link. As noted in the response to RAI 13.03-35, a large-scale version of Figure 1-2 is provided in electronic format, as Enclosure 1, RAI_LTR19_Figure_1-2.pdf, to this letter). The nodes are numbered and the links can be cross referenced with Appendix K of the ETE report.

The link-node network was developed on the basis of a field survey of the entire highway system within the plume exposure pathway Emergency Planning Zone (EPZ) and for some distance outside of the EPZ. A tablet personal computer equipped with Geographical Information Systems (GIS) software was used during the road survey to acquire and record data. The characteristics of each section of highway were recorded. These characteristics include: number and estimated width of lanes, shoulder type and estimated width, intersection configuration, lane channelization, roadway geometrics, posted speed, actual free speed, abutting land use, traffic control devices, street parking and signage.

In addition, video and audio recording equipment were used to capture a permanent record of the highway infrastructure. No attempt was made to meticulously measure such attributes as lane width and shoulder width; estimates of these measures based on visual observation and recorded images were considered appropriate for the purpose of estimating the capacity of highway sections. For example, Exhibit 20-5 in the Highway Capacity Manual 2000 (HCM) indicates that a reduction in lane width from 12 feet (the "base" value) to 10 feet at any shoulder width can reduce free flow speed (FFS) by 1.1 mph – not a material difference – for two lane highways. A 10-foot lane width with a 2-foot shoulder width would reduce FFS by only 3.7 mph relative to a "base" of a 12-foot lane and 6-foot shoulder, a reduction of about 6-9%. Exhibit 12-15 of the HCM shows no sensitivity for the estimates of service volumes at Level of Service (LOS) E (near capacity), with respect to FFS. The topography of the highway (level, rolling, mountainous) is a far more important factor than lane and shoulder width when estimating capacity.

The data from the audio and video recordings were used to create detailed GIS shapefiles and databases of the roadway characteristics and of the traffic control devices observed during the road survey; this information was referenced while preparing the input stream for the IDYNEV system. All of the information obtained during the road survey was input for the

links and nodes shown in Figure 1-2 of the ETE report in order to ensure that the link-node analysis network replicates the actual physical roadway network surrounding the plant.

As documented on page 20-3 of the HCM, the capacity of a two-lane highway is 1700 passenger cars per hour for each direction of travel. For freeway sections, a value of 2250 vehicles per hour per lane is assigned. The road survey has identified several segments which are characterized by adverse geometrics which are reflected in reduced values for both capacity and speed. These estimates reflect the service volumes for LOS E presented in HCM Exhibit 12-15. These links may be identified by reviewing Appendix K. Link capacity is an input to IDYNEV which calculates the ETE. The locations of these sections may be identified by reference to the large-scale map showing the link-node diagram with the nodes identified.

The number of bridges, sharp curves, narrow shoulders and other capacity-reducing features on the evacuation network were observed and considered in estimating capacity. Bridges are treated, for ETE purposes, as links in the highway network. Their properties are recorded in Appendix K (with all other links), but are not otherwise delineated.

In Appendix K of the ETE report, the term "full lanes" is used to identify the number of lanes that extend over the entire length of the roadway segment or link. Many network links are widened with additional lanes near the downstream intersection (e.g., left-turn bays, right-turn bays, additional through lanes). These additional lanes are all properly represented in the input stream for the I-DYNEV system. Lane widths vary from one link to the next and even within one link as do shoulder width, grade, and horizontal curvature. In accord with NUREG-0654, Appendix 4, Section III.B, the estimation of capacity (expressed as saturation flow rate in the fifth column of the table in Appendix K of the ETE report) is based on the narrowest section of the roadway segment. The free-flow speed shown in Appendix K of the ETE report is based upon observation of traffic movements during the field survey; these estimates do not necessarily comport with the speed advisory signing. Lane widths were observed but not measured during the field survey.

To represent the changing geometric features along a highway, the modeling process subdivides a highway into sequential links, each with its own reasonably consistent set of attributes, including lane width. The objective is to assign estimated values of saturation flow rates and free speed for each link that are reflective of its features.

Where the "ideal" conditions are not realized, downward adjustments to the capacity estimate of 1,700 pc/hr were made. These adjustments, which can be viewed in Appendix K, are based on the guidance provided in Exhibit 12-15 of the HCM. Note that the base conditions for this exhibit include a 60/40 directional split. This assumption would not be realized during an evacuation where the flow is primarily outbound and the directional split is more likely to be 80/20 or 90/10. There would be limited inbound traffic, particularly after 90 minutes following the advisory to evacuate when evacuating traffic volumes are high. As is shown in Exhibit 12-7(b), a reduced opposing flow rate is associated with a lower percentage of "Time-spent-following," a measure of "[t]he comfort and convenience of travel." [p.12-12, HCM] As shown in Exhibit 20-4, LOS is related to percent time-spent-following.

Proposed COLA Revisions

None

ATTACHMENT 37

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-37

RAI QUESTION NO. 13.03-37

NRC RAI 13.03-37

ETE-10: Traffic Capacity, Roadway Segment Characteristics
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section III.B

C. Section 1.3 "Preliminary Activities" (page 1-7), states that unusual roadway characteristics were identified in the field survey including: Narrow bridges, sharp curves, poor pavement, flood warning signs, inadequate delineations, etc. Discuss how this information was factored into the calculations for accurate Evacuation Time Estimates (ETE), as described in Grand Gulf Evacuation Time Estimates, Appendix D, "Detailed Description of Study Procedure," KLD Associates, Inc., Rev. 1.

Entergy Response

C. The "unusual roadway characteristics" identified during the field surveys of the highway network can influence both free-flow speed and capacity, both of which are input to the PCDYNEV model used to calculate the evacuation time. Additional details regarding roadway characteristics and features identified during the field survey and how these features factor into the evacuation time estimates are provided in the response to RAI 13.03-36.

Proposed COLA Revisions

None

ATTACHMENT 38

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-38

RAI QUESTION NO. 13.03-38

NRC RAI 13.03-38

ETE-10: Traffic Capacity, Roadway Segment Characteristics
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section III.B

D. Section 2.1.3, "Data Estimates," (page 2-1) states that roadway capacity was estimated for each segment based on the field surveys and on the Highway Capacity Manual. Clarify whether the field survey confirmed that lane widths meet the conditions for 'ideal'.

Entergy Response

D. Some lane widths identified during the field survey do not meet the "ideal" conditions. The response to RAI 13.03-36 details the adjustments to the roadway capacity estimates where the "ideal" conditions are not realized.

Proposed COLA Revisions

None

ATTACHMENT 39

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-39

RAI QUESTION NO. 13.03-39

NRC RAI 13.03-39

ETE-10: Traffic Capacity, Roadway Segment Characteristics
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section III.B

E. Discuss the operational considerations applied to the roadway capacity estimate. If necessary, explain the affect on the Evacuation Time Estimate (ETE) if the capacity is determined to be lower than the value used.

Entergy Response

E. The response to RAI 13.03-36 discusses the operational considerations observed during the field survey and the inputs to PCDYNEV based on those observations. As discussed in the response to RAI 13.03-11, there is no pronounced congestion within the Emergency Planning Zone (EPZ), and the ETE is dictated by the mobilization time of the evacuees. Therefore, if the capacity were determined to be moderately lower than the values used, the effect on the ETE would be negligible.

Proposed COLA Revisions

None

ATTACHMENT 40

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-40

RAI QUESTION NO. 13.03-40

NRC RAI 13.03-40

ETE-10: Traffic Capacity, Roadway Segment Characteristics
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section III.B

F. Section 4, "Estimation of Highway Capacity," (pg. 4-5) states a value of R=0.85 was employed based on empirical data collected on freeways.

1. Describe the empirical data that supports the value of R=0.85, including how the value was determined.

2. Explain the basis for applying this factor to roadways other than freeways.

Entergy Response

F. 1. The advisability of such a capacity factor is based upon empirical studies that identified a fall-off in the service flow rate when congestion occurs at "bottlenecks" or "choke points" on a freeway system. Zhang and Levinson3 describe a research program that collected data from a computer-based surveillance system (loop detectors) installed on the Interstate Highway System, at 27 active bottlenecks in the Twin Cities metro area in Minnesota over a 7-week period. When flow breakdown occurs, queues are formed which discharge at lower flow rates than the maximum capacity prior to observed breakdown. These queue discharge flow (QDF) rates vary from one location to the next and also vary by day of week and time of day based upon local circumstances. The cited reference presents a mean QDF of 2016 passenger cars per hour per lane (pcphpl). This figure compares with the nominal capacity estimate of 2250 pcphpl that is representative for freeway links. The ratio of these two numbers is 0.896 which translates into a capacity reduction factor of 0.90. The data collected in the cited reference indicates a variation of +/- 5 percent about the average QDF. That is, the lower tail of this distribution would be equivalent to a capacity reduction factor of 0.90 - 0.05 = 0.85 which is the figure applied by DYNEV.

The Evacuation Time Estimate (ETE) report takes a conservative view in estimating the capacity at bottlenecks when congestion develops (this capacity is the QDF rate discussed above). One could argue that a more representative value for this capacity reduction factor could be 0.90 as discussed above. Given the emergency conditions, a conservative approach was justified. Therefore, the software applies a factor of 0.85 *only when flow breaks down*, as determined by the simulation model.

F. 2. Rural roads, like freeways, are classified as "uninterrupted flow" facilities. (This is in contrast with urban street systems which have closely spaced signalized intersections and are classified as "interrupted flow" facilities.) As such, traffic flow along rural roads is subject to the same effects as freeways in the event traffic demand exceeds the nominal

[3] Lei Zhang and David Levinson, "Some Properties of Flows at Freeway Bottlenecks," Transportation Research Record 1883, 2004.

capacity, resulting in queuing. As a practical matter, rural roads rarely break down at locations away from intersections. The breakdowns on rural roads usually occur at intersections where other model logic applies. Therefore, the application of a factor of 0.85 is appropriate on rural roads, although this factor is rarely invoked by the simulation software.

Proposed COLA Revisions

None

ATTACHMENT 41

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-41

RAI QUESTION NO. 13.03-41

NRC RAI 13.03-41

ETE-11: Analysis of Evacuation Times, Report Format
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section IV.A.1

A. The evacuation times are presented for the evacuation regions and 10 scenarios in Appendix J, "Evacuation time Estimates [ETEs] for all Evacuation Regions and Scenarios." Results are presented for 50%, 90%, 95%, and 100% of the population for good and adverse (rainy) conditions. The format used for presentation of the ETEs is similar to that in Appendix 4 of NUREG-0654, but separate evacuation times for permanent residents and transients are not provided. Explain why separate evacuation estimates were not calculated for residents and transients.

Entergy Response

A. NUREG-0654 does not specify that separate evacuation time estimates be provided for residents and transients. The vehicles evacuating these population groups use the same roadways. The simulation does not distinguish which vehicles belong to which population group. The evacuation time estimate (ETE) provided in Section 7 and in Appendix J of the ETE report are for the general population, which includes permanent residents, employees commuting into the Emergency Planning Zone (EPZ) and transients.

Table 2 on page 4-16 of Appendix 4 of NUREG-0654 shows a suggested template for ETE tables. There are entries for "Transient Population", "Transient Pop. Vehicles", "Transient Pop. Response Normal Conditions", and "Transient Pop. Response Adverse Conditions". However, the only entries in the Table for Evacuation Time Estimates are "General Pop. Evac. Time Normal Conditions", "General Pop. Evac. Time Adverse Conditions", "Special Pop. Evac. Time Normal Conditions" and "Special Pop. Evac. Time Adverse Conditions".

Tables 7-1 A through D of the ETE report provide the ETE for the general population in good weather ("normal conditions") and in rain ("adverse conditions"); Tables 8-5A and 8-5B of the ETE provide ETE for the schools within the EPZ; Table 8-6 of the ETE provides ETE for the transit-dependent population; and Table 8-7 of the ETE provides the ETE for the medical facilities within the EPZ. Table 5-8 provides the trip generation ("response") times for the general population and separately for transients. Finally, Tables 3-2 through 3-4 of the ETE summarize the general population by ERPA within the EPZ. Thus, the data requested in Table 2 on Page 4-16 of NUREG-0654 is presented within the ETE report.

Proposed COLA Revisions

None

ATTACHMENT 42

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-42

RAI QUESTION NO. 13.03-42

NRC RAI 13.03-42

ETE-11: Analysis of Evacuation Times, Report Format
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section IV.A.1

B. Table 1-1, "ETE Study Comparisons," (page 1-13/15) identifies that the ETEs for the entire plume exposure pathway Emergency Planning Zone (EPZ) is 4 hours and 4 hours 10 minutes, respectively, for winter and summer, good weather. The Topic would indicate that this is the ETE for the entire EPZ. This estimate does not include special facilities and transients whose evacuation estimates in Table 8-6, "Transit-Dependent Evacuation Time Estimates," (page 8-21) may be greater than 5 hours. Clarify which populations were used for the estimate in Table 1-1.

Entergy Response

B. The estimates provided in the final row of Table 1-1 of the Evacuation Time Estimate (ETE) report are the ETE for the general population, which were adapted from Table 7-1D. The "Topic" for the final row will be changed to "Evacuation Time Estimates for the entire Emergency Planning Zone (EPZ): General Population" in Supplement 1 to the Grand Gulf ETE report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter). An additional row will be added to Table 1-1 in Supplement 1 to provide the maximum one-wave and two-wave ETE for both the special facilities and transit-dependent populations within the EPZ.

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Change "Topic" column for final row of Table 1-1 to "Evacuation Time Estimates for the entire EPZ: General Population" on Page 1-15.

2. Add a row to Table 1-1 to provide the maximum one-wave and two-wave ETE for both the special facilities and transit-dependent populations within the EPZ.

ATTACHMENT 43

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-43

RAI QUESTION NO. 13.03-43

NRC RAI 13.03-43

ETE-12: Analysis of Evacuation Times, Methodology, Total Evacuation Times
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section IV.B.1

A. Regarding the shadow evacuation values used in Table 6-4, "Vehicle Estimates for Various Combinations of Regions and Scenarios," (page 6-6):

1. Provide the assumptions used for developing trip generation times and loading of the transportation network.

2. Provide the basis for the population used to calculate the shadow evacuation vehicles.

Entergy Response

A.1. Census block data for year 2000 is overlaid on the link-node analysis network (Figure 1-2 of the Evacuation Time Estimate (ETE) Report) using Geographical Information Systems (GIS) software. Population is then distributed to the nearest accessible roadway section. The population on each link is then converted to households using the average household size of 2.71 persons (Figure F-1 of the ETE report). Finally, the number of households is multiplied by the number of evacuating vehicles per household to determine how many vehicles are loaded on each roadway section. The value of 1.46 vehicles per household (Figure F-8) was used to calculate the base ETE presented in Table 7-1. In accordance with Assumption #5 in section 2.2 of the ETE report, 30% of the resulting vehicles in the Shadow Region were actually generated as voluntary evacuees for the Base condition. It is reasonable to assume that the demographics of the shadow region are similar to those within the Emergency Planning Zone (EPZ); therefore, the EPZ telephone survey results are applicable. The shadow vehicles shown in Table 6-4 of the ETE report are loaded on the transportation network in the ETE analysis using the same trip generation times as EPZ residents with Commuters – Distribution C in Table 5-8.

A.2. As stated in the response to A.1, the shadow population was estimated using census data overlaid on a GIS map of the study area. The methodology used was the same as that used for the permanent resident population, which is outlined on Page 3-2 of the ETE report. The shadow region includes residents of Claiborne, Jefferson and Warren Counties in Mississippi and Tensas and Madison Parishes in Louisiana. Growth rates were found for each of the counties/parishes by comparing 2000 Census data with 2005 census estimates as discussed in the response to RAI 13.03-1. These growth rates were applied to extrapolate their populations to year 2007. Based on this analysis, there is an estimated 2007 population of 4,543 people residing in the shadow region and evacuating in 2,463 vehicles. As stated in Assumption #5 of Section 2.2 of the ETE report, it is assumed that 30% of this population will voluntarily evacuate for all ETE cases considered.

Section 7.1 of the ETE report will be revised in Supplement 1 to the Grand Gulf ETE report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter) to detail the methodology used to estimate the population of the shadow region.

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Add text to Page 7-2 in Section 7.1 to detail the methodology used to estimate the population of the shadow region. Also provide the estimated population and the number of evacuating vehicles for the shadow region.

ATTACHMENT 44

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-44

RAI QUESTION NO. 13.03-44

NRC RAI 13.03-44

ETE-12: Analysis of Evacuation Times, Methodology, Total Evacuation Times
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section IV.B.1

B. The assumption for the base case for shadow evacuation is stated as 30% in Section 2.2, "Study Methodological Assumptions," (page 2-3) assumption #5 and Figure 2-1, "Voluntary Evacuation Methodology" (page 2-3). Table 6-3, "Percent of Population Groups for Various Scenarios," (page 6-5) shows varying percentages of shadow evacuees for all scenarios. Explain what percentage of shadow residents are expected to evacuate.

Entergy Response

B. Figure 2-1 of the Evacuation Time Estimate (ETE) report indicates that 30 percent of the population within the shadow region will "voluntarily" elect to evacuate as they reside outside the plume exposure pathway Emergency Planning Zone (EPZ). As discussed in the footnote to Table 6-3 entitled, "Shadow" on page 6-5 of the ETE report, the population within the shadow region is comprised of residents and employees. The employee to resident ratio in the shadow region is estimated to be the same as within the EPZ. This proportion is the ratio of 1,989 vehicles for employees (in Column 4 of Table 6-4 of the ETE report for Scenarios 6 and 7) to the total number of evacuating vehicles used by residents (4,458 + 2,754 = 7,212, listed in Columns 2 and 3 for Scenarios 6 and 7). This ratio is equal to 0.276. Thus, the total population of residents plus employees within the shadow region is 1.276 x the number of residents. Multiplying 1.276 by 0.3 (the fraction assumed to evacuate) yields 0.38 or 38% as shown in Column 6 of Table 6-3 of the ETE report for Scenarios 6 and 7. The same methodology applied to the remaining scenarios produces the shadow percentages provided in Column 6 of Table 6-3, and the estimates of evacuating vehicles shown in column 6 entitled, "Shadow" of Table 6-4.

Proposed COLA Revisions

None

ATTACHMENT 45

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-45

RAI QUESTION NO. 13.03-45

NRC RAI 13.03-45

ETE-12: Analysis of Evacuation Times, Methodology, Total Evacuation Times
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section IV.B.1

C. Regarding Appendix I, "Evacuation Sensitivity Studies":

1. Provide population values for the percent shadow evacuation in Table I-2, "Evacuation Time Estimates for Shadow Sensitivity Study".

2. Explain how the 30% increase of vehicles was distributed throughout the plume exposure pathway Emergency Planning Zone. Was this uniform or based on the current population densities?

Entergy Response

C. 1. Table I-2 has been revised in Supplement 1 to the Grand Gulf Evacuation Time Estimate (ETE) report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter) to include 2 additional columns showing the shadow population and shadow vehicles for each case. Table I-2 is also included in this response.

C. 2. The vehicles in Table I-2 are distributed throughout the shadow region, not throughout the Emergency Planning Zone. The population loading within the shadow region is described in the response to RAI 13.03-43.

For the sensitivity study, the same methodology was used; however, factors of 15 percent and 60 percent voluntary evacuation, respectively, were applied instead of 30 percent. In all cases, the change in vehicles was distributed within the shadow region according to the current population densities.

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Add the following sentence at the end of the text on Page I-2: "As discussed on page 7-2, it is estimated that 4,543 people reside in the Shadow Evacuation Region and that they will evacuate in 2,463 vehicles."

2. Revise Table I-2 to include columns for shadow population and shadow vehicles for each case.

Table I-2. Evacuation Time Estimates for Shadow Sensitivity Study					
Shadow Data			**Evacuation Region**		
Percent Shadow Evacuation	**Number of Shadow Residents**	**Number of Shadow Resident Vehicles**	**2-Mile Region (R01)**	**5-Mile Region (R02)**	**Entire EPZ (R03)**
15	682	370	3:00	4:00	4:10
30 (Base)	1,363	739	2:50	4:00	4:10
60	2,726	1,478	3:00	4:00	4:10

ATTACHMENT 46

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-46

RAI QUESTION NO. 13.03-46

NRC RAI 13.03-46

ETE-12: Analysis of Evacuation Times, Methodology, Total Evacuation Times
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section IV.B.1

D. Table 5-3, "Time Distribution for Employees to Leave Work," (page 5-8) contains a note that states survey data were normalized to distribute the "Don't know" response. Provide an explanation of the note that includes the process used to normalize the data.

Entergy Response

D. Attachment A in Appendix F of the Evacuation Time Estimate (ETE) report is documentation of the survey instrument used to gather the data that serves as the basis for estimating mobilization times. A review of the survey instrument reveals that several questions have a "don't know" entry for a response. The "don't know" response accounted for approximately 3 percent of the total number of responses during the telephone survey. It is accepted practice in conducting surveys of this type to accept the answers of a respondent who offers a "don't know" response for a few questions. To address the issue of occasional "don't know" responses from a large sample, the practice is to assume that the distribution of these responses is the same as the underlying distribution of the positive responses. In effect, the "don't know" responses are ignored and the distributions are based upon the positive data that is acquired.

Proposed COLA Revisions

None

ATTACHMENT 47

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-47

RAI QUESTION NO. 13.03-47

NRC RAI 13.03-47

ETE-13: Analysis of Evacuation Times, Methodology, Distribution Functions
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section IV.B.2

A. The process used to develop trip generation times is discussed in Section 5, "Estimation of Trip Generation Time." For the trip generation time events and activities in Figure 5-1, "Events and Activities Preceding the Evacuation Trip," (page 5-7) it appears that for scenarios (b) and (d), the assumption is that 100% of the public is at home when the sirens sound. These scenarios correspond to weekend, midday, summer and evening, non-summer. Explain the basis for not having a "prepare to leave activity" and "travel home" sequence for these scenarios.

Entergy Response

A. The comment referencing Figure 5-1 is correct. The diagrams for scenarios (b) and (d) do not include those households with employees who work at those times. Figure 5-1 will be revised as indicated in the attached figure to clarify its meaning. This revised Figure 5-1 is also will be included in Supplement 1 to the Grand Gulf Evacuation Time Estimate (ETE) report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter). The second paragraph on page 5-5 will be revised as follows in Supplement 1:

> "An employee who lives outside the EPZ will follow sequence (c) of Figure 5-1. A household within the EPZ that has one or more commuters at work, and will await their return before beginning the evacuation trip will follow the first sequence of Figure 5-1(a). A household within the EPZ that has no commuters at work, or that will not await the return of any commuters, will follow the second sequence of Figure 5-1(a), regardless of day of week or time of day. Note that event 5, "Prepare to leave for evacuation trip," is conditional either on event 2 or on event 4. For this study, we adopt the conservative posture that all activities will occur in sequence."
>
> "Households with no commuters on weekends or in the evening/night-time, will follow the applicable sequence in Figure 5-1(b). Transients will always follow one of the sequences of Figure 5-1(b). Some transients away from their residence could elect to evacuate immediately without returning to the residence, as indicated in the second sequence."

Proposed COLA Revisions

The following changes will be made to the ETE report Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Replace second paragraph of Page 5-5 as noted above
2. Revise Figure 5-1 on Page 5-7 as detailed in this response
3. Change title of Table 5-3 to "Time Distribution for Employees to Prepare to Leave Work."

4. Change title of Table 5-4 to "Time Distribution for Commuters to Travel Home."

5. Change title of Table 5-5 to "Time Distribution for Population to Prepare to Evacuate."

6. Make appropriate title changes on Page iii of the Table of Contents.

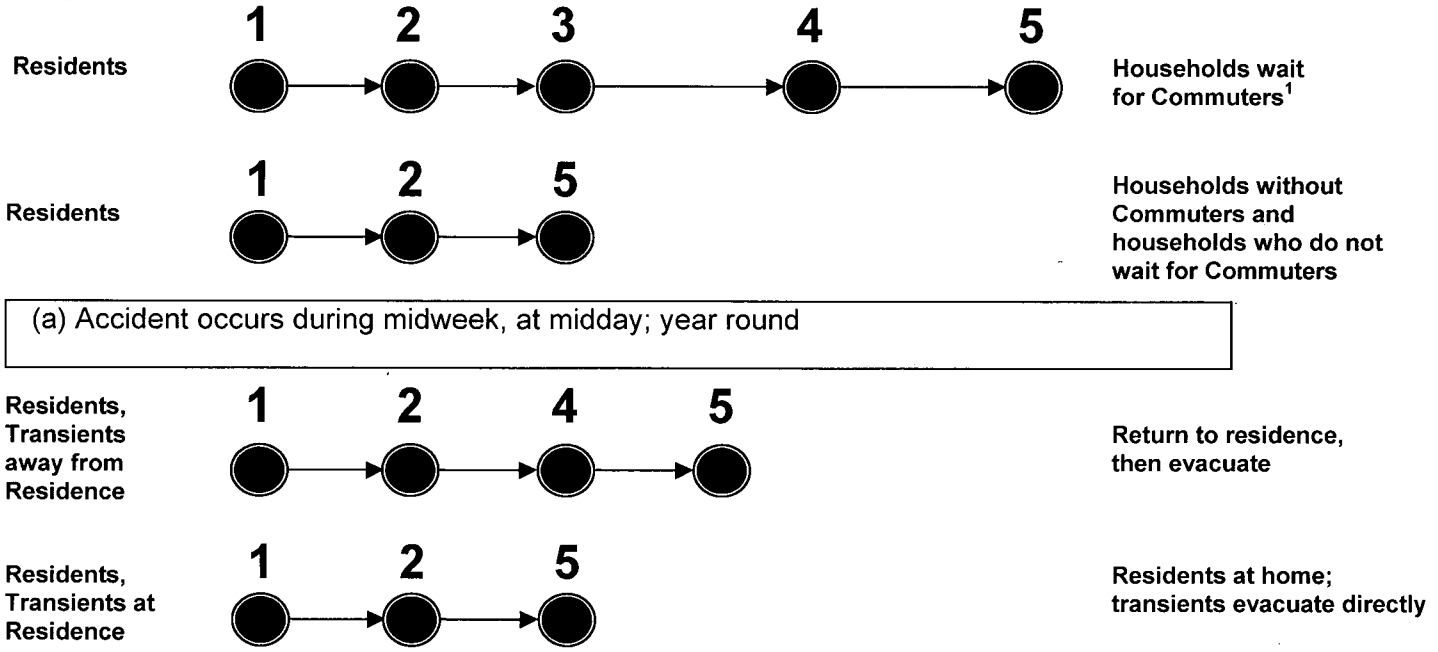
7. Delete "to return home" from the Event Description for Event 3 on Page 5-4.

8. Add two bullets to the bottom of Page 5-4. Bullet 1: "An Event is a 'state' that exists at a point in time (e.g., depart work, arrive home)." Bullet 2: "An Activity is a 'process' that takes place over some elapsed time (e.g., prepare to leave work, travel home)."

9. Add a paragraph after the 2 bullets, reading: "As such, an Activity changes the 'state' of an individual (e.g. the activity, 'travel home' changes the state from 'depart work' to 'arrive home'). Therefore, an Activity can be described as an 'Event Sequence'; the elapsed times to perform an event sequence varies from one person to the next and are described as statistical distributions on the following pages."

10. Change "Notification" to "Receive Notification" in the legend of Figure 5-2 on page 5-11.

11. Change "Prepare Home" to "Prepare to Leave Home to Evacuate" in the legend for Figure 5-2.



[1] Applies for evening and weekends also if commuters are at work.
[2] Applies throughout the day, week, and year for transients.

Figure 5-1. Events and Activities Preceding the Evacuation

ATTACHMENT 48

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-48

RAI QUESTION NO. 13.03-48

NRC RAI 13.03-48

ETE-13: Analysis of Evacuation Times, Methodology, Distribution Functions
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section IV.B.2

B. Table 5-3, "Time Distribution for Employees to Leave Work," (page 5-8) identifies 100% of the employees have left work at 95 minutes. However, in Figure F-9, "Time to Prepare to Leave Work/School," (page F-10) the tail of the curve does not reach 100% until 120 minutes. Explain which estimate is correct.

Entergy Response

B. The curve in Figure F-9 of the Evacuation Time Estimate (ETE) report displays the results of the telephone survey conducted during development of the ETE. The distribution presented in Table 5-3 "truncates" the survey data by advancing the trip generation times of those few (3%) evacuees who leave 100-120 minutes following the advisory to evacuate. A full discussion of this procedure is presented in the response to RAI 13.03-31.

Proposed COLA Revisions

None

ATTACHMENT 49

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-49

RAI QUESTION NO. 13.03-49

NRC RAI 13.03-49

ETE-13: Analysis of Evacuation Times, Methodology, Distribution Functions
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section IV.B.2

C. Table 5-4, "Time Distribution for Commuters to Return Home," (page 5-9) identifies 100% of the population returning home in 80 minutes. However, in Figure F-10, "Work to Home Travel Time," (page F-11) the tail of the distribution does not reach 100% until 120 minutes. Explain whether the 100% evacuation Time Estimate (ETE) identified in Table 7-1D, "Time to Clear the Indicated Area of 100% of the Affected Population," (page 7-12) includes these tail values or if the tails were truncated for the tables in Section 5.

Entergy Response

C. The evacuation time estimates (ETE) for the 100^{th} percentile of population presented in Table 7-1D of the ETE report include these tail values and the tail of the distribution was truncated. This apparent anomaly is explained by the fact that the few lagging commuter trips (4%) were all represented in the ETE calculation, but their trip generation time was advanced to 80 minutes. A full discussion of this procedure and its underlying rationale is discussed in the response to RAI 13.03-31.

Proposed COLA Revisions

None

ATTACHMENT 50

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-50

RAI QUESTION NO. 13.03-50

NRC RAI 13.03-50

ETE-13: Analysis of Evacuation Times, Methodology, Distribution Functions
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section IV.B.2

D. Table 5-5, "Time Distribution of Population Ready to Evacuate," (page 5-10) identifies 100% of the population is prepared to evacuate in 145 minutes. Appendix F, "Telephone Survey," (page F-11) states that 90% are prepared in 1.5 hours and the remaining population (100%) may take up to an additional 4.5 hours, or 6 hours in total. Discuss how the Evacuation Time Estimate for 100% of the population can be 4 hours as indicated in Table 7-1D, "Time to Clear the Indicated Area of 100% of the Affected Population," (page 7-12) when it may take up to 6 hours for a portion of the population to prepare to evacuate.

Entergy Response

D. The distribution was "truncated" by advancing the trip generation times for the relatively few lagging people (4 percent) who presumably would require more than 2½ hours (Table 5-5) to prepare for evacuation. As a result, the resulting trip generation time, shown in Figure 5-3 is about 4 hours. The evacuation time estimate (ETE) of 4:10 (hr:min) for Region R03, Scenario 1 does not include any of the few persons that require more time to mobilize. A full discussion of this "truncation" procedure is provided in the response to RAI 13.03-31.

(By way of clarification, regarding Figure F-11 on Page F-12: as stated on Page F-11, "Over 90 percent of households can be ready to leave home within an hour and a half; the remaining households require up to an additional four and a half hours." Therefore, the remaining population is 10 percent, not 100 percent as stated in the second sentence of the RAI.)

Proposed COLA Revisions

None

ATTACHMENT 51

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-51

RAI QUESTION NO. 13.03-51

NRC RAI 13.03-51

ETE-13: Analysis of Evacuation Times, Methodology, Distribution Functions
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section IV.B.2

E. In Figure 5-2, "Evacuation Mobilization Activities," (page 5-11) the time to prepare home is identified as approximately 140 minutes. However, Appendix F, "Telephone Survey," (page F-12) indicates this would be about 210 minutes and may be as long as 360 minutes. Explain why Figure 5-2 indicates 140 minutes.

Entergy Response

E. As stated on Page 5-10 of the Evacuation Time Estimate (ETE) report, Figure 5-2 is a plot of Table 5-5. This table was discussed in the response to RAI 13.03-50, which provides additional information.

Proposed COLA Revisions

None

ATTACHMENT 52

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-52

RAI QUESTION NO. 13.03-52

NRC RAI 13.03-52

ETE-14: Analysis of Evacuation Times, Methodology, Traffic Congestion
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section IV.B.3

Congestion patterns are discussed in Section 7.2, "Patterns of Traffic Congestion during Evacuation," (page 7-2). Congestion points are identified in Figures 7-3 through 7-5, "Area of Traffic Congestion After *X time* Advisory to Evacuate," (pages 7-16/18) for 30 minutes, 1 hour, and 3 hours, following advisory to evacuate.

1. Provide information on traffic queue locations (if they exist), and any estimates of traffic delay times.

2. Provide a map that identifies traffic queue locations.

Entergy Response

1. Figures 7-3 through 7-5 of the Evacuation Time Estimate (ETE) report have been revised to identify congestion points, as discussed below, and are attached to this response. Additionally, the revised figures are included in Supplement 1 to the Grand Gulf ETE report (included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter). The major roads in the study area have been identified on the map. The major congestion points in the study area have been labeled with an identification number (CP # = Congestion Point #). The attached table will be added to Page 7-3 of the ETE report via Supplement 1. The table provides a description of each congestion point, including the link experiencing congestion, which can be cross-referenced to the large scale map of Figure 1-2 provided in response to RAI 13.03-35. Estimates of the average delay in minutes per vehicle are provided in the table for each of the congestion points; the delay presented encompasses the previous 10 minutes of simulation. For example, Figure 7-4 shows the congestion patterns at 1 hour after the advisory to evacuate. The average vehicle delays for each link provided in the table at 1 hour after the advisory to evacuate (column 6) apply to the 10-minute time interval, 50-60 minutes after the advisory to evacuate. As a further example, the vehicles occupying link (56,48) one hour after the advisory to evacuate will experience an average delay of 4.9 minutes during the previous 10-minute interval.

2. See revised Figures 7-3 through 7-5 discussed above and attached to this response.

Proposed COLA Revisions

The following changes will be made to the ETE report via Supplement 1 to the Grand Gulf ETE report, included as Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter:

1. Revise Figures 7-3 through 7-5 to identify congestion points.

2. Add the attached table to Page 7-3 of the ETE report

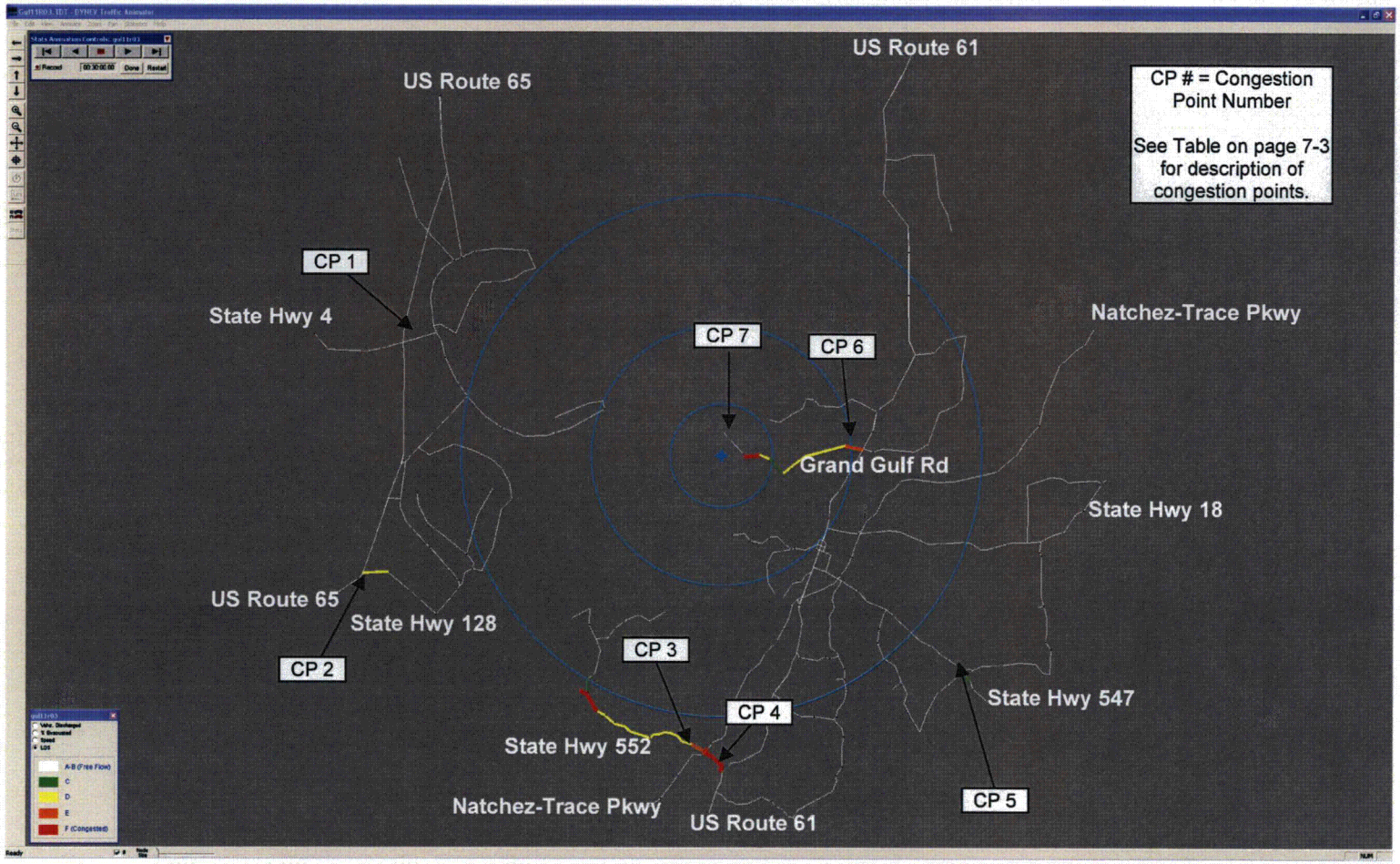


Figure 7-3. Areas of Traffic Congestion

30 Minutes after the Advisory to Evacuate (Region R3, Scenario 11)

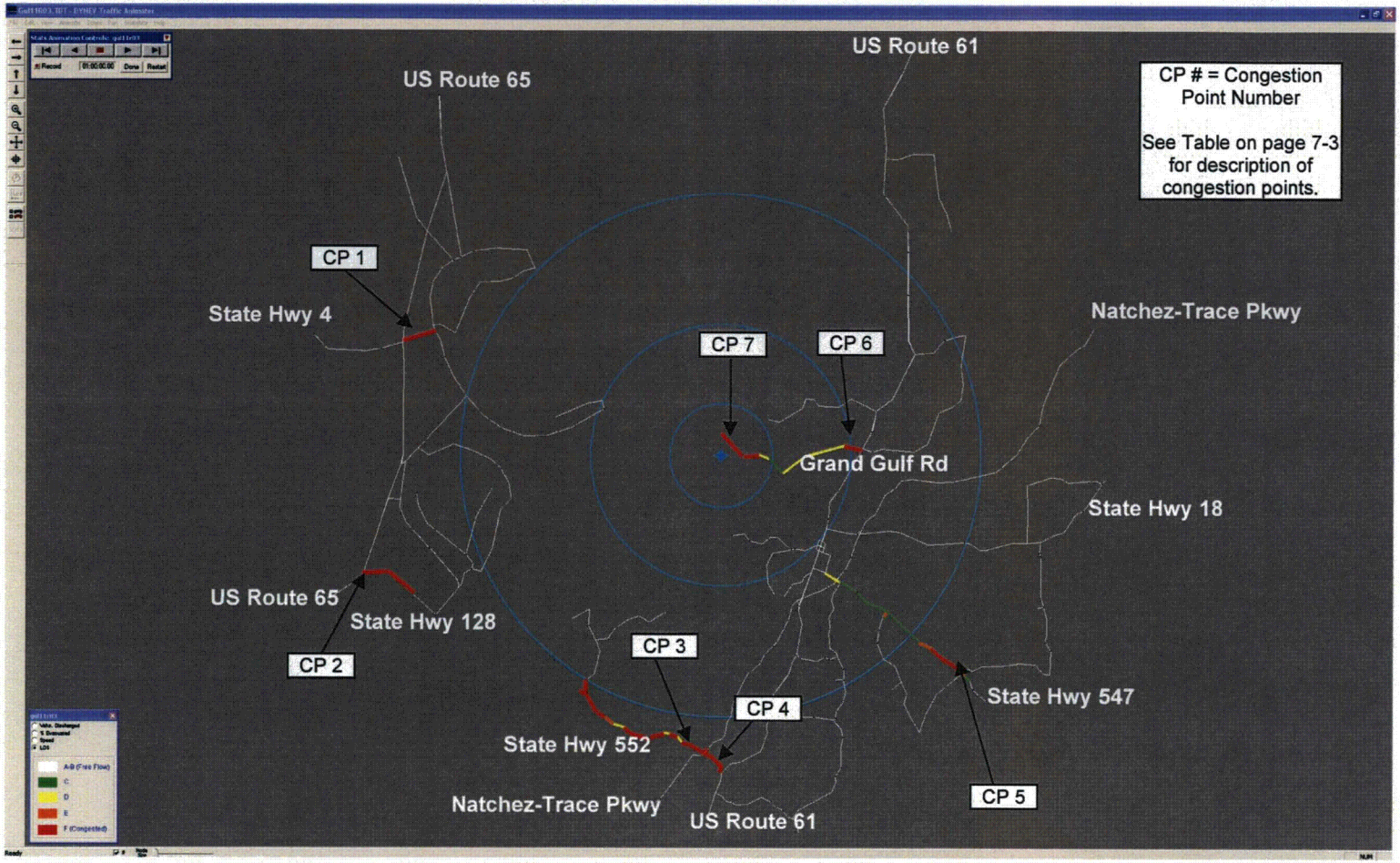


Figure 7-4. Areas of Traffic Congestion

1 Hour after the Advisory to Evacuate (Region R3, Scenario 11)

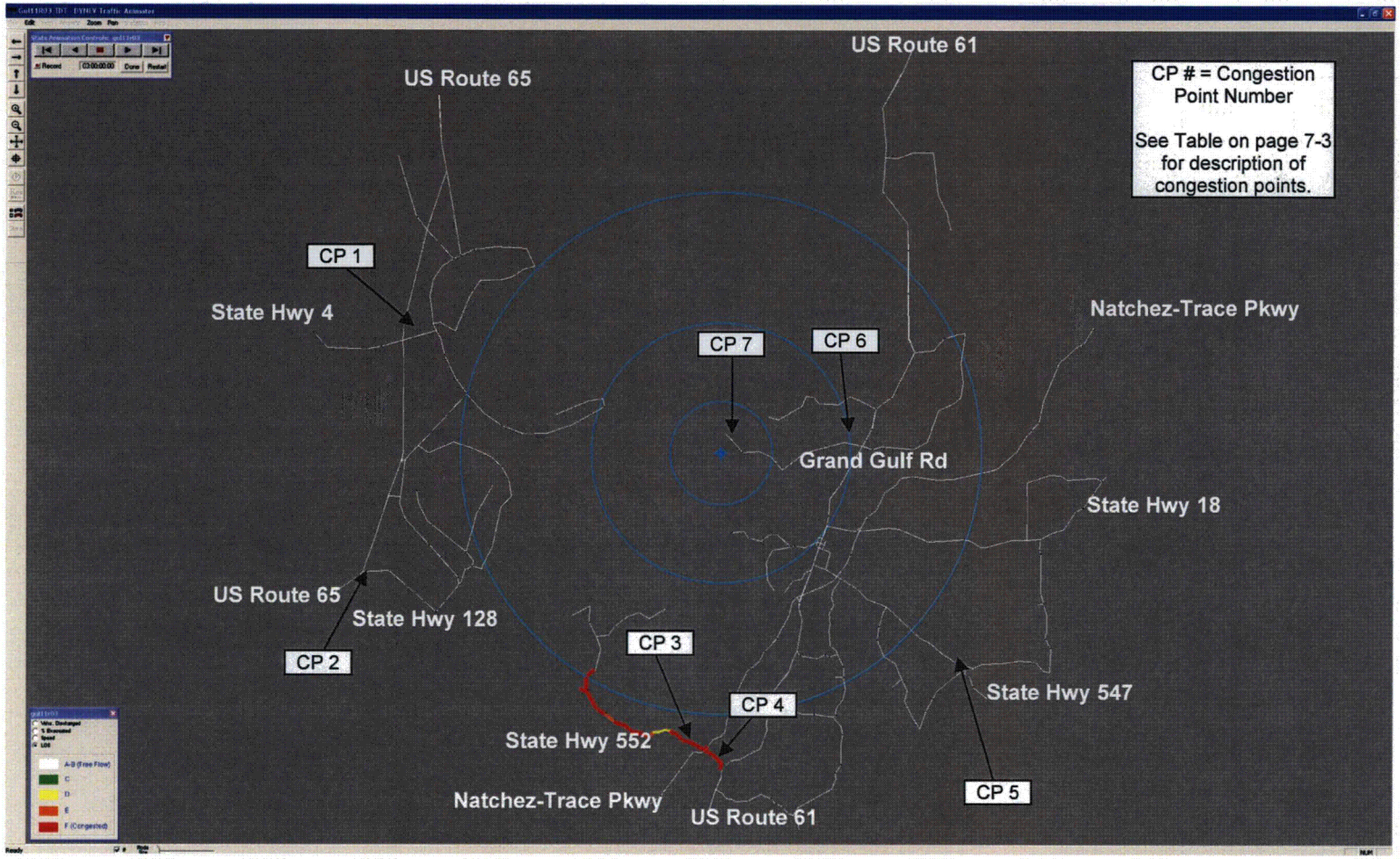


Figure 7-5. Areas of Traffic Congestion

3 Hours after the Advisory to Evacuate (Region R3, Scenario 11)

Average Delay for Selected Roadways in the GGNS EPZ						
Congestion Point Number	Link		Description	Average Delay (min/veh) at Indicated Time after the Advisory to Evacuate		
	From Node	To Node		30 minutes	1 hour	3 hours
1	237	225	State Highway 4 westbound at the intersection with US Route 65	0.0	9.0	0.0
2	292	228	State Highway 128 westbound at the intersection with US Route 65	0.0	9.5	0.0
3	56	48	State Highway 552 eastbound at the interchange with Natchez-Trace Parkway	0.6	4.9	3.1
4	34	35	State Highway 552 eastbound at the interchange with US Route 61	0.9	1.0	1.0
5	180	181	State Highway 547 eastbound through Pattison, Mississippi	0.0	1.1	0.0
6	147	41	Grand Gulf Road eastbound at the intersection with US Route 61	0.4	1.1	0.0
7	152	151	Grand Gulf Road eastbound near the proposed construction site	0.0	9.8	0.0

ATTACHMENT 53

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-53

RAI QUESTION NO. 13.03-53

NRC RAI 13.03-53

ETE-15: Analysis of Evacuation Times, Methodology, Maximum Evacuation Times
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section IV.B.6

Table 7-1C, "Time to Clear the Indicated Area of 95% of the Affected Population," (page 7-11) estimates 95% of the population can be evacuated under normal and adverse weather conditions in the same amount of time. Table 7-1D, "Time to Clear the Indicated Area of 100% of the Affected Population," (page 7-12) estimates it will take ten minutes longer to evacuate 100% of the population under adverse conditions. Provide an explanation for why adverse weather does not affect the total evacuation time.

Entergy Response

The presence of rain reduces capacity and free speed on all network links, as discussed on page 2-6 of the Evacuation Time Estimate (ETE) report. When evacuating the entire Emergency Planning Zone (EPZ) (Region 03), this reduction in speed and capacity led to no increase in ETE at both the 90th percentile and 95th percentile levels of evacuation (see Tables 7-1B and 7-1C of the ETE report) and a 10 minute increase at the 100th percentile (Table 7-1D) only for the winter midday scenario.

Rain did not materially influence the ETE because the volume of traffic following the Advisory to Evacuate never attains a level where capacity is a factor in influencing travel time (see the response to RAI 13.03-11). The effect of the reduction in free flow speed due to rain is generally not sufficient, by itself, to increase the ETE, due to the relatively short trip lengths. Stated another way, over the last 2 hours of evacuation, the traffic environment was operating well within Level of Service (LOS) A: the lower speed due to adverse weather did not increase trip time by as much as 5 minutes.

Proposed COLA Revisions

None

ATTACHMENT 54

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-54

RAI QUESTION NO. 13.03-54

NRC RAI 13.03-54

ETE-16: Other Requirements, Confirmation of Evacuation
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section V.A

The estimated time needed to confirm that the evacuation is complete is 8.5 person hours as stated in Section 12, "Confirmation Time," (page 12-1). Clarify:

1. Whether the mobilization time for personnel needed to confirm the evacuation has been considered.

2. The amount of time and resources needed to obtain telephone numbers for the plume exposure pathway Emergency Planning Zone (EPZ), which are necessary prior to beginning the telephone survey.

3. Whether the process for confirming the evacuation has been agreed upon by the responsible officials.

Entergy Response

1, 2. As indicated in the third paragraph on Page 12-1 of Section 12 of the Evacuation Time Estimate (ETE) report, the confirmation process should not begin until 3 hours after the advisory to evacuate is issued, to ensure that households have had enough time to mobilize. This 3-hour timeframe will enable telephone operators to mobilize and to arrive at their workplace, access the call list and prepare to make the necessary phone calls. At this time, virtually all evacuees will have departed the Emergency Planning Zone (EPZ) and the local telephone system will be largely free of traffic.

As mentioned in Section 12 of the ETE report, the use of automated dialing equipment or the use of multiple operators can significantly reduce the 8.5 person hours needed to complete confirmation. For example, the use of 6 operators would reduce the confirmation time to 85 minutes. If the method to confirm that the evacuation is complete, as described in Section 12 of the ETE report, is ultimately adopted by Claiborne County and Tensas Parish, an updated list of telephone numbers could be maintained in the Emergency Operations Center (EOC), thus eliminating delays associated with obtaining telephone numbers. Such a list could be purchased from vendors and should be periodically updated.

3. Appendix 7 of the Grand Gulf Unit 3 Emergency Plan includes formally executed letters certifying State and local officials' commitment to support future emergency planning efforts. The purpose of including the proposed approach in the ETE was to provide an estimate of the time required to conduct the confirmation, using one suggested method. The inclusion of an estimated confirmation time is required by Section V of NUREG-0654, Rev. 1, App. 4, p. 4-10. Section 12 of the Grand Gulf Unit 3 ETE report provides a potential methodology for evacuation confirmation to be performed by Claiborne County and Tensas Parish. This methodology can be reinforced by ground based vehicles with

public address systems but this is a State/local planning issue and outside the scope of the ETE.

Proposed COLA Revisions

None

ATTACHMENT 55

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-55

RAI QUESTION NO. 13.03-55

NRC RAI 13.03-55

ETE-17: Other Requirements, Specific Recommendations Acceptance Criteria:
Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section V.B

Section 1.3, "Analytical Tools," (page 1-11) states the analyst can identify bottlenecks and develop countermeasures that are designed to expedite the movement of vehicles.

1. Discuss whether this iterative approach was used.

2. Identify any adjustments that were made to expedite the movement of vehicles and improve evacuation times.

3. Identify whether any such adjustments have been integrated into the traffic management plan.

Entergy Response

1. Section 1.3 of the Evacuation Time Estimate (ETE) report provides a description of the analytical tools that were used in development of the ETE. While the tools provide the ability to "identify bottlenecks and develop countermeasures," the subsequent paragraph of Section 1.3 indicates that this is an iterative process that yields an evacuation plan that best services the evacuating public. This iterative process is applied as an integral part of the ETE development procedure; no records are maintained of specific bottlenecks and countermeasures addressed by the analyst in the course of the multiple iterations.

2. As discussed in the response to RAI 13.03-11, there is no pronounced congestion within the Emergency Planning Zone (EPZ). In fact, the only scenarios that exhibited any congestion within the EPZ were the special event scenarios (scenarios 11 and 12), which involve a large influx of vehicles at fixed point events. As discussed on page 7-3 of the ETE report, there is significant congestion expected at the intersection of US Highway 61 and Grand Gulf Road during construction of Unit 3 as all construction traffic would evacuate eastbound on Grand Gulf Road to access US Highway 61. Also, as discussed on Page 7-3 of the ETE report, significant congestion is predicted at the intersection of US Highway 61 and MS Highway 552 after Alcorn State University football games as all traffic would evacuate eastbound on MS Highway 552 to access US Highway 61 or the Natchez Trace Parkway. Although the Natchez Trace Parkway is reserved for emergency vehicles within the EPZ during an evacuation (see response to RAI 13.03-33), vehicles evacuating from Alcorn State University would be expected to use the Natchez Trace Parkway southbound and US Highway 61 southbound to exit the EPZ (see page 3-3 and Assumption #11 on page 2-7 of the ETE report), if necessary during this special event.

3. Traffic Control Point (TCP) ID GG-5 on Page G-8 of the ETE report was included to facilitate the flow of traffic evacuating from Alcorn State University (see item 1 under "Actions to be Taken"). TCPs ID GG-7 and GG-8 on Pages G-9 and G-10 were included to facilitate the flow of construction traffic evacuating from the GGNS site. The intersection of Grand Gulf Road and US Highway 61 is stop-controlled for Grand Gulf Road. TCPs GG-7 and GG-8

were designed to reserve the left-most lane northbound on US Highway 61 for evacuating construction traffic.

Proposed COLA Revisions

None

ATTACHMENT 56

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-56

RAI QUESTION NO. 13.03-56

NRC RAI 13.03-56

ETE-18: Other Requirements, Draft Review
Acceptance Criteria: Requirements A and H; Acceptance Criterion 11
Regulatory Basis: Appendix 4 to NUREG-0654 Section V.C

The Executive Summary on page ES-2 states that the telephone survey designed to gather population data was reviewed and modified by state and county personnel prior to use. Page ES-5 of the Executive Summary also states that the traffic management plan was reviewed with state and local law enforcement. Section 1.1.4, "Overview of the ETE [Evacuation Time Estimate] Update Process," (page 1-2/4) states that local and state police personnel should review all traffic control plans.

1. Clarify whether such reviews have taken place and whether comments were received.

2. If comments were received, discuss how the comments were addressed.

3. Clarify whether the priority assigned to each traffic control point in Appendix G, "Traffic Control," has been agreed to by local response agencies.

Entergy Response

At the beginning of the evacuation time estimate (ETE) project, various State and local emergency management officials and law enforcement personnel participated in a presentation in which the ETE, including its inputs, processes, outputs, and uses, was discussed. During the course of the project, personnel developing the ETE contacted State and local officials to obtain their input on critical questions regarding State and local procedures and practices that might affect the ETE. Once the ETE report was available in draft form, the State and local officials were provided a draft ETE report and were invited to attend a presentation to discuss the initial results and to obtain their comments on the entire ETE report. Following resolution of comments, the ETE was provided to state and local emergency management agencies. Appendix 7 of the Grand Gulf COL Emergency Plan includes formally executed letters certifying State and local government agency review of the ETE Report (which included the Traffic Management Plan) and commitment to supporting future development of emergency plans.

Comments on the draft ETE provided by state and local personnel were not submitted with the ETE report. These comments were satisfactorily addressed during development of the ETE report as indicated by the certification letters provided in Appendix 7 of the Grand Gulf COL Emergency Plan. Provision of certification letters as required by 10 CFR Part 52 provides adequate documentation of State and local agency review of the COL Emergency Plan and ETE obviating the need for submittal of these comments as suggested by Appendix 4 of NUREG-0654/FEMA-REP-1.

Proposed COLA Revisions

None

ATTACHMENT 57

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-57

RAI QUESTION NO. 13.03-57

NRC RAI 13.03-57

SITE-1: Medical and Public Health Support and SITE- 11: Assignment of Responsibility
Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(8) and (12); Section IV.E of Appendix E to 10 CFR Part 50; NUREG-0654/FEMA-REP-1, Evaluation Criterion L.1 and 10 CFR 50.47(b)(1); Appendix E to 10 CFR Part 50); NUREG-0654/FEMA-REP-1, Evaluation Criterion A.3
SRP ACCEPTANCE CRITERIA: Requirement A; Acceptance Criterion 1 and 18

Section II.L.1, "Medical and Public Health Support" describes the arrangements with local and backup hospitals to provide medical services for injured and/or contaminated personnel from

GGNS3. Section II.A.3, "Written Agreements," states that the description of contacts and arrangements provided in Section 3.17, "Contacts and Arrangements" of Part 4, "Emergency Planning Information" of the GGNS ESP is incorporated into the GGNS Emergency Plan by reference. Please describe the type of arrangements, e.g. letter of agreement, that provide assurance that local and backup hospitals will be available and the type of arrangements that refer to the concept of operations developed between not only state, and local agencies, but also other support organizations having an emergency response role within the Emergency Planning Zones, and the applicant for the GGNS.

Entergy Response

Currently, letters of agreement exist describing the responsibilities of the government and private sector organizations that have supporting emergency planning roles in the event of an emergency at Grand Gulf Nuclear Station (GGNS), Unit 1. The current letters of agreement were prepared with respect to the existing generating unit at the GGNS and the level of support to be provided is not expected to change with the addition of the proposed new unit. To assure clear understanding of support, a new letter of agreement will be needed from each applicable organization which clearly indicates that the agreement applies to the entire station, including the planned new unit. It is Entergy's expectation that appropriate agreements can be obtained with the same or similar private sector medical and public health support organizations to support Unit 3 emergency planning. Entergy's intent is to work with the existing Unit 1 private sector medical and public health support organizations listed below in this regard.

- River Region Medical Center
- The Ochsner Clinic
- Metro Ambulance Services (Rural), Inc.

The Claiborne County Hospital currently provides emergency preparedness support to Unit 1, the specific nature of which is clearly established in a properly executed and binding letter of agreement that is included in Appendix D of the GGNS Unit 1 Emergency Plan. A letter of agreement was not pursued with Claiborne County Hospital during development of the COL Application because, as a county operated hospital, the certification provided in Appendix 7 of the Grand Gulf Unit 3 Emergency Plan by Port Gibson/Claiborne County Civil Defense Council was considered appropriate to cover the support provided by the county hospital.

Proposed COLA Revisions

None

ATTACHMENT 58

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-58

RAI QUESTION NO. 13.03-58

NRC RAI 13.03-58

SITE-2: Public Education and Information
Basis:10 CFR 52.79(a)(21); 10 CFR 50.47(b)(7); Appendix E to 10 CFR Part 50); NUREG-0654/FEMA-REP-1, Evaluation Criterion G.3; Evaluation Criterion G.4
SRP ACCEPTANCE CRITERIA: Requirements A and B; Acceptance Criteria 1 and 2

A. Section II.G, "Public Education and Information," identifies the EOI company spokesperson, the public affairs liaison, and the Off-site Emergency Coordinator. Describe the distinction between each of the three positions and where each staffing position is located (e.g., EOF, corporate EOI office, etc.,).

Entergy Response

A. The "public affairs liaison" in Section II.G of the Grand Gulf Unit 3 Emergency Plan is same as the "company spokesperson." The Company Spokesperson is assigned to the Emergency News Media Center (ENMC) at the corporate offices in Jackson, Mississippi, when activated, and reports directly to the Offsite Emergency Coordinator. The ENMC is activated during an Alert, Site Area Emergency and General Emergency. The Company Spokesperson serves as the primary licensee spokesperson and media contact, gathering information from the Offsite Emergency Coordinator and his staff and updating the news media on a periodic basis throughout any emergency situation during which members of the media respond to the ENMC. This will be clarified in the application as indicated below. References to "public affairs liaison" will be deleted.

   The Offsite Emergency Coordinator is assigned to the Emergency Operations Facility (EOF). The Offsite Emergency Coordinator maintains liaison with the Company Spokesperson and is responsible for ensuring the EOF communicates emergency status to the state and local governments, directs the efforts of the off-site monitoring teams, makes radiological assessments, recommends off-site protective measures to the state, and arranges through the company for dispatch of any special assistance or services requested by the station.

Proposed COLA Revisions

Section II.G of the Grand Gulf Unit 3 Emergency Plan (Part 5) will be revised as shown on the attached markup to clarify the Company Spokesperson position.

Markup of Grand Gulf COLA

The attached markup represents Entergy's good faith effort to show how the COLA will be revised in a future COLA submittal in response to the subject RAI. However, the same COLA content may be impacted by revisions to the ESBWR DCD, responses to other COLA RAIs, other COLA changes, plant design changes, editorial or typographical corrections, etc. As a result, the final COLA content that appears in a future submittal may be somewhat different than as presented herein.

3. News Media Coordination

a. The primary outlet for emergency information is the Emergency News Media Center. EOI's Ccompany Sspokesperson serves as the primary licensee spokesperson and media contact in the Emergency News Media Center. The ~~public affairs liaison~~ Company Spokesperson gathers information from the Off-site Emergency Coordinator and his staff for dissemination to the news media and updates the news media on a periodic basis throughout any emergency situation during which the members of the media respond to the Emergency News Media Center. Press conferences are held periodically, and equipment and facilities are available to support timely communication and information dissemination concerning plant conditions. The Emergency News Media Center is activated at an Alert, Site Area Emergency and General Emergency.

The Entergy Operations corporate office in Jackson, Mississippi (Corporate Emergency Center) serves as the news media center during an emergency.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

b. EOI provides a designated space for limited numbers of news media personnel within designated emergency response centers.

4. Information Exchange

a. The ~~public affairs liaison~~ Company Spokesperson has access to required public information, primarily through communications with the Off-site Emergency Coordinator and designated members of the EOF staff.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

b. The ~~public affairs liaison~~ Company Spokesperson coordinates with designated members of the state and local emergency response organizations on a periodic basis to provide for continuity and consistency of information available to the affected organizations.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

c. Rumor control is accomplished through ongoing contact between the designated spokespersons and by the activities of a licensee liaison in the Emergency Information Center, who monitors communications, identifies rumors, and makes appropriate contacts to obtain and disseminate accurate information. EOI also implements a system for dealing with rumors consistent with agreements between EOI and affected public agencies.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable

ATTACHMENT 59

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-59

RAI QUESTION NO. 13.03-59

NRC RAI 13.03-59

SITE-2: Public Education and Information
Basis:10 CFR 52.79(a)(21); 10 CFR 50.47(b)(7); Appendix E to 10 CFR Part 50); NUREG-0654/FEMA-REP-1, Evaluation Criterion G.3; Evaluation Criterion G.4
SRP ACCEPTANCE CRITERIA: Requirements A and B; Acceptance Criteria 1 and 2

B. Section II.G, "Public Education and Information," identifies the Emergency News Media Center and Corporate Emergency Center in subsection II.G.3, and the Emergency Information Center in subsection II.G.4. Discuss the relationship between the three facilities.

Entergy Response

B. Each of these facilities is responsible for monitoring and disseminating information. Each facility serves a distinct purpose during an emergency at GGNS. The Corporate Emergency Center (CEC), located on the first floor of Echelon One Building in Jackson, Mississippi, is the central location for gathering information concerning the status of an Emergency at GGNS. This facility is designed to provide support as needed to the site during an emergency response.

The CEC distributes news bulletins throughout Entergy offices to keep employees informed on the emergency. The CEC also receives inquiries from appropriate State and Federal elected officials not directly involved in the response to an emergency at GGNS. The CEC maintains communications with these officials by keeping them informed of the situation and forwarding inquiries to the Company Spokesperson or designee for disposition. The CEC provides periodic information to other utilities and ensures various services organizations such as EPRI, NEI, and INPO are kept informed of the events at GGNS. The CEC monitors selected national television networks to detect inaccurate or misleading information that is being broadcast and ensures the Company Spokesperson or designee is aware of all findings, and if appropriate, relays the accurate information to the network. The CEC may also serve as an interim and backup news media center for GGNS. Upon declaration of an Unusual Event, Alert, Site Area Emergency, or General Emergency, the CEC Public Information Coordinator contacts the Company Spokesperson to receive information and news bulletins necessary for the CEC to perform tits duties.

The Emergency News Media Center (ENMC) is located on the first floor of Echelon One Building in Jackson, MS. The ENMC is the site of news conferences and serves as the primary outlet for information during an emergency at GGNS. The ENMC arranges for timely exchange of information among designated GGNS, state, local, and federal spokespersons, and media monitoring activities. Press conferences are held periodically, and equipment and facilities are available to support timely communication and information dissemination concerning plant conditions. The overall operation of the ENMC is the responsibility of the Company Spokesperson.

The Emergency Information Center (EIC) is located on the first floor of Echelon One Building in Jackson, MS. The EIC responds to inquires from the media and public for

information during an emergency at GGNS. Rumor control is accomplished in the EIC through ongoing contact between the designated spokespersons and by the activities of GGNS liaisons who monitor communications, identify rumors, and make appropriate contacts to obtain and disseminate accurate information. The EIC Coordinator reports to the Company Spokesperson and is responsible for operation of the EIC. The EIC Coordinator attends the Company Spokesperson's staff briefings and then briefs the EIC staff of the emergency status.

Proposed COLA Revisions

None

ATTACHMENT 60

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-60

RAI QUESTION NO. 13.03-60

NRC RAI 13.03-60

SITE-3: Radiological Emergency Response Training
Basis:10 CFR 52.79(a)(21); 10 CFR 50.47(b)(15), Appendix E to 10 CFR Part 50, Appendix E.IV.F.2.g, to 10 CFR Part 50); NUREG-0654/FEMA-REP-1, Evaluation Criterion O.3; Evaluation Criterion O.4
SRP ACCEPTANCE CRITERIA: Requirement A; Acceptance Criteria 1 and 2

A. Section II.O, "Radiological Emergency Response Training," states that EOI provides first aid training, including cardio-pulmonary resuscitation (CPR) training, consistent with the projected hazards and events, for selected members of the ERO. Describe the equivalency between the first aid training received from EOI and Red Cross Multi-Media training.

Entergy Response

A. NUREG-0654/FEMA-REP-1, Revision 1, Evaluation Criterion II.O.3 indicates that training courses equivalent to Red Cross Multi-Media should be provided for licensee first aid team responders. This NRC guidance was published in 1980. The Red Cross no longer offers a course known as "multi-media". Because the suggested Red Cross Multi-Media course no longer exists, Entergy is unable to provide a direct correlation between its own training program and the Red Cross Multi-Media training course. However, Entergy notes that the Red Cross Multi-Media training was intended to train a layperson to recognize simple first aid situations and provide minimal first aid care until the arrival of a professional medical response team. Such training would typically be provided in an 8 to 16 hour program.

Prior to 2007, Grand Gulf Nuclear Station (GGNS) utilized the "American Red Cross CPR/AED for the Professional Rescuer Instructor's Manual, copyright 2002, International Standard Book Number 1-58480-128-X". The Red Cross material was utilized with a Grand Gulf Lesson Plan cover on the material to assist in the documentation of the materials relative to Grand Gulf station requirements.

In 2007, GGNS began utilizing the American Heart Association training course. This course was taught using, "Heart Saver First Aid with CPR/ AED", copyright 2006 (ISBN 0-87493-486-9 for the instructor manual and ISBN 0-87493-478-8 for the student manual). The course is considered equivalent to the Red Cross material previously used, "American Red Cross CPR/ AED for the Professional Rescuer", and "Heartsaver First Aid with CPR & AED". The American Heart Association material is supported by a DVD that supports the training material in a manner that is considered equivalent to the Red Cross multimedia material supported by videotaped material.

Both courses were developed for individuals to respond to emergencies - including First Aid Basics, Medical Emergencies, Injury Emergencies, CPR, and AED use. Both the Red Cross and American Heart Association materials are credited by the same source, the Emergency Cardiac Council (ECC). Therefore, the content of the first aid training course far exceeds the requirements of the superseded Red Cross Multi-Media training course.

Proposed COLA Revisions

None

ATTACHMENT 61

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-61

RAI QUESTION NO. 13.03-61

NRC RAI 13.03-61

SITE-3: Radiological Emergency Response Training
Basis:10 CFR 52.79(a)(21); 10 CFR 50.47(b)(15), Appendix E to 10 CFR Part 50, Appendix E.IV.F.2.g, to 10 CFR Part 50); NUREG-0654/FEMA-REP-1, Evaluation Criterion O.3; Evaluation Criterion O.4
SRP ACCEPTANCE CRITERIA: Requirement A; Acceptance Criteria 1 and 2

B. Section II.O.4, "Emergency Response Training and Qualification," states that instructors or evaluators immediately correct any erroneous performance noted during practical drills; and, if appropriate, demonstrate proper performance consistent with approved procedures and accepted standards. Discuss how formal critiques are used to identify weak or deficient areas that need correction during training, including exercises.

Entergy Response

B. As discussed in Section II.O.4 of the Grand Gulf Unit 3 Emergency Plan, instructors or evaluators immediately correct any erroneous performance noted during practical drills and, if appropriate, demonstrate proper performance consistent with approved procedures and accepted standards. EOI procedures allow for these on-the-spot corrections of performance errors during these practical drills.

Formal critiques are conducted by the Exercise Evaluation Team (EET). This Team consists of evaluators that observe and critique the actions of Exercise Team Members and Controllers based on established exercise objectives. The EET may consist of, but is not limited to, Scenario Preparation Team (SPT) members and/or personnel from various Grand Gulf Nuclear Station (GGNS) Departments, other utilities, or outside contractors. Additionally, as discussed in Section II.N.4 of the Grand Gulf Unit 3 Emergency Plan, EOI also makes arrangements for exercises to be critiqued by federal and state observers and evaluators. The EET evaluators critique the drill/exercise as soon as possible after its termination. The critique typically involves all emergency response participants involved in the drill/exercise.

Drill and exercise critiques are addressed in Section II.N.5 of the Grand Gulf Emergency Plan. Each EET evaluator report includes the objectives accomplished and the actions tested; results of the drill/exercise; and comments, observations, or recommendations generated from the drill/exercise. Evaluator comments are discussed during the critique, as needed, to support clear understanding of the deficiencies observed. Comments regarding deficiencies are provided to the Manager, Emergency Preparedness. Any drill participant may also provide comments to an EET evaluator to be included in the critique.

The drill/exercise reports are reviewed by the Manager, Emergency Preparedness or designee and a copy is transmitted to Nuclear Records. EOI records the input from the critique participants, evaluates the need for changes to the plan, procedures, equipment, facilities, and other components of the emergency preparedness and response program, and develops an action plan to address the identified substantive issues. The Manager,

Emergency Preparedness ensures that items identified for corrective action are tracked in accordance with corporate procedures.

Proposed COLA Revisions

None

ATTACHMENT 62

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-62

RAI QUESTION NO. 13.03-62

NRC RAI 13.03-62

SITE-4: Protective Response
Basis:10 CFR 52.79(a)(21); 10 CFR 50.47(b)(10); Section IV.E of Appendix E to 10 CFR Part 50; NUREG-0654/FEMA-REP-1, Evaluation Criterion J.10.a
SRP ACCEPTANCE CRITERIA: Requirement A; Acceptance Criterion 1

Section II.J10.a, "Protective Response" states that Appendix 4, "Evacuation Time Estimate" of the GGNS Emergency Plan, contains maps of the Plume Exposure Pathway EPZ illustrating evacuation routes, evacuation areas, pre-selected radiological sampling and monitoring points, and locations of shelter areas and relocation centers. Provide the specific locations of the pre-identified sampling/monitoring locations.

Entergy Response

Evaluation Criteria II.J.10.a of NUREG-0654, FEMA-Rep-1, Rev. 1 states that the plans to implement protective measures for the plume exposure pathway shall include maps showing preselected radiological sampling and monitoring points. The maps currently provided in Appendix 4 of the Grand Gulf Unit 3 Emergency Plan are not of sufficient detail to be used by the Offsite Monitoring Teams (OMT) to locate selected sampling points as directed by the Emergency Operations Facility (EOF). As provided below, the Grand Gulf Unit 3 Emergency Plan will be revised to indicate that pre-selected radiological sampling and monitoring plan are depicted on maps and included in a site implementing procedure i.e., emergency plan procedure (EPP).

Radiological surveys are performed during an emergency to support emergency response teams and to evaluate and verify onsite and offsite radiological conditions. During an emergency, OMTs will be dispatched to sampling locations based on the observed wind speed and direction. The OMTs are dispatched to a sign location depicted on the attached maps to perform the sampling activities required to support the emergency response. Currently, EOI maintains copies of the attached maps in the Emergency Operations Facility (EOF) and in the vehicles used for sampling activities. Entergy expects to utilize the same methods to conduct sampling activities in response to an emergency related to the proposed Unit 3 as are currently used by Unit 1.

The maps include:

1. 10 Mile Offsite Dose Calculation (ODCM) map
2. 2 mile Latitude-Longitude Map (includes specific locations of Sector signs within the Emergency Planning Zone (EPZ))
3. 5 mile map (includes specific locations of Sector signs within the EPZ)

Proposed COLA Revisions

Subsection II.J.10.a will be revised as shown in the attached markup to reflect that radiological sampling and monitoring points are depicted on maps included in EPPs and are available in the EOF and vehicles used during sampling activities.

Markup of Grand Gulf COLA

The attached markup represents Entergy's good faith effort to show how the COLA will be revised in a future COLA submittal in response to the subject RAI. However, the same COLA content may be impacted by revisions to the ESBWR DCD, responses to other COLA RAIs, other COLA changes, plant design changes, editorial or typographical corrections, etc. As a result, the final COLA content that appears in a future submittal may be somewhat different than as presented herein.

10. Protective Measures Implementation

a. Appendix 4 provides a map of the Plume Exposure Pathway EPZ illustrating evacuation routes, evacuation areas, ~~pre-selected radiological sampling and monitoring points,~~ and locations of shelter areas and relocation centers.

Maps depicting pre-selected sampling and monitoring points are included in EPPs that support this plan. These maps are available in the EOF and are provided in vehicles designated for this purpose.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

b. Appendix 4 provides a map of the Plume Exposure Pathway EPZ illustrating population distribution around the facility by evacuation area. Appendix 4 also provides a map of the Plume Exposure Pathway EPZ illustrating population distribution around the facility in a sector format.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

c. The affected state officials are responsible for making decisions regarding the public protective actions. Protective actions are implemented by affected state and local officials. The primary method of warning the public is by the use of the Alert Notification System sirens. Port Gibson/Claiborne County Civil Defense and Tensas Parish Office of Homeland Security and Emergency Preparedness are responsible for activating the portion of the system within their respective jurisdictions. Other warning methods may include telephone communications, television and radio Emergency Alert System stations, public address systems, bullhorns from patrol cars and personal contact.

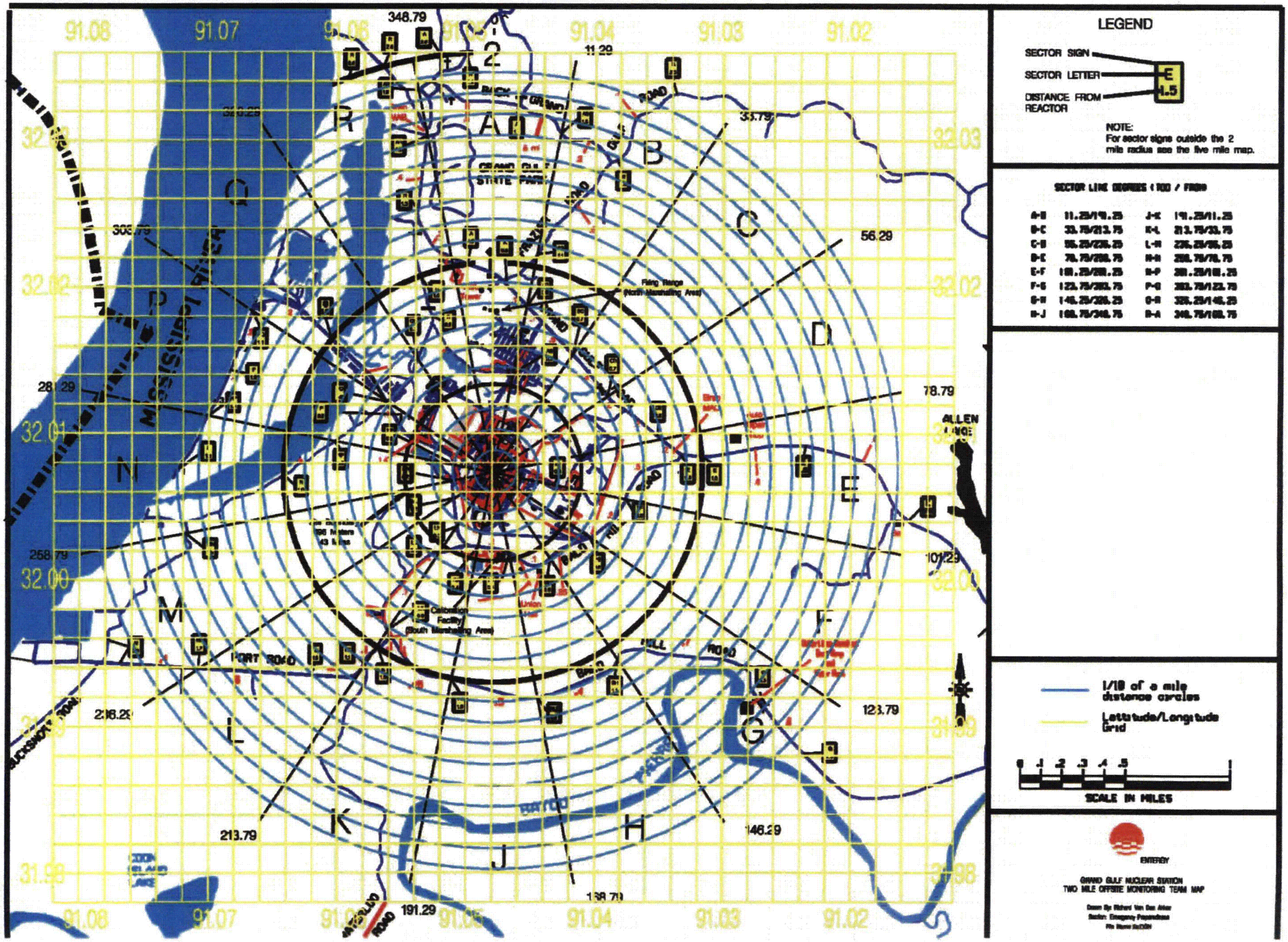
Appendix 3 of this plan provides a description of the Alert Notification System.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

d. This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

e. This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

f. This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.


LEGEND
SECTOR SIGN
SECTOR LETTER
DISTANCE FROM REACTOR
E
1.5
NOTE:
For sector signs outside the 2 mile radius see the five mile map.
1/10 of a mile distance circles
Latitude/Longitude Grid
0 .1 .2 .3 .4 .5 1
SCALE IN MILES
ENTERGY
GRAND GULF NUCLEAR STATION
TWO MILE OFFSITE MONITORING TEAM MAP
91.08
91.07
91.04
91.03
91.02
32.03
32.02
32.01
32.00
31.98
348.79
11.29
33.79
56.29
78.79
101.29
123.79
146.29
213.79
236.29
258.79
281.29
303.79
191.29
MISSISSIPPI RIVER
GRAND GULF STATE PARK
ALLEN LAKE
Firing Range (North Marshalling Area)
Calibration Facility (South Marshalling Area)
PORT ROAD
HILL ROAD
BAYOU
A
B
C
D
E
F
G
H
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K
L
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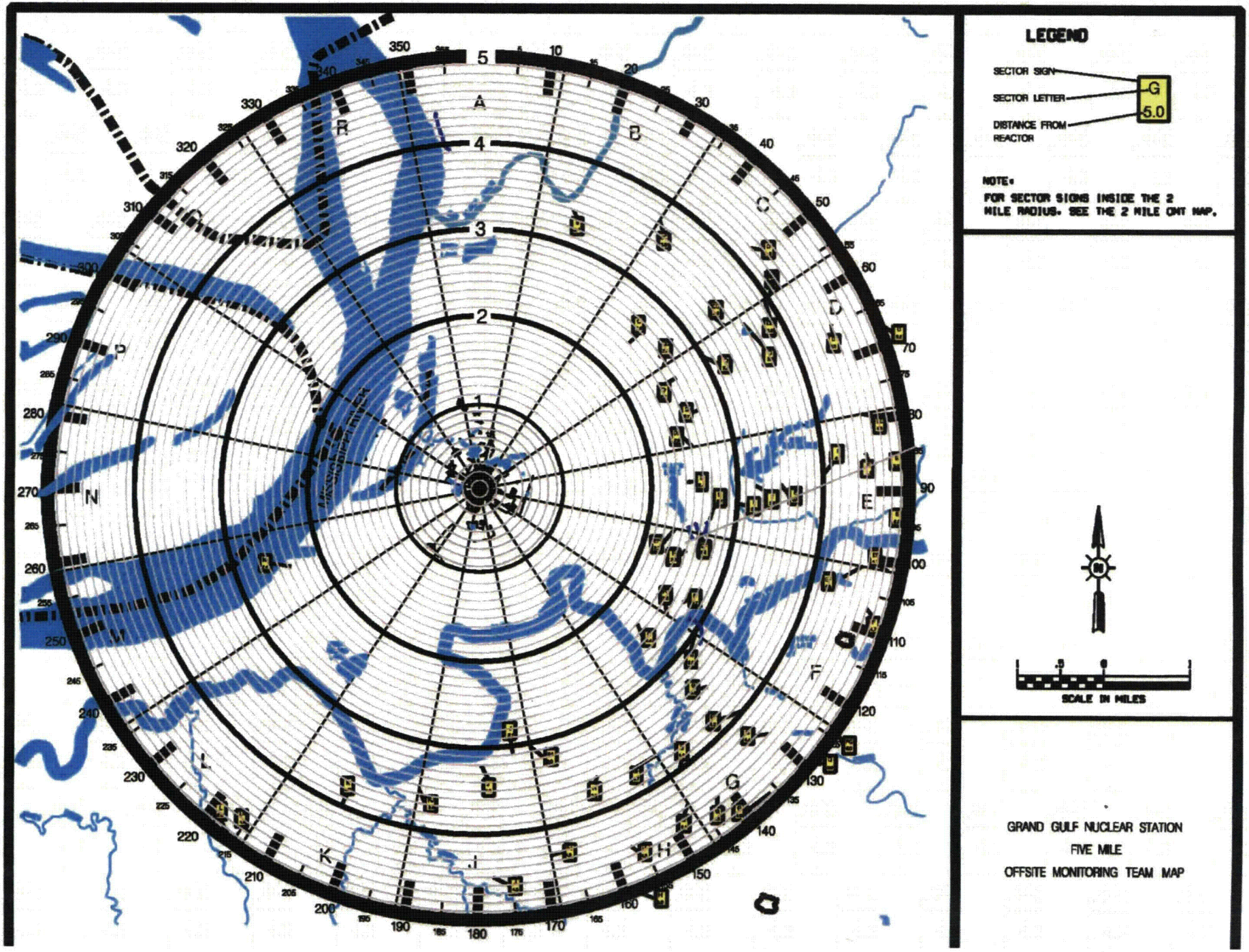
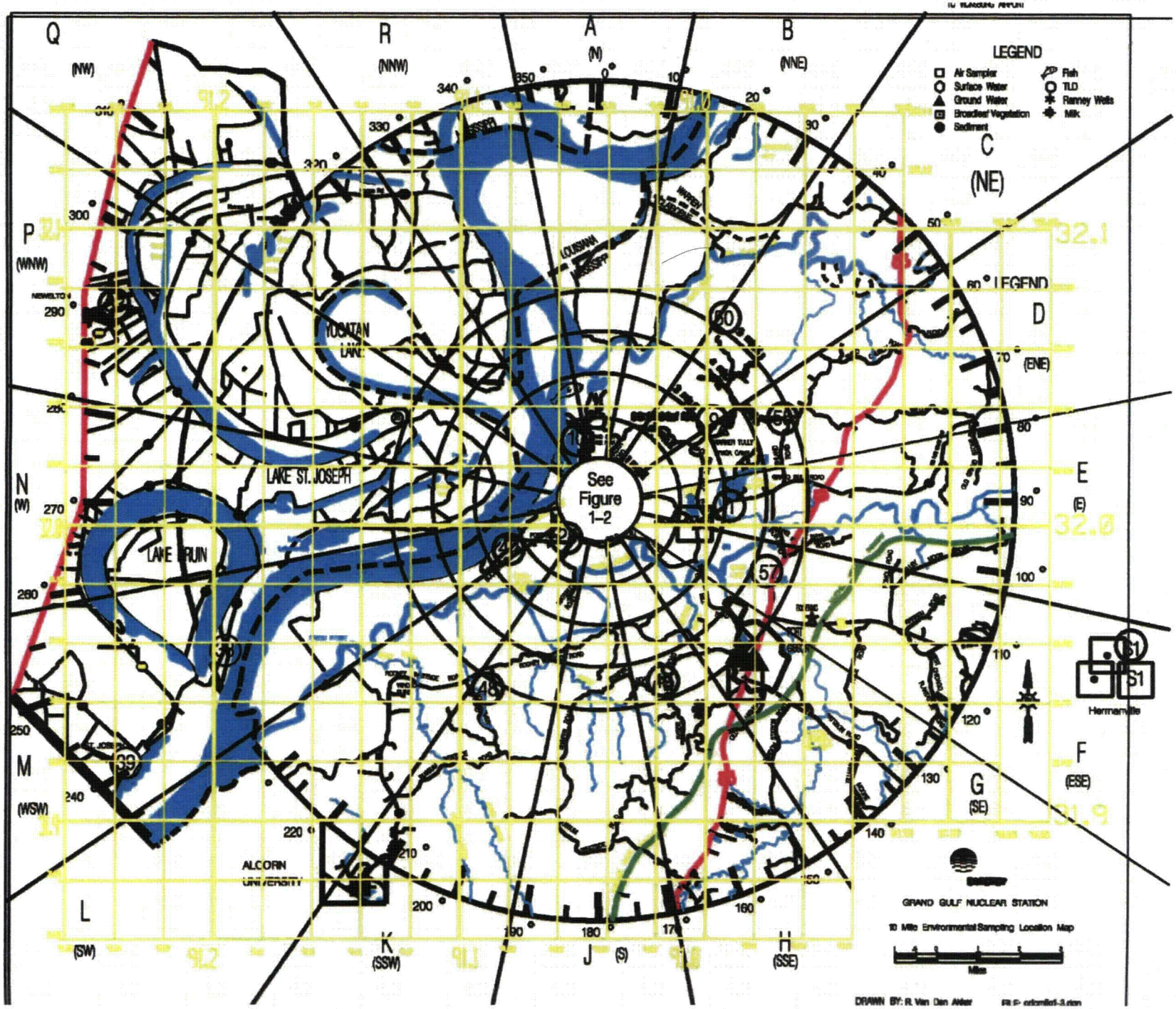
N
P
Q
R


LEGEND
SECTOR SIGN
SECTOR LETTER
DISTANCE FROM REACTOR
G
5.0
NOTE:
FOR SECTOR SIGNS INSIDE THE 2 MILE RADIUS, SEE THE 2 MILE ONT MAP.
SCALE IN MILES
GRAND GULF NUCLEAR STATION
FIVE MILE
OFFSITE MONITORING TEAM MAP


Q
(NW)
R
(NNW)
A
(N)
B
(NNE)
C
(NE)
D
(ENE)
E
(E)
F
(ESE)
G
(SE)
H
(SSE)
J
(S)
K
(SSW)
L
(SW)
M
(WSW)
N
(W)
P
(WNW)
LEGEND
Air Sampler
Surface Water
Ground Water
Broadleaf Vegetation
Sediment
Fish
TLD
Ranney Wells
Milk
See Figure 1-2
LAKE ST. JOSEPH
LAKE BRUIN
YOKATAN LAKE
ALCORN UNIVERSITY
Hermanville
GRAND GULF NUCLEAR STATION
10 Mile Environmental Sampling Location Map
Miles
DRAWN BY: R Van Den Akker

ATTACHMENT 63

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-63

RAI QUESTION NO. 13.03-63

NRC RAI 13.03-63

SITE-5: Accident Assessment
Basis: 10 CFR 50.47(b)(9); 10 CFR 52.79(a)(21); Section IV.E of Appendix E to 10 CFR Part 50; NUREG-0654/FEMA-REP-1, Evaluation Criterion I.2; Evaluation Criterion I.5
SRP ACCEPTANCE CRITERIA: Requirements A and B; Acceptance Criteria 1 and 4

B. Section II.I.5, "Accident Assessment," states, in part (page II-43), that Section II.H.8 and Appendix 2, "Radiological Assessment and Monitoring" of the GGNS Emergency Plan provides a description of the meteorological monitoring systems that are used to provide initial values and continuing assessment of meteorological conditions under emergency conditions. Additionally, Appendix 2, Section 2.3, "Remote Interrogation, states that remote polling of meteorological data for GGNS is available through the Emergency Response Data System (ERDS), which is activated by the licensee at an Alert or higher classification.

   In contrast, NUREG-0654/FEMA-REP-1, Rev.1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Appendix 2, "Meteorological Criteria for Emergency Preparedness at Operating Nuclear Power Plants," states in part (page 2-5) that..."Documentation for procedures to access and use the system shall be provided to the emergency response organizations and the NRC, and shall be available in the control room, the Technical Support center (TSC) and the emergency Operations Facility (EOF)." Please describe how COL Plan Section II.I.5 "Meteorological Information," comports with the above statement in Appendix 2.

Entergy Response

B. Grand Gulf Unit 3 will rely upon the existing meteorological data system in use for Unit 1, as described in the COL Application, Part 5, Section 2.1 and the Grand Gulf Early Site Permit (ESP) Application, Part 4, Section 3.9. A description of the digital data collection system for the existing system is provided in the ESP Application, Part 2, Section 2.3.3.2.1.1. Communication of the meteorological data to offsite responders is discussed in the ESP Application, Part 4, Sections 3.6, 3.7 and 3.9.

   Verification that the required meteorological data is available to the Unit 3 Control Room, Technical Support Center (TSC) and Emergency Operations Facility (EOF) has been provided as an ITAAC Element, per COLA Part 10, Table 2.3-1, "ITAAC For Emergency Planning," Acceptance Criterion 6.4.

   Access to and use of the meteorological data system in the Control Room, TSC and EOF for Grand Gulf Unit 1 is documented through an Emergency Plan Procedure (10-S-01-12), "Radiological Assessment and Protective Action Recommendations." The system also provides "help" features, which are available to the user to assist in access to and use of the meteorological data system. EOI expects a similar procedure will be developed for Unit 3.

Proposed COLA Revisions

GGNS COLA Part 5, Section II.I.5 will be revised as indicated in the attached draft markup.

Markup of Grand Gulf COLA

The following markup represents Entergy's good faith effort to show how the COLA will be revised in a future COLA submittal in response to the subject RAI. However, the same COLA content may be impacted by revisions to the ESBWR DCD, responses to other COLA RAIs, other COLA changes, plant design changes, editorial or typographical corrections, etc. As a result, the final COLA content that appears in a future submittal may be somewhat different than as presented herein.

I. Accident Assessment

The descriptions of provisions for accident assessment provided in Section 3.9 of Part 4 of the GGNS ESP application are incorporated into this plan by reference.

1. Parameters Indicative of Emergency Conditions

Appendix 1 of this plan identifies plant system and effluent parameter values that are indicative of off-normal or accident conditions. Appendix 1 of this plan includes the various indications that correspond to the emergency initiating conditions based on the methodology provided in NEI 07-01. Facility procedures specify the types and capabilities of the instruments used to indicate emergency conditions.

2. Plant Monitoring Systems

Appendix 2 of this plan provides information regarding plant monitoring systems that are significant to continuing radiological assessment. Subsection 1.2.2.15 of the ESBWR DCD provides a description of the ESBWR Post-Accident Sampling System.

3. Determination of Source Term and Radiological Conditions

a. Appendix 2 of this plan describes the means for relating various measured parameters, including containment radiation monitor reading, to the source term available for release within plant systems.

b. Appendix 2 of this plan describes the means for relating various measured parameters, including effluent monitor readings, to the magnitude of the release of radioactive materials.

4. Relationship Between Effluent Monitor Reading and Exposure and Contamination Levels

Emergency Plan Procedures include the relationship between effluent monitor readings and on-site and off-site exposures and contamination for various meteorological conditions.

Appendix 2 provides a description of the emergency dose assessment program used at GGNS 3. Information includes dose and dose rate determinations based on plant effluent monitors, and contamination estimates based on deposition assumptions and meteorological conditions.

5. Meteorological Information

Section II.H.8 and Appendix 2 of this plan provide a description of the meteorological monitoring systems that are used to provide initial values and continuing assessment of meteorological conditions under emergency conditions.

EPPs provide documentation on how to access and use the system in the Control Room, Technical Support Center (TSC) and Emergency Operations Facility (EOF).

ATTACHMENT 64

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-64

RAI QUESTION NO. 13.03-64

NRC RAI 13.03-64

Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(6); Appendix E to 10 CFR Part 50; Appendix E.IV.9, to 10 CFR Part 50; NUREG-0654/FEMA-REP-1, Evaluation Criterion F.1.f; Evaluation Criterion F.3
SRP ACCEPTANCE CRITERIA: Requirements A and B; Acceptance Criteria 1 and 2

A. Section II.F.1.f, "Description of Communication Links" states that EOI provides for communications between Control Room/TSC/EOF and the NRC Operations Center via the systems discussed in Section II.F.1.c, "Description of Communication Links" of the GGNS Emergency Plan. Provide additional information that describes the clear lines of communication, via the applicant's communications systems with NRC Headquarters and the appropriate NRC Regional Office Operations Center, and monthly testing of these lines.

Entergy Response

A. As indicated in DCD Section 13.3, design features, facilities, functions, and equipment necessary for emergency planning are considered in the design bases of the ESBWR Standard Plant. The Technical Support Center (TSC) is provided with reliable voice and data communication with the Main Control Room (MCR) and Emergency Operations Facility (EOF) and reliable voice communications with the Operational Support Center (OSC), Nuclear Regulatory Commission (NRC) Headquarters and Regional Operations Center and state and local operations centers.

   Grand Gulf Nuclear Station (GGNS) Unit 3 Emergency Plan Section II.E.1 indicates that the primary system used for emergency notifications to the USNRC Operations Center is the Emergency Notification System (ENS). If the ENS is unavailable for any reason, the primary back-up notification system is commercial telephone. These same systems, augmented by the systems listed in GGNS Unit 3 Emergency Plan Section II.F.1.c, are used for ongoing communications with NRC Headquarters and Regional Offices under emergency conditions.

   Further details of the communications capabilities are discussed in the DCD, Section 9.5.2.2, "Emergency Communication Systems."

   Monthly testing of these lines is a requirement of 10 CFR 50, Appendix E, Section IV.E.9.d.

Proposed COLA Revisions

GGNS COLA Part 5, Sections II.F.1.f and II.F.3 will be revised as indicated in the attached draft markup.

Markup of Grand Gulf COLA

The following markup represents Entergy's good faith effort to show how the COLA will be revised in a future COLA submittal in response to the subject RAI. However, the same COLA content may be impacted by revisions to the ESBWR DCD, responses to other COLA RAIs, other COLA changes, plant design changes, editorial or typographical corrections, etc. As a result, the final COLA content that appears in a future submittal may be somewhat different than as presented herein.

f. EOI provides for communications between Control Room/TSC/EOF, the NRC Operations Center, and NRC Regional Offices via the systems discussed in Section II.F.1.c of this plan. In the event of the failure of one or more of these systems, back-up communications capability is provided via commercial telephone systems.

g. EOI activates the Emergency Response Data System (ERDS) within one hour of the declaration of an Alert or higher emergency classification.

2. Communication with Fixed and Mobile Medical Support Facilities

EOI maintains communications systems that allow for communications between the site and fixed and mobile medical support facilities. The communications systems include commercial telephone communications between GGNS 3 and the fixed facilities (hospitals). The ambulance maintains radio communications with the hospital. Any communications between GGNS 3 and the ambulance are relayed through the hospital (i.e., from GGNS 3 to the hospital via commercial telephone and then from the hospital to the ambulance via radio).

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

3. Communication System Tests

EOI conducts tests of its emergency communications system as follows:

EOI tests communications between the plant, NRC Headquarters and the NRC Regional Office Operations Center monthly. Communications with the facility and EOF and the state/local warning points are tested monthly. Communications between the state/local EOCs and field assessment teams are tested consistent with the requirements of the affected state and local plans.

EOI tests communications with Federal emergency response organizations, as identified in Section II.A of this plan, at least annually.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable

ATTACHMENT 65

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-65

RAI QUESTION NO. 13.03-65

NRC RAI 13.03-65

SITE-6: Emergency Communications
Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(6); Appendix E to 10 CFR Part 50; Appendix E.IV.9, to 10 CFR Part 50; NUREG-0654/FEMA-REP-1, Evaluation Criterion F.1.f; Evaluation Criterion F.3
SRP ACCEPTANCE CRITERIA: Requirements A and B; Acceptance Criteria 1 and 2

B. Section II.F.3, "Communications Systems Tests" states that communications with the facility and EOF and the state/local warning points are tested monthly. Provide clarifying information to ensure that the communications systems with Federal emergency response organizations are tested annually.

Entergy Response

B. Clarifying information to ensure the annual test will be conducted has been added to the COLA as discussed in RAI 13.03-64 and noted below.

Proposed COLA Revisions

GGNS COLA Part 5, Section II.F.3 will be revised as indicated in the draft markup attached to the response to RAI 13.03-64.

ATTACHMENT 66

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-66

RAI QUESTION NO. 13.03-66

NRC RAI 13.03-66

SITE-7: Protective Response
Basis: 10 CFR 50.47(b)(2); 10 CFR 50, Appendix E.IV.A.2.b; NUREG-0654/FEMA-REP-1, Evaluation Criterion B.2
SRP ACCEPTANCE CRITERIA: Requirement A; Acceptance Criteria 1 and 18

Subsection II.B.5, "Plant Emergency Response Staff," of Section II.B, "On-site Emergency Organization," states that the minimum emergency response staffing in Table II-2, "Plant Staff Emergency Functions," of the GGNS 3 Emergency Plan is based upon guidance provided in Table B-1, "Minimum Staffing Requirements for NRC Licensees for Nuclear Power Plant Emergencies," of NUREG-0654 and is consistent with the emergency response staffing requirements previously approved and successfully implemented for GGNS Unit 1. It further states that the minimum on-shift staffing and goals for augmenting on-shift resources after declaration of an emergency are also indicated in Table II-2. However, Table B-1 identifies the need for a capability for additional staff within 30 and 60 minutes while Table II-2 of the GGNS 3 Emergency Plan, under the column "Capability for Additions", states "time to be provided" with the following note: "If personnel are on-site they report and augment the on-shift personnel as soon as possible without delay, but no later than 45 minutes." Provide the comparable Table B-1 from the current Unit 1 emergency plan. In addition, describe the bases for the staff augmentation times and staffing requirements in the Unit 1 Table B-1, including how they comport with the guidance in Table B-1 of NUREG-0654.

Entergy Response

The requested Grand Gulf Unit 1 response times are listed in UFSAR Table 5-1 (i.e., the Unit 1 table comparable to Table B-1) which is provided as an attachment to this response. The NRC review and approval of staff augmentation time is provided in the NRC letter to Entergy, dated September 29, 2000 (ADAMS Accession No. ML003756919). Unit 3 will be co-located with Unit 1 and has comparable staff augmentation characteristics.

Proposed COLA Revisions

None

TABLE 5-1

SHIFT STAFFING AND AUGMENTATION CAPABILITIES

Major Functional Area	Emergency Tasks	Position Title or Expertise	Location	On Shift (e)	Capability for Additions 90 Min(h)
Plant Operations and Assessment of Operational Aspects	Emergency Direction and Control (f)	Shift Manager (SRO)	CR	1	–
		On-Call Manager	CR/TSC	–	1(g)
		Shift Supervisor (SR0)	CR	1	–
		Nuclear Operator A (RO)	CR	2	–
		Auxiliary Operator	CR	2	–
	Firefighting, firefighting communications	Shift Personnel (Operations)	CR	5(a)	Provided by Claiborne County / Port Gibson
	Technical Support and Core/Thermal Hydraulics(d)	Shift Technical Advisor	CR	1(c)	–
	Core/Thermal Hydraulics	TSC Coordinator/Operations Coordinator/SRO/STA	TSC/CR	–	1(g)
Notification/ Communication	Offsite Notifications (State, Local, Federal) and maintain communications, Notification of Plant On-Call emergency personnel	Communicator	CR/TSC/EOF	2	2(g)
Radiological Accident Assessment and Support of Operational Accident Assessment	EOF Direction and Control	Senior Management	EOF	–	1
	Offsite Dose Assessment	Radiological Assessment	CR/TSC/EOF	1(a)	1(g)
	Chemistry/Radio-Chemistry	Chemist	OSC	1	1
Plant System Engineering	Technical Support	Electrical	TSC/OSC	–	1
		Mechanical	TSC/OSC	–	1
Repair and Corrective Actions		Mechanical Maintenance	OSC	1	1
		Radwaste Operator	OSC	1(a)	1
		Electrical Maintenance	OSC	1	2
		I&C Maintenance	OSC	1	–

TABLE 5-1

SHIFT STAFFING AND AUGMENTATION CAPABILITIES

Major Functional Area	Emergency Tasks	Position Title or Expertise	Location	On Shift (e)	Capability for Additions 90 Min(h)
Radiation Protection	-Access Control -HP coverage for repair, corrective actions, search and rescue/first-aid, and firefighting -Personnel monitoring -Dosimetry -Surveys (offsite, onsite, and in-plant surveys on as needed basis only)	Health Physicist	EOF/OSC	2	11(b)
Rescue / First aid		Rescue and First Aid	OSC	2(a)	Provided by Claiborne County / Port Gibson
Security	Security, personnel accountability	Security Personnel			(See Security Plan)

Notes:

(a) May be provided by Shift Personnel assigned other duties.
(b) Must be trained for the Emergency Task being performed.
(c) STA staffing in accordance with GGNS Technical Specification.
(d) Core/Thermal Hydraulics is part of normal STA duties as listed in the Updated Final Safety Analysis Report and Technical Specifications.
(e) These ERO positions may be vacant for not more than 2 hours, in order to provide for unexpected absences, provided action is taken to fill the required position. This allowance is not applicable during declared emergencies.
(f) Overall direction of facility response is assumed from the Shift Manager (SRO) by the On-Call Manager. Upon relief, the Shift Manager (SRO) resumes plant operational duties.
(g) These personnel will report and augment shift personnel as soon as possible without delay but no later than 75 minutes.
(h) If personnel are onsite they will report and augment the onshift personnel as soon as possible without delay, but no later than 45 minutes.

ATTACHMENT 67

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-67

RAI QUESTION NO. 13.03-67

NRC RAI 13.03-67

SITE-8: Part 2, FSAR
Basis: 10 CFR 52.79(a)(21); 10 CFR 52.79(b)(1); 10 CFR 50.47; Appendix E of 10 CFR Part 50
SRP ACCEPTANCE CRITERIA: Requirements A and B; Acceptance Criteria 1 and 2

COLA FSAR (Part 2) Section 13, "Conduct of Operations," under subsection 13.1.1, "Management and Technical Support Organization," states that corporate offices provide support for the nuclear stations. This support includes functional level management in areas such as emergency planning. Additionally, in COLA FSAR (part 2) Section 13.1.1.2.11, "Emergency Organization", it states that resources of the emergency planning group are shared between units.

Contrary to the above, COLA FSAR (Part 2, page 1-134) Table 1.9-203, "Conformance With the FSAR Content Guidance In RG 1.206," states in Sections C.III.1, 13.3.2 (1) and (2), that the Unit 3 Emergency Plan is a stand-alone plan and does not rely upon the Emergency Plan for Unit 1.

Provide resolution to the apparent above contradictions, and describe the applicability of the existing Unit 1 emergency plan (including corporate support) to the Unit 3 Emergency Plan and the statements in the COL application.

Entergy Response

Applicable sections of the existing Grand Gulf Emergency Plan were incorporated into the ESP Major Features Plan to the extent that the Grand Gulf Emergency Plan supports the emergency planning descriptions in the ESP application. This arrangement provided sufficient clarity to support review and approval of EOI's ESP application in satisfying the guidance provided in NUREG-0654/FEMA-REP-1, Supplement 2, but did not provide the appropriate level of detail needed to support development of a comprehensive and practical emergency plan required for a COL application. The intent in developing the Unit 3 Emergency Plan is to incorporate into that plan the information needed to facilitate review and approval of the plan. Consistent with that intent, content from the applicable sections of the Grand Gulf Emergency Plan, as discussed in the ESP Major Features Plan, is included in the Unit 3 Emergency Plan.

Although the GGNS Unit 1 and GGNS Unit 3 emergency plans constitute two independent licensing documents, it is recognized that implementation of the plans would share certain resources. For example, this would include portions of the meteorological monitoring system, certain elements of both onsite and corporate emergency response staff, and emergency planning group, as well as local, State, and private sector emergency response resources.

The two plans, the Grand Gulf Unit 1 Emergency Plan and the Grand Gulf Unit 3 Emergency Plan, may be consolidated into a single plan at some point in the future. Separation of these two plans at this stage of Unit 3 licensing will facilitate review and approval of the Unit 3 Emergency Plan and the continued effective implementation of the Grand Gulf Unit 1 Emergency Plan.

Proposed COLA Revisions

None

ATTACHMENT 68

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-68

RAI QUESTION NO. 13.03-68

NRC RAI 13.03-68

SITE-9: Emergency Plan
Basis: 10 CFR 52.79(a)(21); 10 CFR 52.79(b)(1); 10 CFR 50.47; Appendix E of 10 CFR Part 50
SRP ACCEPTANCE CRITERIA: Requirements A and B; Acceptance Criteria 1 and 2

Emergency Plan (Part 5) Section II, "Emergency Plan," states that within each planning standard subsection (except for B, M, and N) a referenced section "of the GGNS ESP is incorporated into this plan by reference. The references to the various sections of the GGNS ESP are actually references to the various corresponding subsections of ESP application SSAR (Part 2), Section 13.3, "Emergency Planning." (See 10 CFR 52.79(b)(1), which addresses incorporating by reference the early site permit site safety analysis report (ESP SSAR) into the COL application final safety analysis report (FSAR).

The NRC issued Early Site Permit ESP-002 for the Grand Gulf ESP site on April 5, 2007. Emergency planning is only addressed in ESP-002 Section 1.E, which states in part that "[m]ajor features A, B, C, D, E, F, G, I, J, K, L, O, and P of the emergency plan are acceptable to the extent specified in NUREG-1840, "Safety Evaluation Report for an Early Site Permit (ESP) at the Grand Gulf ESP Site," issued April, 2006." The referenced major features of the emergency plan were proposed by the ESP applicant in ESP application SSAR (Part 2), Section 13.3, and the staff reviewed and evaluated the major features in NUREG-1840.

Confirm that the statement "incorporated into this plan by reference" in the COL application planning standard subsections should be references to the corresponding SSAR (Part 2) subsections of the ESP application (Revision 3, March 8, 2006), Section 13.3.

Entergy Response

The references to Part 4 of the GGNS ESP in Emergency Plan (Part 5) Section II, "Emergency Plan," should have been references to Part 4 of the GGNS Early Site Permit (ESP) application. Grand Gulf ESP Emergency Plan information was provided in Part 4 of the ESP application, not in the ESP SSAR. Thus, the Grand Gulf Unit 3 Emergency Plan references to the ESP are intended to refer to the corresponding subsection of the ESP application, Part 4. This will be clarified in the COL application, as discussed below.

In addition, Section II.B of the Emergency Plan, "On-site Emergency Organization," should indicate that the corresponding section of Part 4 of the ESP application (i.e., Section 3.2.1) is incorporated by reference.

Proposed COLA Revisions

The GGNS COLA Emergency Plan (Part 5) will be revised as shown on the attached markup to clarify the reference to Part 4 of the ESP application. In addition, Section II.B

of the Emergency Plan will be revised to show that Section 3.2.1 of Part 4 of the GGNS ESP Application is incorporated by reference.

Markup of Grand Gulf COLA

The attached markup represents Entergy's good faith effort to show how the COLA will be revised in a future COLA submittal in response to the subject RAI. However, the same COLA content may be impacted by revisions to the ESBWR DCD, responses to other COLA RAIs, other COLA changes, plant design changes, editorial or typographical corrections, etc. As a result, the final COLA content that appears in a future submittal may be somewhat different than as presented herein

I. Introduction

This Emergency Plan describes the plans established by Entergy Operations, Inc. (EOI) for responding to a radiological emergency at Grand Gulf Nuclear Station Unit 3 (GGNS 3).

In Part 4, "Emergency Planning Information," of its Grand Gulf Early Site Permit (ESP) application, System Energy Resources, Inc. (SERI), presented the major features of its proposed emergency plan pursuant to 10 CFR 52.17(b)(2)(i). The NRC Staff documented its review of these proposed major features in NUREG-1840, Section 13.3. With the exception of major feature H, related to emergency facilities and equipment, the Staff concluded that the major features proposed in Part 4 of the ESP application were consistent with the guidelines in RS-002, "Processing Applications for Early Site Permits," and NUREG-0654, Supplement 2. Therefore, these approved major features were found acceptable and satisfied the requirements of 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III, IV.A, IV.F, and IV.G of Appendix E to 10 CFR Part 50, insofar as they described the essential elements of advanced planning that were considered for the development, periodic review, and distribution of emergency plans. As discussed in the following sections of this plan, these approved major features described in Part 4 of the ESP application are incorporated by reference.

Consistent with the requirements of 10 CFR 52.79(b)(4), this Emergency Plan must include any new or additional information that updates and corrects the information that was provided under 10 CFR 52.17(b), and must discuss whether the new or additional information materially changes the bases for compliance with the applicable requirements. In addition, the COL application must identify changes to the major features of emergency plans that have been incorporated into the proposed facility emergency plans and that constitute or would constitute a decrease in effectiveness under 10 CFR 50.54(q).

The ESP stage major features provided sufficient information to address the "essential elements of advance planning" as mentioned above, per Section III of Appendix E to 10 CFR Part 50. As discussed in Section 1.1 of the ESP application, Part 4, it was understood that the COL application would expand the major features, as needed, to support the proposed new facility. Therefore, this Emergency Plan contains supplemental information to meet NUREG-0654 evaluation criteria. A limited number of changes to the ESP major features have been identified and are listed in the "Explanatory Notes" in the preface to this part. This listing includes a cross-reference between the ESP application Part 4 and this Emergency Plan, as well as a brief discussion of the change. None of these is a material change to the bases for compliance with applicable requirements or a change that constitutes a decrease in effectiveness under 10 CFR 50.54(q).

2. Emergency Planning Zones

NUREG-0654/FEMA-REP-1 establishes two Emergency Planning Zones (EPZs) for which planning for predetermined actions should be implemented – the Plume Exposure Pathway EPZ, which has a radius of approximately 10 miles, and the Ingestion Exposure Pathway EPZ, which has a radius of approximately 50 miles.

Plume Exposure Pathway EPZ

The Plume Exposure Pathway EPZ is that area where the principal sources of incident-related radiation exposures are likely to be whole body gamma radiation exposures and inhalation exposures from the passing radioactive plume. As a result of this exposure scenario, any exposures resulting from a radiological incident at the facility are likely to have a duration from less than one hour to a few days.

The Plume Exposure Pathway EPZ consists of an area about 10 miles in radius around the site. Figure I-1 provides an illustration of the Plume Exposure Pathway EPZ and the associated Emergency Response Planning Areas (ERPAs). The description of the Plume Exposure Pathway EPZ provided in Section 2.1.5 of Part 4 of the GGNS ESP application is incorporated into this plan by reference. Collectively, the affected Mississippi counties and Louisiana parishes are referred to as the risk jurisdictions.

Ingestion Exposure Pathway EPZ

The Ingestion Exposure Pathway EPZ is that area where the principal sources of incident-related radiation exposures are likely to result from ingestion of contaminated water and food, including milk, fresh vegetables, and aquatic foodstuffs. As a result of this exposure scenario, any exposures resulting from a radiological incident at the facility are likely to have a duration from a few hours to months.

The Ingestion Exposure Pathway EPZ consists of an area about 50 miles in radius around the site. Figure I-2 provides an illustration of the Ingestion Exposure Pathway EPZ. The description of the Ingestion Exposure Pathway EPZ provided in Section 2.1.5 of Part 4 of the GGNS ESP application is incorporated into this plan by reference.

Site and Area Description

GGNS 3 consists of a General Electric ESBWR Reactor as described in the ESBWR DCD and the associated GGNS Unit 3 FSAR.

The site and area descriptions provided in Section 2.1 of Part 4 of the GGNS ESP application are incorporated into this plan by reference.

II. Emergency Plan

A. Assignment of Responsibility (Organization Control)

Emergency Organization

Participating Organizations

The descriptions of participating organizations provided in Sections 3.1 and 3.2 of Part 4 of the GGNS ESP application are incorporated into this plan by reference.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

Concept of Operations

EOI's responsibilities during an emergency condition focus on taking actions to:

- Assess plant conditions
- Classify emergency conditions
- Notify EOI emergency response organizations and affected agencies and individuals of emergency conditions
- Provide communications and technical expertise to affected agencies
- Provide support for off-site assessment and protective activities
- Make protective action recommendations
- Mitigate the consequences of adverse plant conditions by monitoring and controlling plant parameters
- Request off-site support, as needed
- Coordinate with affected agencies to provide accurate information to the public
- Terminate emergency conditions

Normal operations at GGNS 3 are conducted under the authority of the Shift Manager and directed from the Control Room. In the event of an abnormal condition, the Shift Manager directs the activities of the plant staff in performing initial assessment, corrective, and protective functions. Using approved operating and emergency procedures, including the Emergency Action Levels (EALs) provided in Appendix 1 of this plan, the Shift Manager determines if an emergency condition exists and, if so, determines the proper emergency classification.

Nuclear Regulatory Commission

The response provided by the NRC is described in NUREG-0728, "NRC Incident Response Plan" (Reference 4). The representative of the NRC who would provide input to the CECC Director is the Region II Regional Administrator/designee. A workspace and a telephone have been provided in the EOF for this NRC representative.

Environmental Protection Agency (EPA)

The EPA may provide assistance in supporting environmental monitoring teams and mobile radioanalytical laboratories.

U.S. Coast Guard

The U.S. Coast Guard has jurisdiction over traffic on the Mississippi River. Upon notification by the Mississippi State Emergency Management Agency of an emergency requiring traffic exclusion, the Captain of the Port exercises his authority to control traffic through the establishment of a safety zone in the immediate area.

Appendix 7 of this plan provides copies of the certification letters established between EOI and the supporting state and local government agencies supporting this plan. The responsibilities of many federal agencies are established in the National Response Plan (Reference 5) and therefore no agreement letters are required for these agencies.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

Organizational Interrelationships

The interfaces between and among the on-site and off-site functional areas of emergency response described in Section 3.3.2 of Part 4 of the GGNS ESP application are incorporated into this plan by reference. Figure II-1 illustrates these interrelationships.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

Individual in Charge of Emergency Response

In the event of an abnormal condition, the Shift Manager determines if an emergency condition exists and, if so, determines the proper emergency classification. Upon declaration of an emergency, the Shift Manager assumes the role of the Emergency Director and is in charge of the emergency response for the facility.

If required by the emergency classification, or if deemed appropriate by the Emergency Director, emergency response personnel are notified and

2. Functions, Responsibilities, and Legal Basis

This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

3. Written Agreements

The description of contacts and arrangements provided in Section 3.17 of Part 4 of the GGNS ESP application is incorporated into this plan by reference. Appendix 7 of this plan provides copies of the certification letters established between EOI and the state and local government agencies committed to supporting further development and implementation of this plan.

The responsibilities of those federal agencies having primary responsibilities for supporting this plan are established in the National Response Plan; therefore, no certification letters are required for these agencies.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

4. Continuous Operations

EOI maintains capability for continuous operations consistent with Section II.A.1.e of this plan. The Off-site Emergency Coordinator (if the position is staffed) or the Emergency Director (if the Off-site Emergency Coordinator position is not staffed) bears responsibility for ensuring continuity of technical, administrative, and material resources during emergency operations.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

B. On-site Emergency Organization

1. On-site Emergency Organization

The description of the On-site Emergency Organization in Section 3.2.1 of Part 4 of the GGNS ESP application is incorporated into this plan by reference.

Figure II-2 illustrates the on-site emergency response organization (ERO). Emergency Plan Procedures (Appendix 5) provide details regarding ERO position functions.

The minimum staff required to conduct routine and immediate emergency operations is maintained at the station consistent with 10 CFR 50.54(m) and the GGNS Unit 3 Technical Specifications. Section 13.1 of the GGNS Unit 3 FSAR provides details of facility staffing. Station administrative procedures provide the details of the normal station organization, including reporting relationships.

Upon declaration of an emergency, designated members of the normal staff complement fulfill corresponding roles within the emergency response organization. For example, Radiation Protection personnel undertake radiation protection activities, Security personnel undertake Security activities, Engineering personnel focus on plant assessment and technical support for operations, and Operations personnel focus on plant operations.

2. Emergency Director

The Shift Manager position is staffed at all times. Upon recognition of an emergency condition, the individual filling this position assumes the duties of the Emergency Director until relieved by a qualified member of the management staff consistent with Section II.B.3 of this plan or until termination of the emergency condition, whichever comes first.

The individual filling the Emergency Director role has the responsibility and authority to initiate any required emergency response actions, including notification of affected federal, state, and local authorities and provision of Protective Action Recommendations to off-site authorities.

3. Emergency Director Line of Succession

Should the Shift Manager be rendered unable to fulfill the duties and responsibilities of the Emergency Director position (such as due to personal illness or injury), the Supervisor, Control Room or Reactor Operator present on shift (a position that also is staffed at all times) assumes the Emergency Director position until relieved by a qualified member of the management staff as outlined below.

A trained, higher level member of the licensee's management staff, referred to as the On-Call Manager, may assume Emergency Director responsibilities from the Shift Manager after becoming fully familiar with the pertinent plant and radiological conditions and status of emergency response/accident mitigation efforts.

9. Local Emergency Response Support

EOI has established and maintains agreements for local emergency response support services, including fire fighting, rescue squad, medical and hospital services. Section 3.3 of Part 4 of the GGNS Early Site Permit application is incorporated into this plan by reference.

The Claiborne County Fire Department, located approximately six miles from the plant and available 24 hours per day, provides fire-fighting support to the facility. Notification of a need for off-site fire-fighting assistance is made by means of a telephone call. The Claiborne County Fire Department maintains an informal aid pact with the Port Gibson Fire Department. These two fire-fighting groups have agreed, upon request, to furnish each other with firefighting personnel, resources, and facilities and to render such fire protection services which may be necessary to suppress any fire or disaster which goes beyond the control of either of the agencies. When additional fire support groups would be brought in to assist at the Station, the Claiborne County Fire Department Fire Chief directs off-site firefighting personnel, while the GGNS Emergency Director retains overall responsibility for on-site emergency response.

The Claiborne County Sheriff's Department and the Port Gibson Police Department have agreed to provide the following emergency support:

- Controlling matters of civil disorder within Claiborne County (provided by Sheriff's Department) and within the city limits of Port Gibson (provided by Sheriff's Department and Port Gibson Police Department)
- Communications
- Furnishing personnel and equipment in accordance with Security Plans
- Controlling access to areas affected by the emergency
- Directing area evacuation

Section II.XLX of this plan provides a description of the arrangements for medical support services, including hospital and ambulance support.

Appendix 7 of this plan provides certification letters for organizations providing the required services.

C. Emergency Response Support and Resources

The arrangements for emergency response support and resources described in Section 3.3 of Part 4 of the GGNS ESP application are incorporated into this plan by reference.

1. Federal Response Capability

a. Under some complex circumstances it may be necessary to obtain off-site radiological monitoring support from federal government agencies. The state EOC may request FRMAC assistance directly or through the NRC (Federal Coordinating Agency). The Emergency Director and Off-site Emergency Coordinator (when the EOF is staffed) are responsible for requesting required support.

   Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

b. Federal radiological monitoring assistance may be provided by DOE-Oak Ridge under the DOE Radiological Assistance Program. Support available from DOE-Oak Ridge includes medical support from the Radiation Emergency Assistance Center/Training Site (REAC/TS). EOI estimates that a FRMAC Advance Party could be expected at the site within 12 hours following the order to deploy. EOI expects that NRC assistance from NRC's offices in Arlington, TX will arrive in the site vicinity within 4-6 hours following notification; the team may reduce this time by use of aircraft. Three airfields are available in close proximity to GGNS as follows:

   - Jackson International Airport, Jackson, MS
   - Hawkins Field, Jackson, MS
   - Vicksburg Municipal Airport, Vicksburg, MS

   Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

c. EOI provides facilities and resources needed to support the federal response through the EOF. Available resources include office space, telephone and radio communications circuits, and protective clothing and equipment. EOI also provides limited office space and telephone communications facilities for NRC personnel in the TSC.

   Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

D. Emergency Classification System

EOI has developed and implemented a standard emergency classification scheme, based on system and effluent parameters, on which affected state and local response organizations may rely for determining initial off-site response measures. The initiating conditions include the conditions provided in NEI 07-01, Rev. 0, "Methodology for Development of Emergency Action Levels, Advanced Passive Light Water Reactors," (Reference 6) as it applies to ESBWRs, and postulated accidents identified in the FSAR.

The description of the emergency classification system described in Section 3.4 of Part 4 of the GGNS ESP application is incorporated into this plan by reference. The following information supplements that description.

1. Classification System

Appendix E of 10 CFR 50 identifies four distinct classes of emergencies. The definitions of these emergency classes are more fully discussed in NEI 07-01, as follows:

- Notification of Unusual Event (NOUE) - Events are in process or have occurred which indicate a potential degradation of the level of safety of the plant. No releases of radioactive material requiring off-site response or monitoring are expected unless further degradation of safety systems occurs.
- Alert – Events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life-threatening risk to personnel or damage to equipment because of hostile action. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline (PAG) exposure levels.
- Site Area Emergency - Events are in process or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or hostile actions that result in intentional damage or malicious act: 1) toward personnel or equipment that could lead to the likely failure of, or; 2) that prevent effective access to, equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary.
- General Emergency – Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels off-site for more than the immediate site area.

Appendix 1 of this plan provides recognition categories, the associated initiating condition matrices, and the emergency action levels.

E. Notification Methods and Procedures

EOI maintains procedures for notification of state and local response organizations and licensee emergency responders. These procedures include, or make reference to, the pre-planned content of messages to state and local organizations. EOI also makes arrangements to provide prompt notification to members of the public within the plume exposure pathway EPZ.

The descriptions of notification methods and procedures provided in Section 3.5 of Part 4 of the GGNS ESP application are incorporated into this plan by reference.

1. Notification of State and Local Authorities

EOI establishes systems and procedures needed to provide the capability to provide prompt notification of affected state, local, and federal authorities following the declaration of any emergency condition, consistent with the Emergency Classification and Action Level scheme described in Appendix 1 of this plan. The Emergency Director initiates notification of affected state and local authorities within fifteen (15) minutes of the emergency declaration, including escalation or termination of any emergency condition. The affected state and local authorities include the following (at least one agency in each row must be notified):

Table II-3 – GGNS Emergency Notification Contacts

Primary	Secondary
Mississippi Emergency Management Agency	Mississippi Highway Patrol
Louisiana Office of Homeland Security and Emergency Preparedness	Louisiana Department of Environmental Quality
Claiborne County Sheriff's Dept	Claiborne County Civil Defense
Tensas Parish Sheriff's Dept	

The primary notification method to be used is the Operational Hot Line, which is accessible from the Control Room, TSC, and EOF. Back-up notification capability is maintained through the use of commercial telephone systems. EOI also maintains a UHF radio communication capability with selected local authorities as discussed in Section II.F of this plan. Message content and verification methods are established in Emergency Plan Procedures and agreements between the affected organizations.

EOI maintains systems and procedures needed to provide the capability to provide prompt notification of the USNRC Operations Center following the declaration of any emergency condition. The USNRC is notified as soon as is practical following the notification of state and local authorities and within one (1) hour of the emergency declaration, including escalation or

termination of any emergency declaration[1]. The primary notification method to be used is the Emergency Notification System. Back-up notification capability is maintained through the use of commercial telephone systems.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

2. Notification and Mobilization of Licensee Response Organizations

The description of the methods and procedures used for alerting, notifying, and mobilizing provided in Section 3.5.2 of Part 4 of the GGNS ESP application are incorporated into this plan by reference. The following information supplements that description.

The Emergency Director directs the notification and mobilization of the site and corporate emergency response organization following the declaration of an Alert or higher level emergency. Although EOI does not expect that the augmented resources of the emergency response organization would be required for a Notification of Unusual Event, all or part of the emergency response organization may be mobilized at the Notification of Unusual Event level at the discretion of the Emergency Director.

When staffing of the Emergency Response Organization is required, or desired by the Emergency Director, affected personnel are notified by a computerized emergency notification system. The system is provided with reliable primary and backup power supplies.

Redundant notification capability is provided by the plant paging system (during normal working hours) and commercial telephone system (during non-working hours). Notification and mobilization of the emergency response organization is initiated in accordance with Emergency Plan Procedures under the direction of the Emergency Director.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

3. Message Content

The content of initial emergency notification messages from the plant to affected state and local authorities includes information addressing the class of emergency, status of any radioactive releases, the locations of any potentially-affected populations, and recommendations regarding public protective actions.

[1] In the event of a security-related attack on the site by a hostile force, a brief notification (site name, emergency classification, if determined, and nature of threat) is provided to the NRC following notification of the designated state and local authorities and within approximately fifteen minutes of the discovery of the event.

4. Follow-up Messages to Off-site Authorities

Dedicated communicators are available to maintain a continuous channel of communications with designated authorities and to provide regular updates to state and local officials approximately every 60 minutes, when conditions change or as otherwise agreed.

Follow-up messages from the plant to affected state and local authorities include the following information, to the extent the information is available and appropriate:

- Incident date, time, and location
- Name of and contact information for caller
- Emergency classification
- Information regarding any actual or potential radioactive releases, including medium (i.e., airborne, waterborne, surface spill), estimated duration/impact time, release point (including elevation, if appropriate)), chemical and physical form, and estimates of total and relative quantities and concentrations of noble gases, iodines, and particulates
- Meteorological conditions, including wind speed and direction, stability class, and precipitation
- Actual or projected exposure rates and projected integrated dose at the site boundary
- Projected exposure rates and integrated doses at the projected peak location and at 2, 5, and 10 miles, including affected sectors
- Recommended emergency actions, including protective action recommendations
- Prognosis for changes in event classification or other conditions based on current assessments of plant conditions

The actual notification form to be used is agreed upon by EOI and the affected state and local governmental organizations.

5. Disseminating Information to the Affected Public

This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

6. Instructions to the Public in the Plume Exposure EPZ

The description of the methods and procedures used for providing instructions to members of the public provided in Section 3.5.3 of Part 4 of the GGNS ESP application is incorporated into this plan by reference. The following information supplements that description.

F. Emergency Communications

EOI maintains systems and procedures that provide for prompt communications between its ERFs and between the site and off-site ERFs. The descriptions of emergency communications systems provided in Section 3.6 of Part 4 of the GGNS ESP application are incorporated into this plan by reference.

1. Description of Communication Links

EOI maintains reliable communications links both within the plant and between the plant and external emergency response organizations. Section 9.5.2 of the ESBWR DCD provides a description of communications systems that are within the scope of the certified design.

a. EOI maintains capabilities for 24-hour per day emergency notification to the state and county emergency response network. State/county warning points are manned 24 hours per day. These communication links consist of the following:

- The GGNS Operational Hot Line is used for initial notification and ongoing communications to the locations listed in Table II-4 for the duration of the emergency. Utilization of this line by GGNS activates the emergency response network by notifying each location simultaneously.
- UHF radios are available as a back-up to the GGNS Operational Hot Line. UHF Radios connect the Control Room, TSC, EOF, selected Security stations, the Tensas Parish Sheriff's Department, and the Claiborne County Sheriff's Department.

Section II.A.1.b of this plan describes responsibilities for completing the required notifications.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

b. Provisions for communicating with state and local governments include the GGNS Operational Hot Line and UHF radio systems discussed in Section II.F.1.a of this plan.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

c. Separate telephone lines are dedicated for communications with the NRC and include the following:

- Emergency Notification System (ENS): Provides for initial notifications, as well as provision of ongoing information about plant systems, status and parameters, to the NRC. ENS lines are located in the Control Room, TSC and EOF.

G. Public Education and Information

EOI maintains a coordinated program to educate affected members of the public regarding emergency notification methods and actions. The descriptions of plans for implementing a public information program provided in Section 3.7 of Part 4 of the GGNS ESP application are incorporated into this plan by reference.

1. Public Information Program

EOI coordinates with affected state and local authorities to disseminate pertinent emergency response information to members of the public in the Plume Exposure Pathway EPZ at least once each calendar year. Information is provided via a number of methods to effect the widest practical dissemination. Distribution methods may include providing informational publications, such as brochures or calendars through mailings to individual households. Emergency public information may also be distributed in telephone directories and utility bills, through public information postings, and information distributed via local media outlets. The distributed information includes:

a. Educational information on radiation

b. Information regarding notification methods and immediate actions

c. Protective measures, such as information addressing evacuation routes, relocation centers, sheltering, respiratory protection, and radioprotective drugs

d. Information addressing special needs of the handicapped

e. Point of contact for additional information

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

2. Distribution and Maintenance of Public Information

EOI coordinates with affected state and local authorities to disseminate pertinent emergency response information to members of the public in the Plume Exposure Pathway EPZ at least once each calendar year. Written information applicable to permanent residences is provided in a form that is likely to be maintained in the residence (e.g., calendars, brochures) so it is available during an emergency.

Information intended for transients (individuals on vacation in, camping in, or traveling through the Plume Exposure Pathway EPZ), may include public postings, publications provided to hotels, motels, and campgrounds, and information published in telephone directories. These sources of information provide transients sources for local emergency information, such as local radio and television stations.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

H. Emergency Facilities and Equipment

The descriptions of ERFs provided in Section 3.8 of Part 4 of the GGNS ESP application are incorporated into this plan by reference.

1. On-site Emergency Response Facilities

Control Room

The Control Room is the initial location for command and control of the emergency response effort. Controls and instrumentation needed to diagnose plant conditions and to take immediate actions to place the affected unit(s) in a safe condition are available in the Control Room. Within the Control Room, the Emergency Coordinator has access to the information needed to classify the emergency. Redundant communication systems are also available in the Control Room to make the required on-site and off-site notifications. The Control Room has the required shielding and ventilation system to remain habitable during the emergency. Access to the Control Room is limited to those individuals responsible for carrying out assigned emergency response tasks plus other technical advisors, as necessary.

Technical Support Center (TSC)

The mission of the TSC is to provide an area and resources for use by personnel providing plant management and technical support to the plant operating staff during emergency evolutions. The TSC relieves the reactor operators of peripheral duties and communications not directly related to reactor system manipulations and prevents congestion in the Control Room. Communications needs are provided for the staff within the TSC, and between the TSC and the plant (including the Control Room and OSC), the EOF, EOI management, outside authorities (including the NRC), and the public.

The description of the TSC provided in Section 13.3 of the ESBWR DCD is incorporated into this plan by reference.

Operations Support Center (OSC)

The OSC provides a centralized area and the necessary supporting resources for the assembly of designated operations support personnel during emergency conditions. The OSC, located in the Service Building, includes dedicated telephones to facilitate communications with the Control Room and the TSC and one or more additional telephones providing communications with both on-site and off-site locations. This permits personnel reporting to the OSC to be assigned to duties in support of emergency operations.

Designated plant support personnel, as indicated in Section II.B of this plan, assemble in the OSC to provide support to both the Control Room and TSC. The primary function of the OSC staff is to dispatch assessment, corrective action, and rescue personnel to locations in the plant, as directed by the TSC and Control Room.

I. Accident Assessment

The descriptions of provisions for accident assessment provided in Section 3.9 of Part 4 of the GGNS ESP application are incorporated into this plan by reference.

1. Parameters Indicative of Emergency Conditions

Appendix 1 of this plan identifies plant system and effluent parameter values that are indicative of off-normal or accident conditions. Appendix 1 of this plan includes the various indications that correspond to the emergency initiating conditions based on the methodology provided in NEI 07-01. Facility procedures specify the types and capabilities of the instruments used to indicate emergency conditions.

2. Plant Monitoring Systems

Appendix 2 of this plan provides information regarding plant monitoring systems that are significant to continuing radiological assessment. Subsection 1.2.2.15 of the ESBWR DCD provides a description of the ESBWR Post-Accident Sampling System.

3. Determination of Source Term and Radiological Conditions

a. Appendix 2 of this plan describes the means for relating various measured parameters, including containment radiation monitor reading, to the source term available for release within plant systems.

b. Appendix 2 of this plan describes the means for relating various measured parameters, including effluent monitor readings, to the magnitude of the release of radioactive materials.

4. Relationship Between Effluent Monitor Reading and Exposure and Contamination Levels

Emergency Plan Procedures include the relationship between effluent monitor readings and on-site and off-site exposures and contamination for various meteorological conditions.

Appendix 2 provides a description of the emergency dose assessment program used at GGNS 3. Information includes dose and dose rate determinations based on plant effluent monitors, and contamination estimates based on deposition assumptions and meteorological conditions.

5. Meteorological Information

Section II.H.X8X and Appendix 2 of this plan provide a description of the meteorological monitoring systems that are used to provide initial values and continuing assessment of meteorological conditions under emergency conditions.

J. Protective Response

The descriptions of protective response measures provided in Section 3.10 of Part 4 of the GGNS ESP application are incorporated into this plan by reference.

1. On-Site Notification

EOI establishes methods to inform personnel within the site boundary of an emergency condition requiring individual action. EOI informs individuals located within the protected area, including employees, contractors, and visitors, primarily via use of the plant public announcement system and audible warning systems, including the Evacuation Alarm and Remote Warning System, as described in DCD Subsection 9.5.2. In high noise areas or other areas where these systems may not be audible, other measures, such as visible warning signals or personal notifications, may be used.

EOI informs individuals located outside of the controlled area via audible warnings provided by warning systems and the activities of the Security Force (e.g., vehicle-mounted public address systems) and if needed, local law enforcement personnel. EOI provides information regarding the meaning of the various warning systems and the appropriate response actions via plant training programs, visitor orientation, escort instructions, posted instructions, or within the content of audible messages. Escorts provide response instructions to visitors who may not be trained to take specific emergency response actions.

EOI maintains the ability to notify individuals within the Protected Area within about 15 minutes of the declaration of any emergency requiring individual response actions, such as accountability or evacuation.

2. Evacuation Routes and Transportation

EOI establishes and maintains pre-planned site evacuation routes consistent with Emergency Plan Procedures. EOI has provided the secondary route to provide for site evacuation in the event that the primary route is rendered impassable, such as due to radiological or meteorological conditions or other impediments to evacuation.

Affected individuals evacuate the site via personal vehicles. If any individual on site does not have access to a personal vehicle, the Security Force makes arrangements for transportation with another evacuating individual.

EOI informs individuals of the evacuation routes and appropriate instructions via plant training programs, visitor orientation, escort instructions, posted instructions, or within the content of audible messages.

Should site evacuation via either designated evacuation route be determined to be inadvisable due to adverse conditions (e.g., weather-related, radiological, or traffic density conditions), EOI directs affected individuals to a safe on-site area (as determined by the Emergency Director or his designee)

K. Radiological Exposure Control

The descriptions of radiological exposure control measures provided in Section 3.11 of Part 4 of the GGNS ESP application are incorporated into this plan by reference.

On-Site Exposure Guidelines and Authorizations

EOI implements on-site exposure guidelines for emergency response personnel consistent with those published in EPA 400-R-92-001, Table 2-2, "Guidance on Dose Limits for Workers Performing Emergency Services." The applicable guidelines are provided in Table II-6 of this plan.

Prior to activation of the EOF, the Emergency Director, in consultation with facility Radiation Protection personnel, is responsible for authorization of any emergency exposures resulting in doses exceeding the numerical values of the occupational dose limits provided in 10 CFR Part 20. Following activation of the EOF, the Off-site Emergency Coordinator, in consultation with Radiation Protection personnel, authorizes any exposures in excess of the numerical values of the occupational dose limits provided in 10 CFR Part 20. If exposures in excess of the numerical values of the occupational dose limits provided in 10 CFR Part 20 are required, these exposures are limited to individuals who are properly trained and knowledgeable of the tasks to be completed and the risks associated with the exposures. Selection criteria for volunteer emergency workers include consideration of those who are in good physical health, are familiar with the consequences of emergency exposure, and are not a "declared pregnant adult." It is preferable, though not mandatory, that volunteers be older than 45 years of age and not be a female capable of reproduction. Efforts are made to maintain personnel doses ALARA.

Table II-6 - Emergency Worker Exposure Guidelines

	Dose Guideline in Rem		
Activity	**TEDE**	**Lens of the Eye**	**Other Organs**
Any activity other than those specifically authorized below	5	15	50
Protecting Valuable Property	10	30	100
Lifesaving or Protection of Large Populations	25	75	250
Lifesaving or Protection of Large Populations[Note 1]	>25	>75	>250

Note 1: This guideline applies only to volunteers who are fully aware of the risks involved.

L. Medical and Public Health Support

The descriptions of plans for medical and public health support provided in Section 3.12 of Part 4 of the GGNS ESP application are incorporated into this plan by reference.

1. Hospital and Medical Support

EOI has established agreements with Claiborne County Hospital (primary provider), located in Port Gibson, MS, and River Region Medical Center (back-up provider), located in Vicksburg, MS, under which these facilities provide medical services for injured personnel from GGNS 3. Radiation monitoring equipment, dosimeters, and protective clothing are available at the facilities.

Claiborne County Hospital and River Region Medical Center maintain appropriate radiological control capabilities through training courses supported by EOI consistent with Section II.O of this plan, periodic drills and exercises consistent with Section II.N of this plan, and material support provided consistent with agreements between EOI and the medical support providers.

If medical treatment of the injured and/or contaminated personnel requires assistance or medical expertise beyond the capabilities of the local facilities, the patients would be transferred to a support hospital. GGNS 3 has an agreement with The Ochsner Clinic, located in New Orleans, LA, to provide hospital and medical services for injured/contaminated or overexposed personnel.

Appendix 7 of this plan provides copies of the relevant certification letters.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

2. On-Site First Aid Capability

EOI maintains a trained First Aid Team at the site to provide 24-hour per day first aid support. EOI maintains First Aid Team readiness through training consistent with Section II.O of this plan and drills and exercises consistent with Section II.N of this plan. Appendix 6 of this plan provides a description of first aid supplies and equipment to be maintained at the facility.

3. Emergency Medical Facilities Within the Affected States

This NUREG-0654 criterion does not apply to the licensee, but to state and local plans. Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

4. Medical Emergency Transportation

Transportation of injured persons from GGNS 3 to the medical facility is normally provided by regional ambulance service. In the event that these services are unavailable, provisions are in place to transport

O. Radiological Emergency Response Training

1. General

EOI implements a training program that provides for initial training and retraining for individuals who have been assigned emergency response duties, including both on-site staff and off-site individuals who may be called on to provide assistance in the event of an emergency.

The description of the emergency preparedness training program provided in Section 3.15 of Part 4 of the GGNS ESP application is incorporated into this plan by reference.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

a. Off-site Emergency Response Training

EOI conducts, or supports the conduct of, site-specific training for off-site personnel who may be called upon to provide assistance in the event of an emergency. This includes emergency responders employed by agencies identified in Section II.A of this plan. The affected agencies include local fire, law enforcement, ambulance, and hospital services. Assistance may be provided as needed by personnel from Training, Health Physics, Operations, Security, or Corporate Communications. This emergency plan training includes the following topics as a minimum:

- Grand Gulf Nuclear Station site layout
- Communications interfaces and procedures between the on-site organizations and the off-site support agencies
- Expected responses to emergencies
- Anticipated protective actions
- Basic health physics and radiation protection
- Primary and alternate plant access routes and access procedures

Local civil defense/emergency preparedness personnel are provided training through participation in joint utility/state/local status meetings, through invitations to attend the training offered to the agencies listed above, and through their respective state emergency management agencies.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

b. Mutual Aid Agreements

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

P. Responsibility for the Planning Effort

EOI implements an organizational structure and processes to periodically review, update, audit, distribute and control this plan consistent with facility quality assurance and document control requirements. EOI also implements a program to provide training to personnel responsible for the emergency planning effort appropriate to their duties and responsibilities.

The descriptions of plans for maintaining emergency preparedness provided in Section 3.16 of Part 4 of the GGNS ESP application are incorporated into this plan by reference.

1. Training

EOI implements a process to provide training for the emergency planning coordinator and support staff so as to support effective implementation of the emergency planning effort, consistent with applicable regulatory requirements and guidance, license conditions, other commitments, and accepted good practices. Training may include formal education, professional seminars, plant-specific training, industry meetings, and other activities and forums that provide for an exchange of pertinent information.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

2. Responsibility for Radiological Emergency Response Planning

The senior site executive holds the overall authority and responsibility for ensuring that an adequate level of emergency preparedness is maintained.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

3. Emergency Planning Coordinator

The emergency planning coordinator exercises responsibility for development and updating of site emergency plans and coordination of these plans with other response organizations. The EOI corporate staff may augment these on-site efforts as needed to support a comprehensive emergency preparedness effort.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

4. Plan Reviews and Updates

The emergency planning coordinator is responsible for conducting or coordinating an annual review of this plan to determine that the plan and its supporting agreements are current. This review includes consideration of any changes that may be necessary to address issues identified during the course of drills, exercises, and actual emergency events. The emergency planning coordinator also reviews and updates the plan and agreements as

2.1 Meteorological Measurements

Appendix 2 to NUREG-0654-FEMA-REP-1, provides clarification of the requirement in 10 CFR 50 Appendix E that "the nuclear power plant operator shall have meteorological measurements from primary and backup systems."[9]

Unit 3 relies on the existing GGNS Unit 1 meteorological data system, which includes an on-site meteorological tower, located approximately 5,300 feet northwest of the facility. The facility also utilizes a back-up meteorological system which provides meteorological information to the Control Room, if the primary meteorological system fails, as described in Subsection 2.7.5.2.2 of Part 3 of the GGNS Early Site Permit Application. In the unlikely event that both the primary and backup meteorological systems are inoperable, the tertiary means of obtaining wind speed and direction data is through the National Weather Service or the U.S. Army Corps of Engineers, Waterway Experiment Station in Vicksburg, MS.

The on-site meteorological measurements program has been designed to meet requirements at least as stringent as those described in Regulatory Guide 1.23 as well as NUREG-0654/FEMA-REP-1.

The on-site meteorological measurement system provides data to the Control Room and personnel via the plant computer. Meteorological parameters are reported at less than or equal to ten second reading, a fifteen minute average, and hourly averages. These measurements are described in Subsection 2.7.5 of the GGNS Early Site Permit Application.

This design addresses the guidance provided in Supplement 1 to NUREG-0737[10].

2.2 Atmospheric Transport and Diffusion Assessment

Atmospheric transport and diffusion assessment requirements are discussed in Appendix E to 10 CFR 50, which states, "the means to be used for determining the magnitude of and for continually assessing the impact of the release of radioactive material shall be described.[11]" Two classes of atmospheric transport and diffusion models are discussed in NUREG-0654/FEMA-REP-1. This Appendix discusses the model used for GGNS, which addresses guidance associated with the "Class B" model described in Appendix 2 of NUREG-0654/FEMA-REP-1, "a numerical model which predicts the spatial and temporal variations of plume distribution and provides estimates of deposition and relative concentration of radioactivity within

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[9] NUREG-0654, Rev. 1, Appendix 2, "Meteorological Criteria for Emergency Preparedness at Operating Nuclear Power Plants," Washington, DC, November 1980
[10] U.S. Nuclear Regulatory Commission, NUREG-0737, Supplement 1, "Clarification of TMI Action Plan Requirements," Washington, DC, January 1983
[11] 10 CFR 50, Appendix E, IV.B

ATTACHMENT 69

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-69

RAI QUESTION NO. 13.03-69

NRC RAI 13.03-69

SITE-10: Exercises and Drills
Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(14); Appendix E to 10 CFR Part 50; NUREG-0654/FEMA-REP-1, Evaluation Criterion N.2.a; Evaluation Criterion N.2.e (2)
SRP ACCEPTANCE CRITERIA: Requirements A and B; Acceptance Criteria 1 and 2

A. Section II.N.2.a, "Communication Drills," states that EOI tests communication with affected state agencies within the Ingestion Pathway EPZ, as identified in Section II.A, "Assignment of Responsibility (Organization Control)" of the GGNS Emergency Plan, at least once each calendar quarter. Provide further information that describes the communications testing with Federal emergency response organizations within the ingestion pathway on a quarterly basis.

Entergy Response

A. Clarifying information to specify that communications with Federal agencies are included in the quarterly communication drills has been added to the COLA as noted below.

Proposed COLA Revisions

GGNS COLA Part 5, Section II.N.2.a will be revised as indicated in the attached draft markup.

Markup of Grand Gulf COLA

The following markup represents Entergy's good faith effort to show how the COLA will be revised in a future COLA submittal in response to the subject RAI. However, the same COLA content may be impacted by revisions to the ESBWR DCD, responses to other COLA RAIs, other COLA changes, plant design changes, editorial or typographical corrections, etc. As a result, the final COLA content that appears in a future submittal may be somewhat different than as presented herein.

The activities undertaken in the event of an actual declared emergency may be used to satisfy emergency drill requirements, provided that these activities demonstrate adequate execution of the specified activities.

The drill program includes the following:

a. Communications Drills

EOI tests communications with state and local governments within the Plume Exposure Pathway EPZ, as identified in Section II.XAX of this plan, at least once each calendar month.

EOI tests communications with affected state and federal agencies within the Ingestion Pathway EPZ, as identified in Section II.A of this plan, at least once each calendar quarter.

Communications between GGNS, state and local EOCs, and field assessment teams are tested on an annual basis.

Communications drills evaluate both the operability of the communications system(s) and the ability to understand message content.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

b. Fire Drills

EOI conducts fire drills as required by Section 9.5.1 of the GGNS 3 Final Safety Analysis Report. EOI conducts a drill on an annual basis to determine the effectiveness of the local fire department working in conjunction with the Fire Brigade.

c. Medical Emergency Drills

EOI conducts medical emergency drills that include a simulated contaminated injured individual and participation by the local support services agencies (e.g., medical transportation and off-site medical treatment facility) at least once each calendar year.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

d. Radiological Monitoring Drills

EOI conducts radiological monitoring drills, involving both on-site and off-site radiological monitoring activities, at least once each calendar year. Radiological monitoring drills include collection and analysis of those sample media for which the facility is responsible, communications with monitoring teams, and recordkeeping activities. EOI may coordinate radiological monitoring drills with those drills conducted by state and local government entities, or may conduct these drills independently.

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

ATTACHMENT 70

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-70

RAI QUESTION NO. 13.03-70

NRC RAI 13.03-70

SITE-10: Exercises and Drills
Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(14); Appendix E to 10 CFR Part 50; NUREG-0654/FEMA-REP-1, Evaluation Criterion N.2.a; Evaluation Criterion N.2.e (2)
SRP ACCEPTANCE CRITERIA: Requirements A and B; Acceptance Criteria 1 and 2

B. Section II.N.2.e.(2), "Health Physics Drills," states that EOI conducts on-site Health Physics drills at least semi-annually. Health Physics drills include the use of the Post-Accident Sampling System, response to, and analysis of, simulated elevated airborne and liquid samples, and direct radiation measurements in the environment. Provide clarifying information that describes Health Physics drills that include the analysis of in-plant liquid samples with actual elevated radiation levels including the use of the Post-Accident Sampling System on an annual basis.

Entergy Response

B. Section II.N.2.e incorrectly refers to "use of the Post-Accident Sampling System." As discussed below, such a system is not present in the ESBWR design and therefore would not be used in Health Physics drills. The Emergency Plan will be revised to clearly indicate that Health Physics drills will be conducted semi-annually including:

- Response to and analysis of simulated elevated airborne and liquid samples and direct radiation measurements in the environment; and
- Analysis of in-plant liquid samples with simulated or actual elevated radiation levels.

By letter dated November 30, 2000 (ADAMS Accession No. ML003781582), the BWR Owners Group (BWROG) submitted Topical Report NEDO-32991, "Regulatory Relaxation for BWR Post Accident Sampling Stations (PASS)," dated October 2000. That submittal included the basis for the elimination of all regulatory requirements related to the PASS for boiling water reactors (BWRs), subject to certain conditions, including development of contingency plans for obtaining and analyzing highly radioactive reactor coolant, suppression pool, and containment atmospheric samples.

By letter dated June 12, 2001 (ADAMS Accession No. ML011630016), the NRC concluded that it is acceptable to eliminate PASS from the licensing basis for BWRs, contingent on three proposed licensee commitments, as identified in the safety evaluation accompanying that letter. The NRC-approved version of NEDO-32991, which included the NRC's Safety Evaluation, subsequently was issued as NEDO-32991-A (ADAMS Accession No. ML012260048). Accordingly, the PASS is not included in the ESBWR design, as documented in the ESBWR DCD, Table 1.9-9, "Summary of Differences from SRP Section 9." Because the PASS is not included in the ESBWR design, there are no Health Physics drills that include the use of a Post-Accident Sampling System.

Proposed COLA Revision

Section II.N.2.e of the Grand Gulf Unit 3 Emergency Plan (Part 5) will be revised as shown on the attached markup with regard to Health Physics Drills.

Markup of Grand Gulf COLA

The attached markup represents Entergy's good faith effort to show how the COLA will be revised in a future COLA submittal in response to the subject RAI. However, the same COLA content may be impacted by revisions to the ESBWR DCD, responses to other COLA RAIs, other COLA changes, plant design changes, editorial or typographical corrections, etc. As a result, the final COLA content that appears in a future submittal may be somewhat different than as presented herein.

e. Health Physics Drills

EOI conducts on-site Health Physics drills at least semi-annually. Health Physics drills include ~~use of the Post Accident Sampling System, response to, and analysis of, simulated elevated airborne and liquid samples, and direct radiation measurements in the environment.~~:

- Response to and analysis of simulated elevated airborne and liquid samples and direct radiation measurements in the environment
- Analysis of in-plant liquid samples with simulated or actual elevated radiation levels

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

f. External Threat-Based Drills

EOI conducts an integrated terrorist-action based drill consistent with applicable NRC requirements.

3. Conduct of Drills and Exercises

EOI implements a process to provide for effective preparation for and conduct of drills and exercises. EOI develops drill and exercise scenarios and related materials that clearly establish the following:

a. Basic objectives and evaluation criteria

b. Date, time period, location, and participating organizations

c. Simulated events

d. Time schedule of real and simulated initiating events

e. Narrative summary describing the conduct of the exercise or drill, including items such as simulated casualties, off-site response to the facility, personnel rescue, use of protective equipment, monitoring team deployment, and public information activities

f. Arrangements for official observers and the advance materials to be provided to them

Appendix 8 of this plan provides a cross-reference to these provisions in State and Local Plans, as applicable.

4. Exercise and Drill Evaluation

One or more qualified instructors/evaluators supervises and evaluates drills and exercises. A qualified instructor/evaluator is an individual whose knowledge, skills, and abilities have been evaluated by the emergency planning coordinator or his designee and determined to be sufficient for observing and evaluating the planned activities against the established criteria. For example, a qualified instructor/evaluator may be an individual who has been trained to fill the emergency response position to be observed or may be a supervisor or instructor for the position.

EOI makes arrangements for exercises to be critiqued by federal and state observers/evaluators.

ATTACHMENT 71

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

RAI QUESTION NO. 13.03-71

RAI QUESTION NO. 13.03-71

NRC RAI 13.03-71

SITE- 13: Emergency Facilities and Equipment
Basis: 10 CFR 52.79(a)(21); 10 CFR 50.47(b)(8); Section IV.E of Appendix E to 10 CFR Part 50; Appendix E to 10 CFR Part 50; Section VI.1, 2a.-.2c, .3a-.3c, and .4a-.4d of Appendix E to 10 CFR Part 50; NUREG-0654/FEMA-REP-1, Evaluation Criterion H.2; Evaluation Criterion H.5 SRP ACCEPTANCE CRITERIA: Requirements A and B; Acceptance Criteria 1, 2, and 12

A. Section II.H.5, "On-site Monitoring Systems" states that EOI maintains and operates on-site monitoring systems needed to provide data that is essential for initiating emergency measures and performing accident assessment. This includes monitoring systems for geophysical phenomena, radiological conditions, plant processes, and fire hazards. Provide further information to demonstrate compliance with the requirements of 10 CFR Part 50, Appendix E.VI., "Emergency Response Data System."

Entergy Response

A. The Emergency Response Data System (ERDS) will be designed and implemented to meet the provisions of 10 CFR Part 50, Appendix E, Section VI, as discussed below.

The on-site monitoring systems provide data to comply with the applicable requirements of 10 CFR Part 50, Appendix E, Section VI, "Emergency Response Data System." ERDS obtains parameter values from the installed plant information systems, formatting to meet the protocol required for receipt by the NRC software, and transmitting though a dedicated data feed to the NRC.

The frequency of the parameter value update is no longer than once per 60 seconds and no more frequent than once per 15 seconds.

10 CFR Part 50, Appendix E, Section VI 2.a.(ii) lists specific parameters that must be transmitted from boiling water reactors via the ERDS. Some of the specified parameters are not applicable to the ESBWR due to the types of systems that provide required functions. The table titled "ESBWR ERDS Parameter Applicability," (provided with this response) lists the required parameters in the regulation and, for each, the following information:

- The compliant parameters from the ESBWR or corresponding alternative
- Indication of non-applicability.
- Alternative parameters corresponding to the regulatory required parameter

Proposed COLA Revisions

None

ESBWR ERDS Parameter Applicability	
10 CFR Part 50, Appendix E.VI 2.a.(ii) Parameter Requirement	**Corresponding ESBWR Parameter**
(1) Reactor coolant system:	
Reactor pressure	Reactor pressure
Reactor vessel level	Reactor vessel level
Feedwater flow	Feedwater flow
Reactor power	Reactor power
(2) Safety injection:	
Reactor core isolation cooling flow	No RCIC in ESBWR, corresponding parameter is Isolation Condenser System mass flow rate in condensate return line
High-pressure coolant injection	Not applicable, high pressure injection is not safety related
High-pressure core spray flow	Not applicable, no core spray systems in ESBWR
Core spray flow	Not applicable, no core spray systems in ESBWR
Low-pressure coolant injection flow	Not applicable, low pressure injection is not safety related
Condensate storage tank level	Condensate storage tank level and Gravity drain cooling system pools water levels

ESBWR ERDS Parameter Applicability	
10 CFR Part 50, Appendix E.VI 2.a.(ii) Parameter Requirement	**Corresponding ESBWR Parameter**
(3) Containment: Drywell pressure, Drywell temperatures Drywell sump levels, Hydrogen and oxygen concentrations Suppression pool temperature Suppression pool level	 Drywell pressure Drywell temperatures Drywell sump level and Drywell water level Hydrogen and oxygen concentrations Suppression pool temperature Suppression pool level and Gravity drain cooling system pools water levels
(4) Radiation monitoring system: Reactor coolant radioactivity level Primary containment radiation level Condenser off-gas radiation level Effluent radiation monitor Process radiation levels	 Reactor coolant radioactivity level Containment and drywell radiation levels Condenser off-gas radiation level Effluent radiation monitors Process radiation levels
(5) Meteorological data: Wind speed Wind direction Atmospheric stability	Same data as is transmitted for GGNS Unit 1: Wind speed Wind direction Atmospheric stability

ATTACHMENT 72

G3NO-2008-00023

RESPONSE TO NRC RAI LETTER NO. 19

REGULATORY COMMITMENTS

REGULATORY COMMITMENTS

The following table identifies those actions committed to by Entergy in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE (If Required)
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
Revise COLA Part 5, Emergency Plan as described in the response to the following Letter 19 RAIs: 13.03-18 – Attachment 18 to this response 13.03-58 – Attachment 58 to this response 13.03-62 – Attachment 62 to this response 13.03-63 – Attachment 63 to this response 13.03-64 – Attachment 64 to this response 13.03-65 – Attachment 65 to this response 13.03-68 – Attachment 68 to this response 13.03-69 – Attachment 69 to this response 13.03-70 – Attachment 70 to this response	✓		Future COLA submittal.
Revise the report, "Grand Gulf Nuclear Station Development of Evacuation Time Estimates" (included as Supplemental Information in COLA Part 5), as described in the following RAI responses to the attached to this letter and as compiled in Supplement 1 to the subject report which is provided in Enclosure 1, RAI_LTR19_Supp1_ETE.pdf, to this letter. 13.03-1 – Attachment 1 to this response 13.03-3 – Attachment 3 to this response 13.03-4 – Attachment 4 to this response 13.03-5 – Attachment 5 to this response 13.03-6 – Attachment 6 to this response 13.03-7 – Attachment 7 to this response 13.03-8 – Attachment 8 to this response 13.03-10 – Attachment 10 to this response 13.03-14 – Attachment 14 to this response 13.03-15 – Attachment 15 to this response 13.03-16 – Attachment 16 to this response 13.03-17 – Attachment 17 to this response 13.03-18 – Attachment 18 to this response 13.03-19 – Attachment 19 to this response 13.03-20 – Attachment 20 to this response 13.03-22 – Attachment 22 to this response 13.03-24 – Attachment 24 to this response 13.03-26 – Attachment 26 to this response 13.03-27 – Attachment 27 to this response 13.03-28 – Attachment 28 to this response	✓		Future COLA Submittal

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE (If Required)
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
13.03-29 – Attachment 29 to this response 13.03-30 – Attachment 30 to this response 13.03-31 – Attachment 31 to this response 13.03-32 – Attachment 32 to this response 13.03-42 – Attachment 42 to this response 13.03-43 – Attachment 43 to this response 13.03-45 – Attachment 45 to this response 13.03-47 – Attachment 47 to this response 13.03-52 – Attachment 52 to this response			