PMVictoriaESPPEm Resource

From: david.distel@exeloncorp.com
Sent: Wednesday, March 23, 2011 10:46 AM
To: Jessie, Janelle; Hale, Jerry
Subject: Exelon Letter - Response to Request for Additional Information Letter No. 4
Attachments: NP-11-0010 - Response to Request for Additional Information Letter No. 4.pdf

Janelle/Jerry – Attached is a courtesy copy of the Exelon Response to Request for Additional Information Letter No. 4 submittal letter signed out today. The original letter and the designated cc's are being mailed today.

Thanks.

Dave Distel

Hearing Identifier: Victoria_ESP_Public
Email Number: 252

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Subject: Exelon Letter - Response to Request for Additional Information Letter No. 4
Sent Date: 3/23/2011 10:46:18 AM
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From: david.distel@exeloncorp.com

Created By: david.distel@exeloncorp.com

Recipients:
"Jessie, Janelle" <Janelle.Jessie@nrc.gov>
Tracking Status: None
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NP-11-0010
March 23, 2011

10 CFR 52, Subpart A

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

Subject: Exelon Nuclear Texas Holdings, LLC
Victoria County Station Early Site Permit Application
Response to Request for Additional Information Letter No. 04
NRC Docket No. 52-042

Attached are responses to NRC staff questions included in Request for Additional Information (RAI) Letter No. 04, dated February 25, 2011, related to Early Site Permit Application (ESPA), Part 2, Sections 03.05.01.06, 11.02, 11.03, and 17.05. This submittal comprises a complete response to RAI Letter No. 04, and includes responses to the following Questions:

03.05.01.06-1	11.02-1	11.03-1	17.05-1
	11.02-2		17.05-2

When a change to the ESPA is indicated by a Question response, the change will be incorporated into the next routine revision of the ESPA, planned for no later than March 31, 2012.

Regulatory commitments established in this submittal are identified in Attachment 7. If any additional information is needed, please contact David J. Distel at (610) 765-5517.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 23rd day of March, 2011.

Respectfully,

Marilyn C. Kray

Marilyn C. Kray
Vice President, Nuclear Project Development

Attachments:

1. Question 03.05.01.06-1
2. Question 11.02-1
3. Question 11.02-2
4. Question 11.03-1
5. Question 17.05-1
6. Question 17.05-2
7. Summary of Regulatory Commitments

cc: USNRC, Director, Office of New Reactors/NRLPO (w/Attachments)
USNRC, Project Manager, VCS, Division of New Reactor Licensing (w/Attachments)
USNRC, Region IV, Regional Administrator (w/Attachments)

RAI 03.05.01.06-1:

Question:

RS-002 provides guidance regarding the information that is needed to ensure that potential hazards in the site vicinity (such as airports, dams, transportation routes, military and chemical facilities) are identified and evaluated to meet the siting criteria in 10 CFR 100.20 and 10 CFR 100.21. SSAR Section 2.2.3.1.4 does not provide sufficient information for the NRC staff to perform an independent determination of aircraft impact probability. Provide the aircraft crash rate, the assumptions for effective area determination, and the parameters for aircraft crash location conditional probability (per square mile) for each aircraft type and for each flight phase used in determining the total annual aircraft crash impact probability (F).

Response:

Section 3.5.1.6 of NUREG-0800 specifies that 10 CFR 100.10, 10 CFR 100.20, 10 CFR 100.21, 10 CFR 52.17, and 10 CFR 52.79 requirements are met, if the probability of aircraft accidents resulting in radiological consequences greater than the 10 CFR Part 100 exposure guidelines is less than an order of magnitude of 10^{-7} per year. Further, Section 3.5.1.6 of NUREG-0800 provides three criteria for the probability of aircraft accidents to be less than an order of magnitude of 10^{-7} per year by inspection: (1) specified plant-to-airport distance and projected annual operations criteria are met; (2) plant is at least 5 statute miles from the nearest edge of military training routes; and (3) plant is at least 2 statute miles beyond the nearest edge of a federal airway, holding pattern, or approach pattern.

As detailed in SSAR 2.2.2.7, there are no identified airports that are within the specified plant-to-airport distance criteria or identified airways or military training routes where the edges are located within 2 statute miles or 5 statute miles, respectively, to the proposed Victoria County Station (VCS). However, the site is located within the Kingsville Military Operating Area (MOA) and, therefore, does not meet the criteria for the probability of aircraft accidents to be less than an order of magnitude of 10^{-7} per year by inspection. Consequently, the annual aircraft impact frequency per year was calculated.

The four-factor formula from DOE Standard, DOE-STD-3014-2006 was used for the determination of annual aircraft crash impact frequency for the facility (F) per year as presented below:

Four-Factor Formula: $F=\sum_{ijk} N_{ijk} * P_{ijk} * f_{ijk}(x,y) * A_{ij}$

Where,

F= estimated annual aircraft crash impact frequency for the facility of interest (no./year);

N_{ijk}= estimated annual number of site-specific aircraft operations (i.e., takeoffs, landings, and in-flights) for each applicable summation parameter (no./year);

P_{ijk}= aircraft crash rate (per takeoff or landing for near-airport phases and per flight for the in-flight (non-airport) phase of operation) for each applicable summation parameter;

$f_{ijk}(x,y)$= aircraft crash location conditional probability (per square mile) given a crash evaluated at the facility location for each applicable summation parameter;

A_{ij}= the site-specific effective area for the facility of interest that includes skid and fly-in effective areas (square miles) for each applicable summation parameter;

i= (index for flight phases): i=1, 2, and 3 (takeoff, in-flight, and landing);

j= (index for aircraft category or subcategory): j=1, 2, ..., 11;

k= (index for flight source): k=1, 2, ..., k (there could be multiple runways, and non-airport operations);

$\sum_{ijk}$= $\Sigma_k \Sigma_j \Sigma_i$;

ijk= site-specific summation over flight phase, i; aircraft category or subcategory, j; and flight source, k.

Generally, the four-factor formula is implemented in two different ways, depending on the flight phase:

1. For airport operations, or near airport activities which consist of take-offs and landings, the four-factor formula is implemented through a combination of site-specific information and data from the standard.

2. For non-airport operations, DOE site specific values or estimates applicable throughout the continental United States, for the expected number of crashes per square mile per year in the vicinity of the site (the value of the product NPf(x,y)) is provided and the four-factor formula is implemented by combining these with the facility effective areas to assess frequencies.

As there are no identified airports having operations which exceed the specified plant-to-airport distance criteria, airport operations were not considered in the evaluation of aircraft hazards for the VCS ESP site, i.e. only the non-airport operations flight phase was considered for the VCS site in the ESP.

Non-airport Operations (In-flight Phase Frequency Analysis):

Methods provided by the DOE Standard, DOE-STD-3014-2006, and the associated input data were used to calculate the non-airport operation flight phase frequency from the four-factor formula:

$$F_j = N_j * P_j * f_j(x,y) * A_j$$

NPf(x,y):

As indicated in the DOE standard, because of the limited number of historical in-flight crashes, particularly for commercial and large military aircraft, frequency calculations for non-airport operations are based on modeling the number of crashes per square mile per year, i.e., the product NPf(x,y), and combining this with the facility effective area.

Inputs and assumptions used to calculate **NPf(x,y)**:

- The NAS Kingsville reports that the majority of flight operations are high level operations (i.e., 9000 ft – 23,000 ft) and that all low level operations (i.e., 1500 ft – surface) are greater than 10 miles from the site.
- The Average CONUS value of NPf(x,y) for small military aircraft was selected from Table B-15 of the DOE standard-- see partial reproduction of Table B-15 for the average continental U.S.(CONUS) values below. Note, the small military aircraft category was selected based on the military aircraft type and wingspan provided by NAS Kingsville—it is also the most conservative input value for military aircraft.

Table B-15. DOE site-specific values and maximum, minimum, and average CONUS values of NPf(x,y) for commercial and military aviation non-airport operations (in crashes per square mile, per year, centered at the site)

Site	Air Carrier	Air Taxi	Large Military	Small Military
Average CONUS	4E-7	1E-6	2E-7	4E-6

Effective Area Calculation (A_{eff}):

To calculate the effective area, methods provided in DOE-STD-3014-2006 were used:

$$A_{eff} = A_f + A_s$$

Where,

$$A_f = (WS+R)H\cot\Phi + (2L * W * WS)/R + L * W$$

$$A_s = (WS + R) * S$$

A_f = effective fly-in area; A_s = effective skid area

WS = aircraft wingspan;

R = length of the diagonal of the facility = $(L^2+W^2)^{0.5}$

H = facility height;

cotΦ = mean of the cotangent of the aircraft impact angle

L = length of the facility

W = width of the facility

S = aircraft skid distance (mean value)

In the DOE standard, the facility (or in the case of a nuclear plant—the compilation of safety-related structures) is represented by a bounding rectangle. And, as illustrated in the above equations, the derived effective area is dependent on the length, width, and height of the bounding rectangle. A technology has not been specified for the VCS site; consequently, the dimensions of the safety-related buildings are not known. Therefore, a calculation to determine the maximum area of a bounding building—that is, the maximum allowable area for the safety-related structures mapped into a rectangular building—was derived such that the resulting aircraft crash frequency per year remained less than an order of magnitude of 10^{-7} for the VCS site.

Inputs and assumptions used to calculate the dimensions of the bounding rectangle:

- In determining **H**, a review of current-technology building heights was performed in order to determine a bounding building height—a height of 230 feet was determined to be bounding for the ESP and is listed as the site-related design parameter for structure height (SSAR Table 2.0-1 Site Characteristics and Site-Related Design Parameters).

- In determining the maximum length, **L**, and width, **W**, of the bounding building, the layout of various current technologies were analyzed and a maximum allowable footprint area was determined that would yield an estimated crash frequency impact of less than an order of magnitude of 10^{-7} per year.
    - In analyzing the various layouts, an approximate length of 925 ft was chosen as the bounding footprint length, **L**, to encompass all current technologies. (See Figure 1)
    - The maximum value for the width, **W,** of the footprint area was then chosen to maximize the effective area such that the crash frequency impact remained less than an order of magnitude of 10^{-7} per year—i.e, the evaluation would remain applicable to any technology whose effective area remained below the maximum determined effective area. Through spreadsheet iterations, the bounding value for the width of the facility, **W**, was 700 feet. A check was then made to ensure that a 700-foot width would encompass each current technology. As shown in Figure 1, a 700-foot width would allow for the incorporation of the safety-related structures (indicated in magenta) for current technologies into a bounding building at the VCS site. (Note: It is expected that the mPower technology will have a smaller footprint than the other represented technologies.)

- It should be noted, that these bounding values would be conservative for any of the current technologies—as depicted in Figure 1, there would be much open space (or non-safety-related areas in the target area) included for these dimensions.

Inputs and assumptions used to calculate the effective area:

- The estimated small military aircraft wingspan, **WS**, was selected from Table B-16 of the DOE standard. A 78-foot wingspan (small aircraft, high performance) was chosen for input—see partial reproduction for the military aviation class for Table B-16 below). The high performance wingspan includes fighters, attackers, and trainers. This is conservative as the NAS Kingsville reports that the following type of aircraft (along with their associated wing spans) utilize the MOA:
  - F-15 (42 ft 9 in)
  - F-16 (32 ft 9 in)
  - T-38 (25 ft 3 in)
  - T-6 (33 ft 3 in)
  - T-45 (30 ft 8 in)
  - T-1 (43 ft 8 in)

Table B-16 Representative wingspans (WS) for commercial, general aviation, and military aircraft

Military Aviation	Large Aircraft	Small Aircraft High Performance	Small Aircraft Low Performance
	233 ft	78 ft	110 ft

- The value for **cotΦ** was obtained from Table B-17 of the DOE standard. As recommended in the DOE standard, the takeoff value, 8.4 for small military, was used because only in-flight crashes (non-airport operations) are considered in this analysis—see Table B-17 reproduced below.

Table B-17. Values of the mean of the cotangent of the impact angle (cotΦ).

Aircraft Category	Commercial Aviation	General Aviation	Helicopters	Military Aviation			
				Large Aircraft		Small Aircraft	
				Takeoff	Landing	Takeoff	Landing
Mean (cotΦ)	10.2	8.2	0.58	7.4	9.7	8.4	10.4

- The value for mean skid distance, **S**, for small military aircraft, 246 feet, was obtained from Table B-18 of the DOE standard. (See Table B-18 reproduced below)

Table B-18. Mean skid distances (s) for each aircraft category.

Aircraft Category	Commercial Aviation	General Aviation	Helicopters	Military Aviation			
				Large Aircraft		Small Aircraft	
				Takeoff	Landing	Takeoff	Landing
Mean Skid Distance, ft	1440	60	0	780	368	246	447

The resultant calculation of the effective area then becomes:

$A_f = (WS+R)H\cot\Phi + (2L * W * WS)/R + L * W$

$A_f = (78+1160) * (230*8.4) + (2(925)*(700)*78)/1160 + (925*700)$

$A_f \approx 0.112$ square miles

$A_s = (WS + R) * S$

$A_s = (78+1160)*246$

$A_s \approx 0.0109$ square miles

Therefore:

$\mathbf{A_{eff}} = A_f + A_s \approx 0.1231$ square miles

Finally, a confirmatory calculation was performed to show that the frequency of annual aircraft crash impact for the determined bounding building and resultant effective area is less than an order of magnitude of 10^{-7}.

For those facilities with an effective area less than 0.1231 square miles:

$$F_j = N_j * P_j * f_j (x,y) * A_j$$

$$F = (4E\text{-}6)*(0.1231)$$

$$F = 4.92E\text{-}7$$

Thus, the frequency of annual aircraft crash impact for the determined effective area is less than an order of magnitude of 10^{-7}, thereby ensuring that the probability of aircraft accidents resulting in radiological consequences greater than the 10 CFR Part 100 exposure guidelines is less than an order of magnitude of 10^{-7} per year for the VCS site.

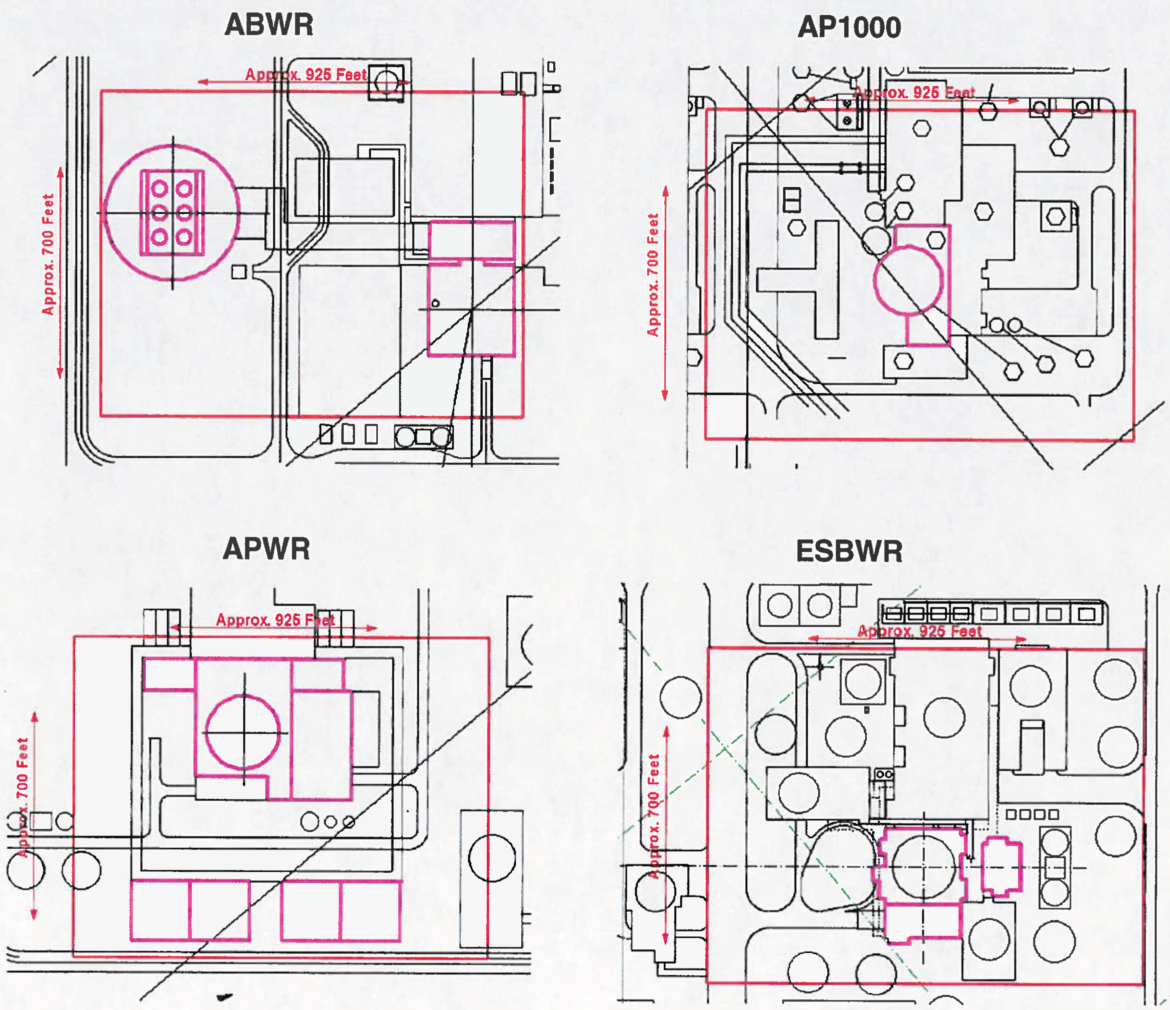
References:

1. U.S. Department of Energy, *Accident Analysis for Aircraft Crash into Hazardous Facilities, DOE Standard, DOE-STD-3014-2006*, October 1996, Reaffirmation May 2006.

Associated ESPA Revisions:

No ESPA revision is required as a result of this RAI response.

Figure 1: Comparison of Current Technology Layouts with Determined Bounding Footprint Area



RAI 11.02-1:

Question:

10 CFR Part 50 Appendix I, SRP 11.2, and RG 1.109 require that main parameters to calculate the liquid effluent off site dose to the public be identified for review and evaluation. The liquid effluent flow rate utilized in performing liquid effluent dose calculations identified in section 11.2 does not match the confirmatory calculations. Table 11.2.3-3 of the SSAR indicates in the notes at the bottom of the table that an effluent flow rate of 480 cfs was used.

Based on staff independent verification of the radionuclide concentrations calculated in Table 11.2-3, it appears that 240 cfs or one half of the value noted at the bottom of the table was used. Please confirm that the current values in Table 11.2.3-3 are correct, or change this table or the note to be in agreement and update the liquid effluent dose calculations as necessary.

Response:

The concentrations in SSAR Table 11.2.3-3 are based on a Guadalupe River flow rate of 480 cfs, as indicated in the table footnote. Table 11.2.3-3 provides the calculated radioactive concentrations for discharges to the Guadalupe River on a site basis. A simplified version of the equation used to calculate these values is:

Concentration = (Activity Release per Unit) x (2 Units) / (River Flow)

The activity release per unit is based on composite data (i.e. maximum activity for each isotope) from all the technologies considered on a per unit basis, with the exception of the mPower design. Six mPower reactors are considered equivalent to one of the larger reactor designs. Thus, the mPower effluent activities are multiplied by six when developing the composite data.

The composite releases are multiplied by two to yield expected releases for the site. This represents two large reactors or 12 mPower reactors.

Table 11.2.3-3 column heading and footnote are being revised to clarify that concentrations are based on site releases, not a single unit. Site concentrations are considered more appropriate for the ESP when evaluating conformance with 10CFR 20 limits.

Associated ESPA Revisions:

The changes to SSAR Table 11.2.3-3 are shown on the following pages.

Table 11.2.3-3 (Sheet 1 of 2)
Liquid Effluent Concentrations in the Guadalupe River

Radionuclide	Release per Unit (Ci/yr)	Site Concentration (μCi/ml)		Fraction of ECL
		River	ECL	
H-3	1.60×10^{3}	7.47×10^{-6}	1.0×10^{-3}	7.5×10^{-3}
C-14	1.60×10^{-4}	7.47×10^{-13}	3.0×10^{-5}	2.5×10^{-8}
Na-24	5.05×10^{-3}	2.36×10^{-11}	5.0×10^{-5}	4.7×10^{-7}
P-32	5.68×10^{-4}	2.65×10^{-12}	9.0×10^{-6}	2.9×10^{-7}
Cr-51	1.70×10^{-2}	7.93×10^{-11}	5.0×10^{-4}	1.6×10^{-7}
Mn-54	4.50×10^{-3}	2.10 x 10-11	3.0×10^{-5}	7.0×10^{-7}
Mn-56	3.81×10^{-3}	1.78×10^{-11}	7.0×10^{-5}	2.5×10^{-7}
Fe-55	9.46×10^{-3}	4.41×10^{-11}	1.0×10^{-4}	4.4×10^{-7}
Fe-59	2.30×10^{-3}	1.07×10^{-11}	1.0×10^{-5}	1.1×10^{-6}
Co-56	5.19×10^{-3}	2.42 x 10-11	6.0×10^{-6}	4.0×10^{-6}
Co-57	7.19×10^{-5}	3.35×10^{-13}	6.0×10^{-5}	5.6×10^{-9}
Co-58	9.80×10^{-3}	4.57×10^{-11}	2.0×10^{-5}	2.3×10^{-6}
Co-60	1.54×10^{-2}	7.19×10^{-11}	3.0×10^{-6}	2.4×10^{-5}
Ni-63	1.70×10^{-3}	7.93×10^{-12}	1.0×10^{-4}	7.9×10^{-8}
Cu-64	1.26×10^{-2}	5.88×10^{-11}	2.0×10^{-4}	2.9×10^{-7}
Zn-65	4.41×10^{-4}	2.06×10^{-12}	5.0×10^{-6}	4.1×10^{-7}
Zn-69m	7.51×10^{-4}	3.51×10^{-12}	6.0×10^{-5}	5.8×10^{-8}
Br-83	1.00×10^{-4}	4.67×10^{-13}	9.0×10^{-4}	5.2×10^{-10}
Br-84	2.00×10^{-5}	9.33×10^{-14}	4.0×10^{-4}	2.3×10^{-10}
Rb-88	2.80×10^{-2}	1.31×10^{-10}	4.0×10^{-4}	3.3×10^{-7}
Rb-89	4.41×10^{-5}	2.06×10^{-13}	9.0×10^{-4}	2.3×10^{-10}
Sr-89	3.14×10^{-4}	1.47×10^{-12}	8.0×10^{-6}	1.8×10^{-7}
Sr-90	3.51×10^{-5}	1.64×10^{-13}	5.0×10^{-7}	3.3×10^{-7}
Sr-91	1.25×10^{-3}	5.83×10^{-12}	2.0×10^{-5}	2.9×10^{-7}
Sr-92	8.00×10^{-4}	3.73×10^{-12}	4.0×10^{-5}	9.3×10^{-8}
Y-90	3.11×10^{-6}	1.45×10^{-14}	7.0×10^{-6}	2.1×10^{-9}
Y-91m	4.40×10^{-5}	2.05×10^{-13}	2.0×10^{-3}	1.0×10^{-10}
Y-91	2.35×10^{-4}	1.10×10^{-12}	8.0×10^{-6}	1.4×10^{-7}
Y-92	1.69×10^{-3}	7.89×10^{-12}	4.0×10^{-5}	2.0×10^{-7}
Y-93	1.36×10^{-3}	6.35×10^{-12}	2.0×10^{-5}	3.2×10^{-7}
Zr-95	1.30×10^{-3}	6.07×10^{-12}	2.0×10^{-5}	3.0×10^{-7}
Nb-95	2.00×10^{-3}	9.33×10^{-12}	3.0×10^{-5}	3.1×10^{-7}
Mo-99	2.61×10^{-3}	1.22×10^{-11}	2.0×10^{-5}	6.1×10^{-7}
Tc-99m	5.68×10^{-3}	2.65×10^{-11}	1.0×10^{-3}	2.7×10^{-8}
Ru-103	4.93×10^{-3}	2.30×10^{-11}	3.0×10^{-5}	7.7×10^{-7}
Ru-105	1.30×10^{-4}	6.07×10^{-13}	7.0×10^{-5}	8.7×10^{-9}

Table 11.2.3-3 (Sheet 2 of 2)
Liquid Effluent Concentrations in the Guadalupe River

Radionuclide	Release per Unit (Ci/yr)	Site Concentration (µCi/ml)		Fraction of ECL
		River	ECL	
Ru-106	7.35 x 10^{-2}	3.43 x 10^{-10}	3.0 x 10^{-6}	1.1 x 10^{-4}
Rh-103m	4.93 x 10^{-3}	2.30 x 10^{-11}	6.0 x 10^{-3}	3.8 x 10^{-9}
Rh-106	7.35 x 10^{-2}	3.43 x 10^{-10}	–	–
Ag-110m	1.80 x 10^{-3}	8.40 x 10^{-12}	6.0 x 10^{-6}	1.4 x 10^{-6}
Ag-110	1.40 x 10^{-4}	6.53 x 10^{-13}	–	–
Sb-124	4.30 x 10^{-4}	2.01 x 10^{-12}	7.0 x 10^{-6}	2.9 x 10^{-7}
Te-129m	1.20 x 10^{-4}	5.60 x 10^{-13}	7.0 x 10^{-6}	8.0 x 10^{-8}
Te-129	3.10 x 10^{-4}	1.45 x 10^{-12}	4.0 x 10^{-4}	3.6 x 10^{-9}
Te-131m	2.50 x 10^{-4}	1.17 x 10^{-12}	8.0 x 10^{-6}	1.5 x 10^{-7}
Te-131	7.60 x 10^{-5}	3.55 x 10^{-13}	8.0 x 10^{-5}	4.4 x 10^{-9}
Te-132	4.70 x 10-^{4}	2.19 x 10^{-12}	9.0 x 10^{-6}	2.4 x 10^{-7}
I-131	1.41 x 10^{-2}	6.59 x 10^{-11}	1.0 x 10^{-6}	6.6 x 10^{-5}
I-132	2.60 x 10^{-3}	1.21 x 10^{-11}	1.0 x 10^{-4}	1.2 x 10^{-7}
I-133	3.73 x 10^{-2}	1.74 x 10^{-10}	7.0 x 10^{-6}	2.5 x 10^{-5}
I-134	1.70 x 10^{-3}	7.93 x 10^{-12}	4.0 x 10^{-4}	2.0 x 10^{-8}
I-135	1.09 x 10^{-2}	5.09 x 10^{-11}	3.0 x 10^{-5}	1.7 x 10^{-6}
Cs-134	1.20 x 10^{-2}	5.60 x 10^{-11}	9.0 x 10^{-7}	6.2 x 10^{-5}
Cs-136	2.20 x 10^{-2}	1.03 x 10^{-10}	6.0 x 10^{-6}	1.7 x 10^{-5}
Cs-137	1.80 x 10^{-2}	8.40 x 10^{-11}	1.0 x 10^{-6}	8.4 x 10^{-5}
Cs-138	1.90 x 10^{-4}	8.87 x 10^{-13}	4.0 x 10^{-4}	2.2 x 10^{-9}
Ba-137m	1.25 x 10^{-2}	5.81 x 10^{-11}	–	–
Ba-139	3.00 x 10^{-5}	1.40 x 10^{-13}	2.0 x 10^{-4}	7.0 x 10^{-10}
Ba-140	5.80 x 10^{-3}	2.71 x 10^{-11}	8.0 x 10^{-6}	3.4 x 10^{-6}
La-140	8.00 x 10^{-3}	3.73 x 10^{-11}	9.0 x 10^{-6}	4.1 x 10^{-6}
La-142	2.00 x 10^{-5}	9.33 x 10^{-14}	1.0 x 10^{-4}	9.3 x 10^{-10}
Ce-141	2.97 x 10^{-4}	1.39 x 10^{-12}	3.0 x 10^{-5}	4.6 x 10^{-8}
Ce-143	5.00 x 10^{-4}	2.33 x 10^{-12}	2.0 x 10^{-5}	1.2 x 10^{-7}
Ce-144	5.60 x 10^{-3}	2.61 x 10^{-11}	3.0 x 10^{-6}	8.7 x 10^{-6}
Pr-143	1.30 x 10^{-4}	6.07 x 10^{-13}	2.0 x 10^{-5}	3.0 x 10^{-8}
Pr-144	3.16 x 10^{-3}	1.47 x 10^{-11}	6.0 x 10^{-4}	2.5 x 10^{-8}
Nd-147	2.00 x 10^{-6}	9.33 x 10^{-15}	2.0 x 10^{-5}	4.7 x 10^{-10}
W-187	3.50 x 10^{-4}	1.63 x 10^{-12}	3.0 x 10^{-5}	5.4 x 10^{-8}
Np-239	9.49 x 10^{-3}	4.43 x 10^{-11}	2.0 x 10^{-5}	2.2 x 10^{-6}
Total	1.60 x 10^{3}	7.47 x 10^{-6}	–	7.9 x 10^{-3}

Note: The Guadalupe River flow rate is assumed to be 480 cfs (based on a 95th percentile value of 486 cfs from a statistical analysis of USGS data showing 80,811 daily flow rates for the Guadalupe River from 1935 to 2008). Although releases are shown per unit, concentrations are for the whole site, which consists of two units. In the case of mPower, six modules are equivalent to one unit.

RAI 11.02-2:

Question:

10 CFR Part 50 Appendix I, SRP 11.2, RG 1.109 require various parameters to calculate the liquid effluent offsite doses to the public to be identified for review and evaluation. Values from Table 11.2.3-1 used in the NRC LADTAP code used to demonstrate compliance with 10 CFR 50 Appendix I cannot be verified. Regulatory Guide 1.109 is referenced as the basis for calculating values listed in Table 11.2.3.1.

The staff evaluation of Table 11.2.3-1 yielded the following concerns:

1. Several notes in Table 11.2.3-1 indicate that 12 counties are included in the area surrounding the site. Section 2.1.3.2 indicates 16 counties fall within the 10-50 mile radius of the Victoria County Station site, and Section 2.1.3.3.2 specifically lists 16 different counties. What are the 12 counties being used for Table 11.2.3-1?

2. In Table 11.2.3-1, the 50 Mile Parameters use a reference to justify a percentage to obtain a value for each parameter. Please provide the process and calculations used to determine these percentage values from the references for all 50 Mile Parameters in Table 11.2.3-1.

3. Regulatory Guide 1.109 Appendix D and Table E-4 is listed as the basis for the values of consumption rates for fish consumed, invertebrate consumed and shoreline recreation. However it does not explain how the values were obtained based on the site specific consumption rates. Please verify and provide the process and calculations used to determine the consumption rate values for 5.9 kg/yr of fish consumed, 0.85 kg/yr of invertebrate consumed, and 12.8 hr/yr of shoreline recreation in Table 11.2.3-1.

Response:

Further detail on the calculations supporting the basis for Table 11.2.3-1 is provided below.

1. Population doses are calculated considering the 12 counties that have at least 10% of their land areas within 50 miles of the plant. This was clarified in ER Section 5.4, but not in SSAR Section 11. The following 12 counties have at least 10 percent of their land areas within 50 miles of the plant: Aransas (100%), Bee (70%), Calhoun (100%), DeWitt (100%), Goliad (100%), Jackson (100%), Karnes (40%), Lavaca (50%), Matagorda (15%), Refugio (100%), San Patricio (50%), and Victoria (100%). The following four counties have less than 10% of their land areas within 50 miles of the plant: Colorado, Gonzales, Nueces, and Wharton. SSAR Section 11 is being revised to identify the 12 counties considered and to explain the basis for selecting them. The 10% cutoff is considered reasonable because the land area excluded using this criterion is negligible compared to the total land area of the counties that are included within 50 miles.

2. The percentages of the 50-mile population used for the various pathways are obtained as follows:

    a. Drinking Water – Reference 11.2.3-2 provides municipal water usage data for the 12 counties within 50 miles. It indicates that the municipal usage for the 12 counties is 7.85E3 acre-ft from Guadalupe River and 4.60E4 acre-ft from all water sources, yielding a ratio of 17%. This means that 17% of the population within 50 miles of the plant receives its drinking water from Guadalupe River.

    b. Sport Fishing – Reference 11.2.3-4 indicates that 574,000 people in Texas engage in sport fishing. Dividing this number by the total state population of 20.9 million (Reference 11.2.3-3) yields a ratio of 2.75%. Thus it is assumed that 2.75% of the population within 50 miles of the plant consumes sport fish from Guadalupe River.

    c. Commercial Fishing – It is conservatively assumed that Guadalupe River is the source of 50% of all fish consumed within 50 miles. With sport fishing accounting for 2.75% of fish intake, the remaining 47.25% is assumed to be commercial fishing. Thus it is assumed that 47.25% of the population within 50 miles of the plant consumes commercial fish from Guadalupe River.

    d. Sport Invertebrate – This is assumed to be the same percentage as sport fishing.

    e. Commercial Invertebrate – This is assumed to be the same percentage as commercial fishing.

    f. Leafy Vegetable Production – Reference 11.2.3-5 provides harvested land usage data for Texas as well as individual counties. When the harvested area of each county is multiplied by the fraction of the land that falls within 50 miles of the plant (see Item 1 above), a total harvested area of 6.76E5 acres is obtained for the 12 counties. Dividing this by the total harvested land area for Texas of 1.92E7 acres yields a ratio of 3.5%. Based on this, it is assumed that 3.5% of the leafy vegetables produced in Texas occur within 50 miles of the plant.

    g. Leafy Vegetable Production with Irrigated Water – Reference 11.2.3-5 provides irrigated land usage data for Texas as well as individual counties. When the irrigated area of each county is multiplied by the fraction of the land that falls within 50 miles of the plant (see Item 1 above), a total irrigated area of 3.87E4 acres is obtained for the 12 counties. Dividing this by the harvested land area within 50 miles of 6.76E5 acres (Item f above) yields a ratio of 5.7%. Reference 11.2.3-2 provides irrigation water usage data for the 12 counties within 50 miles. It indicates that irrigation usage for the 12 counties is 4.68E3 acre-ft from Guadalupe River and 2.72E5 acre-ft from all water sources, yielding a ratio of 1.7%. Multiplying 5.7% by 1.7% yields 0.10%. Based on this, it is assumed that 0.10% of the leafy vegetables produced within 50 miles of the plant are irrigated using water from the Guadalupe River.

    h. Vegetable Production – This calculation is the same as leafy vegetables (Item f).

i. Vegetable Production with Irrigated Water – This calculation is the same as leafy vegetables (Item g).

j. Milk Production – Reference 11.2.3-5 provides data on the number of milk cows in Texas as well as individual counties. When the number of milk cows in each county is multiplied by the fraction of the land that falls within 50 miles of the plant (see Item 1 above), a total count of 984 milk cows is obtained for the 12 counties. Dividing this by the total count for Texas of 4.04E5 milk cows yields a ratio of 0.24%. Based on this, it is assumed that 0.24% of the milk produced in Texas occurs within 50 miles of the plant.

k. Milk Production with Irrigated Water – As indicated above (Item g), 5.7% of the harvested land within 50 miles is irrigated. Reference 11.2.3-2 provides livestock water usage data for the 12 counties within 50 miles. It indicates that the livestock water usage for the 12 counties is 2.50E3 acre-ft from Guadalupe River and 1.26E4 acre-ft from all water sources, yielding a ratio of 20%. Multiplying 5.7% by 20% yields 1.1%. Based on this, it is assumed that 1.1% of the milk produced within 50 miles of the plant is from livestock using irrigated water from the Guadalupe River.

l. Meat Production – Reference 11.2.3-5 provides data on the number of beef cows and broilers in Texas as well as individual counties. When the number of beef cows and broilers in each county are multiplied by the fraction of the land that falls within 50 miles of the plant (see Item 1 above), total counts of 2.96E5 beef cows and 2.31E5 broilers are obtained for the 12 counties. Dividing these by the total counts for Texas of 5.26E6 beef cows and 1.19E8 broilers yield ratios of 5.6% and 0.20%, respectively. Based on this, it is assumed that 5.6% of the beef and 0.20% of the broiler produced in Texas occurs within 50 miles of the plant.

m. Meat Production with Irrigated Water – Using the same calculation as milk production with irrigated water (Item k above), it is assumed that 1.1% of the meat produced within 50 miles of the plant is from livestock using irrigated water from the Guadalupe River.

3. Regulatory Guide (RG) 1.109, Table E-4 provides average usage rates for adults, teens, and children to be utilized in lieu of site-specific data. RG Page 1.109-33 also indicates that the age distribution within 50 miles of the plant may be assumed to be the same as that for the U.S. population: 0.71 for adults, 0.11 for teens, and 0.18 for children. This distribution is utilized with the usage rates from Table E-4 as follows to obtain the average rates for the population:

   a. Fish Consumption = (6.9 kg/yr)(0.71) + (5.2 kg/yr)(0.11) + (2.2 kg/yr)(0.18) = 5.9 kg/yr

   b. Invertebrate Consumption = (1.0 kg/yr)(0.71) + (0.75 kg/yr)(0.11) + (0.33 kg/yr)(0.18) = 0.85 kg/yr

   c. Shoreline Usage = (8.3 hr/yr)(0.71) + (47 hr/yr)(0.11) + (9.5 hr/yr)(0.18) = 12.8 hr/yr

Associated ESPA Revisions:

In response to Item 1 above, the following paragraph has been inserted at the end of SSAR Section 11.2.3.1:

> Population doses are calculated for the year 2080, the assumed end of plant life, when the population is projected to be at its peak during the assumed 60 years of plant operation. In 2080, food production rates within 50 miles of the plant are projected to increase at the same rate as population growth. Population doses are calculated considering the following 12 counties that have at least 10 percent of their land areas within 50 miles of the plant: Aransas, Bee, Calhoun, DeWitt, Goliad, Jackson, Karnes, Lavaca, Matagorda, Refugio, San Patricio, and Victoria.

RAI 11.03-1:

Question:

10 CFR Part 50 Appendix I, SRP 11.3, and RG 1.109 require the main parameters required to calculate the gaseous effluent off site dose to the public to be identified for review and evaluation. The identification of the gaseous effluent dispersion parameter (X/Q) utilized in performing gaseous effluent dose calculations described in section 11.3.3.1 does not match the actual calculations.

The X/Q value documented in Section 2.3.5.2 at the property boundary is 1.3E-5 sec/m^3. Verification of the calculations of the radionuclide concentrations in Table 11.3.3-3 indicates the X/Q is a value between 2.5E-5 and 2.6E-5 sec/m^3. The staff's evaluation of the X/Q value used to demonstrate compliance with 10 CFR 50 Appendix I and 10 CFR 20 Appendix B cannot be verified. Please confirm the X/Q dispersion parameter value and verify radionuclide concentrations listed in Table 11.3.3-3. Make changes as appropriate to any sections that may be impacted. Provide information as to the correct values.

Response:

The concentrations at the site boundary in SSAR Table 11.3.3-3 are based on a χ/Q of 1.3E-5 sec/m^3, which is the maximum value shown for this location in Section 2.3.5.2. Table 11.3.3-3 provides the calculated radioactive gaseous effluents on a site basis. A simplified version of the equation used to calculate these values is:

$$\text{Concentration} = (\text{Activity Release per Unit}) \times (2 \text{ Units}) \times (\chi/Q)$$

The activity release per unit is based on composite data (i.e. maximum activity for each isotope) from all the technologies considered on a per unit basis, with the exception of the mPower design. Six mPower reactors are considered equivalent to one of the larger reactor designs. Thus, the mPower effluent activities are multiplied by six when developing the composite data.

The composite releases are multiplied by two to yield expected releases for the site. This represents two large reactors or 12 mPower reactors.

Table 11.3.3-3 column heading is being revised and a footnote is being added to clarify that concentrations are based on site releases, not a single unit. Site concentrations are considered more appropriate for the ESP when evaluating conformance with 10CFR 20 limits.

Associated ESPA Revisions:

The changes to SSAR Table 11.3.3-3 are shown on the following pages.

Table 11.3.3-3 (Sheet 1 of 2)
Gaseous Effluent Concentrations at the Site Boundary

Radionuclide	Release per Unit (Ci /yr)	Site Concentration (µCi/ml)		Fraction of ECL
		Site Boundary	ECL	
H-3	3.5×10^{2}	2.8×10^{-10}	1.0×10^{-7}	2.8×10^{-3}
C-14	1.4×10^{1}	1.2×10^{-11}	3.0×10^{-9}	3.9×10^{-3}
Na-24	4.1×10^{-3}	3.3×10^{-15}	7.0×10^{-9}	4.7×10^{-7}
P-32	9.2×10^{-4}	7.4×10^{-16}	5.0×10^{-10}	1.5×10^{-6}
Ar-41	2.0×10^{2}	1.6×10^{-10}	1.0×10^{-8}	1.6×10^{-2}
Cr-51	3.5×10^{-2}	2.8×10^{-14}	3.0×10^{-8}	9.5×10^{-7}
Mn-54	5.4×10^{-3}	4.4×10^{-15}	1.0×10^{-9}	4.4×10^{-6}
Mn-56	3.5×10^{-3}	2.8×10^{-15}	2.0×10^{-8}	1.4×10^{-7}
Fe-55	6.5×10^{-3}	5.2×10^{-15}	3.0×10^{-9}	1.7×10^{-6}
Fe-59	8.1×10^{-4}	6.6×10^{-16}	5.0×10^{-10}	1.3×10^{-6}
Co-57	8.2×10^{-6}	6.6×10^{-18}	9.0×10^{-10}	7.4×10^{-9}
Co-58	2.3×10^{-2}	1.9×10^{-14}	1.0×10^{-9}	1.9×10^{-5}
Co-60	1.3×10^{-2}	1.0×10^{-14}	5.0×10^{-11}	2.1×10^{-4}
Ni-63	6.5×10^{-6}	5.2×10^{-18}	1.0×10^{-9}	5.2×10^{-9}
Cu-64	1.0×10^{-2}	8.1×10^{-15}	3.0×10^{-8}	2.7×10^{-7}
Zn-65	1.1×10^{-2}	9.0×10^{-15}	4.0×10^{-10}	2.2×10^{-5}
Kr-83m	2.3×10^{-3}	1.9×10^{-15}	5.0×10^{-5}	3.7×10^{-11}
Kr-85m	3.6×10^{1}	2.9×10^{-11}	1.0×10^{-7}	2.9×10^{-4}
Kr-85	4.1×10^{3}	3.3×10^{-9}	7.0×10^{-7}	4.7×10^{-3}
Kr-87	3.8×10^{1}	3.1×10^{-11}	2.0×10^{-8}	1.5×10^{-3}
Kr-88	5.7×10^{1}	4.6×10^{-11}	9.0×10^{-9}	5.1×10^{-3}
Kr-89	3.8×10^{2}	3.1×10^{-10}	1.0×10^{-9}	3.1×10^{-1}
Kr-90	3.2×10^{-4}	2.6×10^{-16}	1.0×10^{-9}	2.6×10^{-7}
Rb-89	4.3×10^{-5}	3.5×10^{-17}	2.0×10^{-7}	1.7×10^{-10}
Sr-89	5.7×10^{-3}	4.6×10^{-15}	2.0×10^{-10}	2.3×10^{-5}
Sr-90	1.2×10^{-3}	9.7×10^{-16}	6.0×10^{-12}	1.6×10^{-4}
Sr-91	1.0×10^{-3}	8.1×10^{-16}	5.0×10^{-9}	1.6×10^{-7}
Sr-92	7.8×10^{-4}	6.3×10^{-16}	9.0×10^{-9}	7.0×10^{-8}
Y-90	4.6×10^{-5}	3.7×10^{-17}	9.0×10^{-10}	4.1×10^{-8}
Y-91	2.4×10^{-4}	1.9×10^{-16}	2.0×10^{-10}	9.7×10^{-7}
Y-92	6.2×10^{-4}	5.0×10^{-16}	1.0×10^{-8}	5.0×10^{-8}
Y-93	1.1×10^{-3}	9.0×10^{-16}	3.0×10^{-9}	3.0×10^{-7}
Zr-95	1.6×10^{-3}	1.3×10^{-15}	4.0×10^{-10}	3.2×10^{-6}
Nb-95	8.4×10^{-3}	6.8×10^{-15}	2.0×10^{-9}	3.4×10^{-6}
Mo-99	5.9×10^{-2}	4.8×10^{-14}	2.0×10^{-9}	2.4×10^{-5}
Tc-99m	3.0×10^{-4}	2.4×10^{-16}	2.0×10^{-7}	1.2×10^{-9}

Table 11.3.3-3 (Sheet 2 of 2)
Gaseous Effluent Concentrations at the Site Boundary

Radionuclide	Release per Unit (Ci /yr)	Site Concentration (µCi/ml)		Fraction of ECL
		Site Boundary	ECL	
Ru-103	3.5×10^{-3}	2.8×10^{-15}	9.0×10^{-10}	3.2×10^{-6}
Ru-106	7.8×10^{-5}	6.3×10^{-17}	2.0×10^{-11}	3.2×10^{-6}
Rh-103m	1.1×10^{-4}	9.0×10^{-17}	2.0×10^{-6}	4.5×10^{-11}
Rh-106	1.9×10^{-5}	1.5×10^{-17}	1.0×10^{-9}	1.5×10^{-8}
Ag-110m	2.7×10^{-6}	2.2×10^{-18}	1.0×10^{-10}	2.2×10^{-8}
Sb-124	1.8×10^{-4}	1.5×10^{-16}	3.0×10^{-10}	4.9×10^{-7}
Sb-125	6.1×10^{-5}	4.9×10^{-17}	7.0×10^{-10}	7.0×10^{-8}
Te-129m	2.2×10^{-4}	1.8×10^{-16}	3.0×10^{-10}	5.9×10^{-7}
Te-131m	7.6×10^{-5}	6.1×10^{-17}	1.0×10^{-9}	6.1×10^{-8}
Te-132	1.9×10^{-5}	1.5×10^{-17}	9.0×10^{-10}	1.7×10^{-8}
I-131	2.6×10^{-1}	2.1×10^{-13}	2.0×10^{-10}	1.0×10^{-3}
I-132	2.2	1.8×10^{-12}	2.0×10^{-8}	8.8×10^{-5}
I-133	1.7	1.4×10^{-12}	1.0×10^{-9}	1.4×10^{-3}
I-134	3.8	3.1×10^{-12}	6.0×10^{-8}	5.1×10^{-5}
I-135	2.4	1.9×10^{-12}	6.0×10^{-9}	3.2×10^{-4}
Xe-131m	1.8×10^{3}	1.5×10^{-9}	2.0×10^{-6}	7.3×10^{-4}
Xe-133m	8.7×10^{1}	7.0×10^{-11}	6.0×10^{-7}	1.2×10^{-4}
Xe-133	4.6×10^{3}	3.7×10^{-9}	5.0×10^{-7}	7.4×10^{-3}
Xe-135m	5.9×10^{2}	4.8×10^{-10}	4.0×10^{-8}	1.2×10^{-2}
Xe-135	7.6×10^{2}	6.1×10^{-10}	7.0×10^{-8}	8.7×10^{-3}
Xe-137	7.6×10^{2}	6.1×10^{-10}	1.0×10^{-9}	6.1×10^{-1}
Xe-138	6.2×10^{2}	5.0×10^{-10}	2.0×10^{-8}	2.5×10^{-2}
Xe-139	4.1×10^{-4}	3.3×10^{-16}	1.0×10^{-9}	3.3×10^{-7}
Cs-134	6.2×10^{-3}	5.0×10^{-15}	2.0×10^{-10}	2.5×10^{-5}
Cs-136	5.9×10^{-4}	4.8×10^{-16}	9.0×10^{-10}	5.3×10^{-7}
Cs-137	9.5×10^{-3}	7.6×10^{-15}	2.0×10^{-10}	3.8×10^{-5}
Cs-138	1.7×10^{-4}	1.4×10^{-16}	8.0×10^{-8}	1.7×10^{-9}
Ba-137m	3.6×10^{-3}	2.9×10^{-15}	1.0×10^{-9}	2.9×10^{-6}
Ba-140	2.7×10^{-2}	2.2×10^{-14}	2.0×10^{-9}	1.1×10^{-5}
La-140	1.8×10^{-3}	1.5×10^{-15}	2.0×10^{-9}	7.3×10^{-7}
Ce-141	9.2×10^{-3}	7.4×10^{-15}	8.0×10^{-10}	9.3×10^{-6}
Ce-144	1.9×10^{-5}	1.5×10^{-17}	2.0×10^{-11}	7.6×10^{-7}
Pr-144	1.9×10^{-5}	1.5×10^{-17}	2.0×10^{-7}	7.6×10^{-11}
W-187	1.9×10^{-4}	1.5×10^{-16}	1.0×10^{-8}	1.5×10^{-8}
Np-239	1.2×10^{-2}	9.6×10^{-15}	3.0×10^{-9}	3.2×10^{-6}
Total	1.4×10^{4}	1.2×10^{-8}	–	1.0

Note: Although releases are shown per unit, concentrations are for the whole site, which consists of two units. In the case of mPower, six modules are equivalent to one unit..

RAI 17.05-1:

Question:

SRP Section 17.5 part II, subsection A, "Organization," states that the applicants QAPD should 1) contain an organizational description that addresses the organizational structure, functional responsibilities, levels of authority, and interfaces, 2) include the onsite and offsite organizational elements that function under the cognizance of the QA program, 3) define the interface responsibilities for multiple organizations.

The applicant commits to Nuclear Energy Institute (NEI) QAPD template (NEI 06-14A, Revision 7, "Quality Assurance Program Description") as conditionally endorsed by an NRC SER dated November 3, 2009 (ML102370305). The template provides organizational charts that include all on-site and off-site organizations and applicable phases of the QAPD.

Please describe the title, role, and interfaces for each of the on-site and off-site organizations for each phase described in the organization section of the QAPD, and annotate their position in the appropriate organizational chart, or provide justification for any exceptions to the guidance provided in SRP Section 17.5 part II, subsection A, and NEI 06-14A, Revision 7.

Response:

As stated on the cover page of NO-AA-15, Revision 0, Victoria County Station Quality Assurance Program Description, the VCS QAPD document generally incorporates the text from NEI 06-14A, Revision 7, with Exelon Nuclear Texas Holdings, LLC and Victoria County Station specific information added where appropriate. NO-AA-15, Part II, Section 1 describes the organization. The titles, roles and interfaces for the on-site and off-site organizations are described in detail for the applicable phases in the following QAPD Part II sections:

- Subsection 1.1 describes the corporate and off-site support functions for all phases.
- Subsection 1.2 describes the on-site organization during the operating phase.
- Subsection 1.3 describes the on-site organization during the construction and pre-operational phase.

Specific description of off-site QA organizational independence is provided in NO-AA-15, Part 2, Subsection 1.1.3.3. Specific description of on-site QA organizational independence is provided in NO-AA-15, Part 2, Subsections 1.2.6 and 1.3.7. The requirement for QA organizational independence is contained in NO-AA-15, Part 2, Subsection 1.6, consistent with NEI 06-14A, Revision 7, "Quality Assurance Program Description."

Exelon has elected to use generic organizational position titles and descriptive text rather than use of specific titles and organizational charts. This approach is acceptable since the requirements specified in 10 CFR 50.54(a)(3)(iii) and (iv) allow use of generic organizational position titles that clearly denote the position function, supplemented as necessary by descriptive text rather than specific titles, and use of descriptive text as an alternative to use of generic organizational charts to indicate functional relationships, authorities, and responsibilities. The titles, roles, and interfaces of each off-site and on-site organization are described in detail in NO-AA-15, Part II, Section 1, including the specific organizational provisions to ensure QA organizational independence, as described above. Administrative documents will be maintained to relate the generic titles to Exelon and VCS specific titles, as described in NO-AA-15, Part II, Section 1. Specific position descriptions will be maintained in approved Company documents. This approach is consistent with the NRC approved Exelon Nuclear Quality Assurance Topical Report utilized and referenced in SSAR Section 17.1.

This approach is a deviation from the proposed organization charts provided in NEI 06-14A, Revision 7. In lieu of these organization charts, the text provided in NO-AA-15, Revision 0, incorporates generic organizational position titles that clearly denote the position function, supplemented as necessary by descriptive text rather than specific titles, and descriptive text is used as an alternative to use of generic organizational charts to indicate functional relationships, authorities, and responsibilities, in accordance with the provisions of 10 CFR 50.54(a)(3)(iii) and (iv).

Associated ESPA Revisions:

No ESPA revision is required as a result of this RAI response.

RAI 17.05-2:

Question:

SRP Section 17.5 part II, subsection A, "Quality Assurance Program" states that the QAPD includes criteria used to identify items and activities to which the QA program applies. A list of the structures, systems and components (SSC's) and/or activities under the control of the QA program is required to be established and maintained at the applicant's or holder's facility.

The applicant commits to Nuclear Energy Institute (NEI) QAPD template (NEI 06-14A, Revision 7, "Quality Assurance Program Description") as conditionally endorsed by an NRC SER dated November 3, 2009 (ML102370305). The template states that for ESP applications, the QAPD applies to those applicant activities that can affect either directly or indirectly the safety-related site characteristics or analysis of those characteristics. In addition, the QAPD applies to engineering activities that are used to characterize the site or analyze that characterization.

Please clarify how the Victoria County Station's QAPD section "Quality Assurance Program" meets the acceptance criteria in SRP Section 17.5 part II, subsection A, "Quality Assurance Program" and aligns with the guidance mentioned above in NEI 06-14A, Revision 7, or please explain the basis for any exceptions.

Response:

As stated in SSAR 17.1, during the preparation of the ESP application, and prior to start of any construction activities, Exelon utilizes the NRC approved Exelon Generation Company Quality Assurance Topical Report NO-AA-10 (SSAR Reference 17.1-1) to control purchase and review of design services affecting either directly or indirectly the safety-related site characteristics or analysis of these characteristics, including the engineering activities that are used to characterize the site or analyze that characterization.

After the ESP Application is approved, and prior to the start of any site construction activities, Exelon intends to implement the QAPD requirements as defined in NO-AA-15 (SSAR Appendix 17A), entitled "Victoria County Station Quality Assurance Program Description," for future safety-related work performed onsite. NO-AA-15, Revision 0, generally incorporates the text from NEI 06-14A, Revision 7. The following paragraph from NO-AA-15, Part II, Section 2, specifically addresses this requirement, including the need to establish and maintain a list of structures, systems, and components, and activities, under the control of the QA program:

"The QAP applies to those quality-related activities that involve the functions of safety-related structures, systems, and components (SSCs) associated with the design, fabrication, testing, licensing, and construction of new nuclear power units. Examples of ESP program safety-related activities include, but are not limited to, site specific engineering related to safety-related SSCs, site geotechnical investigations, certain site engineering analysis, seismic analysis, and meteorological analysis. A list or system identifying SSCs and activities to which this program applies will be maintained at the appropriate facility. The applicable Design Certification Documents will be used as the basis for this list."

Associated ESPA Revisions:

No ESPA revision is required as a result of this RAI response.

ATTACHMENT 7

SUMMARY OF REGULATORY COMMITMENTS

(Exelon Letter to USNRC, NP-11-0010, dated March 23, 2011)

The following table identifies commitments made in this document. (Any other actions discussed in the submittal represent intended or planned actions. They are described to the NRC for the NRC's information and are not regulatory commitments.)

COMMITMENT	COMMITTED DATE	COMMITMENT TYPE	
		ONE-TIME ACTION (Yes/No)	Programmatic (Yes/No)
Exelon will revise the VCS ESPA SSAR Section 11.2.3 to incorporate the changes shown in the enclosed response to the following NRC RAI: 11.02-1 (Attachment 2)	Revision 1 of the ESPA SSAR and ER planned for no later than March 31, 2012	Yes	No
Exelon will revise the VCS ESPA SSAR Section 11.2.3 to incorporate the change shown in the enclosed response to the following NRC RAI: 11.02-2 (Attachment 3)	Revision 1 of the ESPA SSAR planned for no later than March 31, 2012	Yes	No
Exelon will revise the VCS ESPA SSAR Section 11.3.3 to incorporate the change shown in the enclosed response to the following NRC RAI: 11.03-1 (Attachment 4)	Revision 1 of the ESPA SSAR planned for no later than March 31, 2012	Yes	No