

CCNPP3COLA PEmails

From: John Rycyna
Sent: Wednesday, November 05, 2008 2:38 PM
To: Wrobel, George
Cc: CCNPP3COL Resource; Joseph Colaccino; Eric Weiss; Kevin Williams
Subject: Draft RAI No 36 ORLT 1194.doc (P)
Attachments: Draft RAI No 36 ORLT 1194.doc

George,

Attached is DRAFT RAI No. 36. You have ten working days to review it and to decide whether you need a conference call to discuss it. After the call or after ten days the RAI will be finalized and sent to you. You then have 30 days to respond.

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Calvert Cliffs Unit 3
UniStar
Docket No. 52-016
SRP Section: 13.03 - Emergency Planning
Application Section: 13.03

QUESTIONS for Licensing and Inspection Branch (NSIR/DPR/LIB (EP))

13.03-3

RAIs ETE-1 through ETE-17 – Evacuation Time Estimate (ETE) – RAIs 1 through 17 address the August 2002, “Evacuation Time Estimate within the Plume Exposure Pathway Emergency Planning Zone for the Calvert Cliffs Nuclear Power Plant Revision 6,” prepared by Calvert Cliffs Nuclear Power Plant, Inc. The ETE is referenced in Appendix 5 of the Emergency Plan, with the full report included as a separate document. Please provide the following information regarding the ETE.

ETE-1: Subject: Preparation of an Evacuation Time Estimate

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47, 10 CFR Part 50 Appendix E

SRP ACCEPTANCE CRITERIA: Requirements A, B, E, and H; Acceptance Criterion 11

Section 1.1, “Purpose,” (page 1-1) of the Calvert Cliffs Nuclear Power Plant (CCNPP) Evacuation Time Estimate (ETE) states that the results of the study reflects changes in population and the road network which occurred since the last revision in 1998. Data for this revision was collected until December 21, 2001. The ETE does not mention the addition of Unit 3 at the CCNPP site or evaluate the affect it would have on the evacuation time estimate. Explain why the ETE does not mention the addition of Unit 3 and the effect the activities surrounding its construction and operation will have on evacuation.

ETE-2: Subject: Population Projections

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47, 10 CFR Part 50 Appendix E, RG 1.206

SRP ACCEPTANCE CRITERIA: Requirements A, B, E, and H; Acceptance Criterion 11

A. Section 2, “Study Area Description,” (page 2-6) states that the population increased 10% from 1997 to 2000. Population estimates for the counties in the Plume Exposure Pathway Emergency Planning Zone (EPZ) are listed as: Calvert County 34,345; St. Mary’s County 100,378; and Dorchester County 31,846. These values do not agree with those in the Environmental Report. The following information needs to be provided and addressed in a revision to the Evacuation Time Estimate:

1. A current estimate of the population in the EPZ which includes Calvert County, St. Mary’s County, and Dorchester County. If it is assumed that the population is unchanged, provide the basis for the assumption.
2. A projection of the population though the construction period which is scheduled through 2015;

3. Updated maps, figures, and tables should be provided along with any updates to population data;
4. An explanation for differences between the estimates in the Environmental Report and the Evacuation Time Estimate.

B. Section 3.2.3, "Assumptions Used in Developing the Evacuation Time Estimates," (page 3-4) states that the 2000 Census was used as interpreted by the Maryland Department of Planning. Discuss what is meant by "as interpreted by the Maryland Department of Planning." Provide additional information to explain whether the actual Census values were used or if those values were adjusted. If they were adjusted, an explanation of this process should also be provided.

ETE-3: Subject: Site Location and Emergency Planning Zone

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47, 10 CFR Part 50 Appendix E, NUREG-0654/FEMA-REP-1; Appendix 4 Section I.A

SRP ACCEPTANCE CRITERIA: Requirements A, B, E, and H; Acceptance Criterion 11

Figure 2-1, "Site Vicinity Protective Action Zones and Reception Centers Plume Exposure Pathway EPZ," (Page 2-12) provides a vicinity map of the Plume Exposure Pathway Emergency Planning Zone (EPZ) as of August 2002. Surrounding communities, political boundaries, and the location of the new unit are not identified. Provide a map that includes any information that may update the 2002 map in the ETE. This map should clearly define surrounding communities, political boundaries, and the location of the new unit.

ETE-4: Subject: General Assumptions

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47, 10 CFR Part 50 Appendix E, NUREG-0654/FEMA-REP-1; Appendix 4 Section I.B, IV.B.1, IV.B.2, IV.B.3

SRP ACCEPTANCE CRITERIA: Requirements A, B, E, and H; Acceptance Criterion 11

A. Section 3.1, "The NETVAC2 Computer Model," (page 3-1) states that the NETVAC2 computer model that is used to calculate evacuation time estimates uses the 1985 Highway Capacity Manual as its prime reference to calculate capacity and vehicle flow on the roadway network. The following information needs to be provided and addressed in a revision to the Evacuation Time Estimate:

1. An explanation for the effect of using a more current version of the Highway Capacity Manual would have on evacuation estimates presented in this study.

B. The NETVAC2 Computer Model assumes that there is no cross traffic and all roads are open. This does not take into account that some people from outside the area may be passing through during the evacuation and add to loading on the network. It also does not account for the possibility of accidents which have a higher probability of occurrence as the traffic density increases. Provide a basis for these assumptions and an explanation for the effect that eliminating them would have on evacuation estimates.

C. Section 3.2.1, "Assumptions for Vehicle Demand Estimation," (page 3-2/3) states that the vehicle demand estimations were based on population average occupancy data obtained from 2000 census data and subsequent updated information. Provide clarification for what is considered to be "subsequent updated information."

D. For the assumptions made in Section 3.2.1, “Assumptions for Vehicle Demand Estimation,” (page 3-2/3) for average household size and vehicle occupancy factors for the general population and other population sub-groups, provide the following information:

1. Population numbers used to determine vehicle demand estimation need to be adjusted to include current values or an explanation needs to be provided to clarify why the values used are accurate. For those values that are used, the basis for using them should be provided.
2. Provide information to explain the effect that adjusting the vehicle demand estimation would have on evacuation times.
3. The vehicle occupancy factor does not account for those households that may evacuate before a commuter returns home. The commuter may then evacuate from work and not return home. Clarify whether households that may evacuate before a commuter returns home were considered. If not, provide information on this population group and an analysis of the effect this would have on evacuation times.
4. The estimation does not consider weekends which could produce varying results due to the fact that children are not in school and a majority of people will not be at work. This also does not include increases in the transient population and permanent residences performing outdoor activities that normally do not occur during a work week. Clarify whether weekend activities were considered. If not, provide an analysis of the effect weekend activities would have on evacuation times.

E. Section 3.2.2, “Public Response Times and Network Loading Rates,” (page 3-3) provides assumptions for individual response activities. Nighttime response only includes notification and evacuation. Section 2.4, “Evacuation Scenarios,” (page 2-10) states that the nighttime scenarios include nighttime employees. Based on this statement, it would appear that the mobilization activities for nighttime employees were not included in the estimation of response times in Section 3.2.2. Clarify whether or not nighttime workers have been considered in the ETE.

F. Section 3.2.3, “Assumptions Used in Developing the Evacuation Time Estimates,” (Page 3-4) states the time to notify the population inside the Plume Exposure Pathway Emergency Planning Zone (EPZ) is 15 minutes and no vehicles will evacuate until 30 minutes following initial notification. Everyone that is notified and only those notified are assumed to evacuate.

1. Provide the basis for this 30 minute period where no one is evacuating.
2. Provide justification for the assumption that only those instructed to evacuate will evacuate.

G. The Evacuation Time Estimate (ETE) assumes that all traffic control points will be manned by police and that traffic lights will be overridden. This information is in the County Radiological Emergency Plan and Standard Operating Procedures but is not included in the ETE.

1. Provide a summary of this information in the evacuation time estimate.
2. Provided information on the timeframe used to establish traffic control points.
3. Provide information to determine that sufficient staffing is available for all traffic

control points. If staffing is not sufficient, how will it affect the evacuation estimates?

H. Section 3.2.3, "Assumptions Used in Developing Evacuation Time Estimates," (page 3-5) states that traffic control personnel will prevent vehicles from entering the EPZ. Section 3.2.2, "Public Response Times and Network loading Rates," (page 3-3) states employees will be returning home from work before evacuating. Explain whether or not employees working outside the EPZ will be returning home prior to evacuating.

ETE-5: Subject: The Transit Dependent Population

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47, 10 CFR Part 50 Appendix E, NUREG-0654/FEMA-REP-1; Appendix 4 Section II.A, IV.B.1, IV.B.2, IV.B.4, IV.B.5, IV.B.6

SRP ACCEPTANCE CRITERIA: Requirements A, B, E, and H; Acceptance Criterion 11

A. In Section 3.2.3, "Assumptions Used in Developing the Evacuation Time Estimates," (page 3-4) the assumption is made that households without vehicles will receive rides from neighbors based on the sufficient number of vehicles in the Plume Exposure Pathway Emergency Planning Zone (EPZ). The availability of vehicles in the EPZ does not necessarily mean they will be available to those that need them. The section does state that local emergency plans include information on the evacuation of those without transportation which is a contradiction of the ridesharing assumption. The following information needs to be provided:

1. An assessment of the number of residents without vehicles that will require transportation assistance.
2. Information regarding how this assistance will be provided should be included to verify that the assumption is correct.
3. Locations of pickup points and an explanation regarding how passengers are expected to get there.
4. Clarify whether the transportation used is available and sufficient to evacuate all transit dependent people in one wave. If not, will a second wave be used?
5. An evacuation estimate that includes the second wave, if necessary.

A-1. Section 2.5.2.10.2, "Public Transportation (Bus)," (page 2.5-26/27) of the Calvert Cliffs Nuclear Power Plant Environmental Report states that a commuter bus service is operated by Calvert County as an alternative mode of transportation for those individuals living in the county, but working in the Washington D.C. area. The same service is provided in St. Mary's County. Calvert County has 17 passenger buses on 7 service routes that carried approximately 113,354 passengers for FY 2005. St. Mary's Transit System operates daily, including evenings and on the weekends. Ridership has increased from approximately 54,395 passengers annually in fiscal year (FY) 2000 to over 300,000 passengers annually in FY 2006.

1. Clarify whether these people have been factored into the evacuation estimates.
2. Clarify whether the evacuation plans include the use of these buses that may be unavailable due to the distance they travel.
3. The staff understands that Calvert County does not operate "commuter" buses.

A-2. Provide information regarding how information received from special needs resident registration cards has been used in supporting the assumptions for this population group.

ETE-6: Subject: The Transient Population

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47, 10 CFR Part 50 Appendix E, NUREG-0654/FEMA-REP-1; Appendix 4 Section II.B, IV.B.1, IV.B.2, IV.B.6

SRP ACCEPTANCE CRITERIA: Requirements A, B, E, and H; Acceptance Criterion 11

A. Section 2.3, "Evacuation Areas," (page 2-9) states that even though a large majority of the Plume Exposure Pathway Emergency Planning Zone (EPZ) consists of the Chesapeake Bay, the evacuation time estimate is not modeled for boaters. This portion of the population is to be warned by the Maryland Marine Police and the Coast Guard to return to port prior to evacuation. Early notification is said to give the boaters adequate time to return, and they will be among the first to evacuate. Section 3.2.3, "Assumptions Used in Developing Evacuation Time Estimates" (page 3-4) states vehicles will begin evacuating 30 minutes after notification is given. If these 30 minutes are the time frame used for boater's notification to evacuate, it seems unlikely that the police and Coast Guard could be mobilized and notify all boaters within this timeframe. Provide information to address the following questions:

1. What is the timeframe being used for notification and evacuation of boaters?
2. What is the process for notification of boaters and estimated time needed to notify all boaters on the water?
3. What is the basis for the statement that boaters should be the first to evacuate?

B. Section 3.4, "Special Event Evacuation Time Estimate Methodology and Assumptions," (page 3-6/7) lists six events that occur within the Plume Exposure Pathway Emergency Planning Zone (EPZ) that result in an influx of transient people. Although the special events are for short periods, peak tourist volumes do need to be assessed. Provide the following information:

1. An explanation of the capability to evacuate transient populations for these events.
2. An updated estimate of peak tourist populations.
3. An analysis of their affect on evacuation times.

C. The Calvert Cliffs Nuclear Power Plant Environmental Report states that Calvert County, St. Mary's County, and Charles County, had 541,791 visitors in 2004. Major parks within the 10-mile radius include Calvert Cliffs State Park and Flag Ponds Park. Calvert Cliffs State Park had 17,113 day visitors from July 2005 to June 2006 and 2,175 overnight visitors. The peak month for day users was October with 5,650 people and the peak month for overnight users was July with 875 people. October had the most overall visitors with 6,035. Flag Ponds Park receives approximately 20,000 annual visitors during the summer months. Provide an explanation of how these estimates compare to the transient population estimates in the Evacuation Time Estimate.

D. Table 2.5-6, "Resident and Transient Populations, by Sector and Distance from the {Calvert Cliffs Nuclear Power Plant} CCNPP Site," of the CCNPP Environmental Report contains different estimations of the transient population by sector than the ones in the Evacuation Time Estimate. Provide an explanation for these differences.

E. Table 4-1, "Population and Vehicle Demand by Protective Action Zone," (page 4-3) lists the summer daytime population as 59,621 and the winter daytime population as

63,893. Discuss why the winter daytime population is higher given summer is the tourist season.

F. Section 3-4, "Special Event Evacuation Time Estimate Methodology and Assumptions," (page 3-7) states that the special event that will be considered is the closure of the Governor Thomas Johnson Bridge. Discuss why one of the six peak tourist events discussed in Section 3.4, "Special Event Evacuation Time Estimate Methodology and Assumptions," was not used as a special evacuation event.

G. Table 4-4, "Transient Population Facilities – Major Employers within the {Plume Exposure Pathway Emergency Planning Zone} EPZ," (page 4-6) does not include Calvert Cliffs Nuclear Power Plant (CCNPP) or Dominion Cove Point Power Plant. The listings in the table do not agree with those in Table 2.5.2-5 of the CCNPP Environmental Report. The population estimates need to be updated to include current and projected values, which includes construction workers and vehicles.

H. Figures B-3, "Winter Day Time Special/Transient Facility Population Distribution by Compass Sector," (page B-3) through B-10, "Summer Night Time Special/Transient Facility Vehicle Distribution by Compass Sector," (page B-10) states that special and transient facilities are depicted, but the numbers do not correlate with Tables 4-2, "Special Facilities - Schools Within the Emergency Planning Zone," (page 4-4) through 4-7, "Transient Population Facilities – Marinas Within the Emergency Planning Zone" (page 4-10). Provide information to clarify which population groups were used in these figures.

ETE-7: Subject: The Special Facility Population

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47, 10 CFR Part 50 Appendix E, NUREG-0654/FEMA-REP-1; Appendix 4 Section II.C, IV.B.1, IV.B.2, IV.B.5, IV.B.6

SRP ACCEPTANCE CRITERIA: Requirements A, B, E, and H; Acceptance Criterion 11

A. Section 3.3, "Special Facility Evacuation Time Estimates Methodology and Assumptions," (page 3-5) states evacuation times for school buses is 40 minutes for normal weather and 70 minutes in adverse weather at maximum speeds of 45 and 30 miles per hour respectively. Evacuation times for nursing facilities are 2 hours for normal conditions and 2 hours and 30 minutes in adverse conditions at 45 and 30 miles per hour respectively.

1. Provide current population data for special facilities with an analysis of the effect the updated numbers will have on evacuation times.
2. Provide justification for mobilization times for schools and nursing homes.

A-1. The last column in Table 4-2, "Special Facilities - Schools within the Emergency Planning Zone," (page 4-4) lists the transportation resources available for each school. Footnote "2" on page 4-4 states that local emergency plans provide buses for schools without sufficient means to evacuate their facilities. To verify the assumptions are correct, provide answers to the following questions.

1. Are the buses listed for each school those that will be required or those that will be available for evacuation. Is the number of buses sufficient to evacuate the schools?

2. Which facilities do not have sufficient means to evacuate?
3. How will those schools with insufficient means to evacuate acquire assistance?
4. Can all the schools be evacuated in one wave?

B. Table 4-3, “Special Facilities – Nursing Homes within the Emergency Planning Zone,” (page 4-5) lists Solomon Pines as a special facility, which is an independent living center for seniors. It appears there are additional such facilities within the Plume Exposure Pathway Emergency Planning Zone (EPZ). Explain why other facilities within the EPZ such as Oyster Bay, Chapline Place, Calvert Pines, and Prince Frederick Senior Center were not considered in the Special Facilities totals. If they should be, the Evacuation Time Estimate should be adjusted accordingly.

B-1. In Table 4-3, “Special Facilities – Nursing Homes Within the Emergency Planning Zone,” (page 4-5) Solomon Pines is identified as a senior living facility with 100 residents and 100 vehicles (Table 4-3, Special Facilities – Nursing Homes). Therefore, it can be assumed that most residents will have their own vehicles to evacuate. The other nursing facilities identified in Table 4-3 have more dependent residents and/or more non-ambulatory patients, all of which will likely require more time to evacuate. Clarify why Solomon Pines has a longer evacuation estimate than other facilities. Table 6-4, “Special Facility – Nursing Facilities Evacuation Times Estimates,” (page 6-6) will need to be updated to include any changes.

C. Table 4-3, “Special Facilities – Nursing Homes within the Emergency Planning Zone,” (page 4-5) footnote (3) indicates that 193 residents are transportation dependent. However, only 2 buses are identified in the transportation resources column as needed to support the evacuation.

1. Clarify whether special vehicles are required for evacuation of any transit dependent residents.
2. Provide details on the number and types of vehicles required, as well as the mobilization times for these vehicles.

C-1. If residents are evacuated via cars as indicated in the transportation resources column in Table 4-3, “Special Facilities – Nursing Homes within the Emergency Planning Zone,” (page 4-5) provide additional detail on the loading time assumptions including the queuing vehicles at each facility. For instance, 446 cars are identified in Table 4-3, as needed to evacuate the Asbury at Solomon’s Island facility. Discuss the time required to queue and load these vehicles.

ETE-8: Subject: NETVAC2 Traffic Simulation Model

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47, 10 CFR Part 50 Appendix E, NUREG-0654/FEMA-REP-1; Appendix 4 Section I.C, II.D, III.A, III.B, IV.B.1, IV.B.3

SRP ACCEPTANCE CRITERIA: Requirements A, B, E, and H; Acceptance Criterion 11

Section 3.1, “The NETVAC2 Computer Model,” (page 3-1) states that specific data on the network and vehicle loading rates are required to develop the evacuation estimates. This information is utilized in the Highway Capacity Manual equations to determine evacuation times for different population groups. The equations themselves, other supporting algorithms, standard parameters, or default parameters are not provided or described in the Evacuation Time Estimate. Provide the following information:

1. The equations and supporting algorithms used to calculate evacuation times.
2. The standard parameters or default parameters used in the equations.

ETE-9: Subject: Resident Population

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47, 10 CFR Part 50 Appendix E NUREG-0654/FEMA-REP-1; Appendix 4 Section II.A, IV.B.1, IV.B.2, IV.B.6

SRP ACCEPTANCE CRITERIA: Requirements A, B, E, and H; Acceptance Criterion 11

Because a resident in the Plume Exposure Pathway Emergency Planning Zone (EPZ) may also work in the EPZ, the possibility exists for the resident to be counted twice. Explain how double counting was avoided or if it was considered. If not, the effect of double counting on evacuation times should be analyzed.

ETE-10: Subject: Protective Action Zones

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47, 10 CFR Part 50 Appendix E NUREG-0654/FEMA-REP-1; Appendix 4 Section II.D

SRP ACCEPTANCE CRITERIA: Requirements A, B, E, and H; Acceptance Criterion 11

Section 2.2, "Protective Action Zone," (page 2-7/9) states that eight protective action zones (PAZs) have been considered that approximate 90 degree sectors for 0, 2, 5, and 10 mile radii. PAZ boundaries are defined by roads and rivers and are agreed upon by county officials. Clarify whether PAZ boundaries bisect densely populated areas.

ETE-11: Subject: Transportation Network

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47, 10 CFR Part 50 Appendix E NUREG-0654/FEMA-REP-1; Appendix 4 Section II.D, III.A, III.B

SRP ACCEPTANCE CRITERIA: Requirements A, B, E, and H; Acceptance Criterion 11

A. The routes used for evacuation are described in Section 5.2, "Primary Evacuation Routes" (page 5-1). The primary routes are mapped with sectors and boundaries in Figure 5-1 "Evacuation Road Network" (page 5-3). Provide a version of Figure 5-1 that is more legible.

B. Section 3.2.3, "Assumption Used in Developing the Evacuation time Estimates," (page 3-4) states that the roadway capacity for the network is assumed to be 1800 vehicles per lane per hour based on the Highway Capacity Manual dated 1985. Provide any information regarding how using an updated version of the manual would affect the estimated value.

C. Section 5.3, "Roadway Capacities, Classification, and Vehicle Routing," (page 5-1) states that two rural divided highways, Routes 2/4 and Route 235, are located within the Plume Exposure Pathway Emergency Planning Zone. The rest of the roadways are identified as rural undivided highways. In the Appendix D, "Key to NETVAC2 Computer Printout" Roadway Type (6) is specified for rural divided highways. However, in the Roadway Link and Node Characteristics table (pages D-3/11), the column "Roadway Type" does not indicate any type (6) roadways.

1. Clarify if any type (6) roadways are present.
2. Explain if the omission of these roadways effects the evacuation times.

D. Figure 7-1, "Recommended Traffic control," (page 7-3) points out an area of congestion on the Thomas Johnson Bridge at the South of the plant. According the MD 4 - Thomas Johnson Memorial Bridge Planning Study^[1], (pages 1-7) congestion on Thomas Johnson Memorial Bridge is problematic. All intersections have a failing Level of Service (LOS) in both the AM and PM peak hours. This information agrees with the findings in, "St. Mary's County Transportation Plan^[2]," which identifies a need to widen Maryland Route 4 and add an additional span to the Thomas Johnson Bridge to accommodate existing conditions and anticipated growth. The current situation with traffic congestion on Maryland Route 4 and the Thomas Johnson Bridge is not addressed in the ETE. Provide additional information on potential traffic congestion associated with the Thomas Johnson Bridge and Maryland Route 4 during evacuation scenarios.

E. A Traffic Impact Analysis (TIA)^[3] was conducted by KLD Associates, Inc in 2007. Explain how the TIA was used to develop the Evacuation Time Estimate (ETE). Specifically explain the apparent incongruity of the ETE dated 2002 and the TIA dated 2007.

ETE-12: Subject: Adverse Weather Conditions

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47, 10 CFR Part 50 Appendix E, NUREG-0654/FEMA-REP-1; Appendix 4 Section IV.A.1.

SRP ACCEPTANCE CRITERIA: Requirements A, B, E, and H; Acceptance Criterion 11

A. Section 2.3, "Evacuation Areas," (page 2-10) states that adverse conditions for the area includes snow, rain, fog, ice or high winds. Discuss the amount and severity of snow, ice or fog. Discuss which of these conditions is being analyzed in the scenarios, or whether they are all grouped together.

B. In Tables 1-1, "Summary of General Population Evacuation Time Estimates-Summer," (page 1-4) and Table 1-2, "Summary of General Population Evacuation Time Estimates-winter," (page 1-5) the "Preparation Time for Adverse Weather and Total Public Response Time for Adverse Weather" (columns 10 thru 13) are the same between summer and winter scenarios. Explain why there is not a difference between summer and winter preparation times or total response times for adverse weather. Also, discuss the basis for the 30 minute travel time.

ETE-13: Subject: Text Supporting Tables

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47, 10 CFR Part 50 Appendix E, NUREG-0654/FEMA-REP-1; Appendix 4 Section IV.A.2.

SRP ACCEPTANCE CRITERIA: Requirements A, B, E, and H; Acceptance Criterion 11

A. The text on page 3-3 states that the distribution curves are represented by a bar graph in Figure 3-1, "Public Response Curves" (page 3-9). Figure 3-1 on page 3-9 is titled "Public Response Time Estimates." The text should be modified to include the correct figure title.

B. The text on page 6-2 states: "Evacuation confirmation time estimates for each *Emergency Action Zone*" are presented in Table 6-5." The table and other supporting text refer to them as *Protective Action Zones*." Provide an explanation regarding the use of the differing terminology.

C. The difference between daytime and nighttime populations at 0-10 miles for all Protective Action Zones in Table 1-2, "Summary of General Population Evacuation Time Estimates-Winter," (page 1-5) is large when compared to Table 1-1, "Summary of General Population Evacuation Time Estimates-Summer," (page 1-4) values. Discuss why transient populations are not higher in the summer.

ETE-14: Subject: Methodology for Total Evacuation Times

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47, 10 CFR Part 50 Appendix E, NUREG-0654/FEMA-REP-1; Appendix 4 Section IV.B.

SRP ACCEPTANCE CRITERIA: Requirements A, B, E, and H; Acceptance Criterion 11

For clarification of the assumptions, explain what action items or steps are included in the estimation of "Total Public Response Time" in Tables 1-1 and 1-2, "Summary of General Evacuation Times Estimates – Summer/ Winter," on pages I-4 and I-5 respectively. For example, does preparation time include time to travel home from work, as well as time to prepare one's home for evacuation? Also, discuss whether the column titled, "General Public Evacuation Times," is a summation of previous travel (from work) and preparation activities, or is it solely the time to evacuate?

ETE-15: Subject: Evacuation Confirmation

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47, 10 CFR Part 50 Appendix E, NUREG-0654/FEMA-REP-1; Appendix 4 Section V.A

SRP ACCEPTANCE CRITERIA: Requirements A, B, E, and H; Acceptance Criterion 11

Section 6.5, "Evacuation Confirmation Time Estimates," (page 6-2) states that the county emergency management agency officials and law enforcement personnel estimate confirmation times based upon the number of vehicles available and the number of miles to be driven in each evacuation area. Discuss how these estimates may fluctuate depending on vehicle availability and miles to be driven.

ETE-16: Subject: Recommendations

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47, 10 CFR Part 50 Appendix E NUREG-0654/FEMA-REP-1; Appendix 4 Section V.B

SRP ACCEPTANCE CRITERIA: Requirements A, B, E, and H; Acceptance Criterion 11

A. Section 7.2, "Recommendations," (page 7-2) states that adding additional traffic control points could reduce the evacuation time estimates. Eight intersections in Calvert County and 16 additional intersections in St. Mary's County are listed.

1. Provide information regarding what is done with these recommendations.
2. Provide information regarding the cost associated with these recommendations.
3. Explain whether any additional changes could be instituted that could affect the current state of the transportation network.

B. The St. Mary's County Transportation Plan, dated August 2006, identifies a need to widen Maryland Route 4 to support current traffic volume and anticipated growth. This project is estimated to cost 41 million dollars. The plan also identifies a need for a second span on the Thomas Johnson Bridge estimated to cost 131 million dollars. Explain why potential widening of Maryland Route 4 and construction of a new span for the Thomas Johnson Bridge, which would improve evacuation times, were not discussed in the ETE.

ETE-17: Subject: Consultations with other Agencies

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47, 10 CFR Part 50 Appendix E, NUREG-0654/FEMA-REP-1; Appendix 4 Section V.C

SRP ACCEPTANCE CRITERIA: Requirements A, B, E, and H; Acceptance Criterion 11

Section 1.2, "Summary," (page 1-2) states that Rev. 6 of the Evacuation Time Estimate (ETE) will be reviewed with Maryland Emergency Management Agency, Maryland Department of the Environment, Maryland Department of Natural Resources, and emergency management officials from Calvert, St. Mary's and Dorchester Counties. Discuss when revision 6 of the ETE will be reviewed with State and local officials.

¹ Maryland State Highway Administration Office of Planning and Preliminary Engineering. 2008. *MD 4 - Thomas Johnson Memorial Bridge Planning Study (Solomons Island Road/Patuxent Beach Road), Purpose and Need Statement*, Project Number SM 351A11.

¹ St. Mary's County Department of Public Works. 2006. *St. Mary's County Transportation Plan*, Prepared by Johnson, Mirmiran, & Thompson, Baltimore, Maryland.

¹ UniStar Nuclear Inc. 2008. *Traffic Impact Study at the Calvert Cliffs Nuclear Power Plant, Draft Final Report*. Prepared by KLD Engineering P.C., Commack, NY.