May 6, 2011

Ms. Marilyn C. Kray
Vice President
New Plant Development
Exelon Generation
200 Exelon Way
Kennett Square, PA 19348

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 09 (SRP SECTIONS: 02.05.01 – BASIC GEOLOGIC AND SEISMIC INFORMATION, 02.05.03–SURFACE FAULTING) RELATED TO THE VICTORIA COUNTY STATION EARLY SITE PERMIT APPLICATION

Dear Ms. Kray:

By letter dated March 25, 2010, Exelon Nuclear Texas Holdings, LLC (Exelon) submitted an early site permit application for Victoria County Station pursuant to 10 CFR Part 52. The Nuclear Regulatory Commission (NRC) staff is performing a detailed review of this application.

The staff has identified that additional information is needed to continue portions of the review and the request for additional information (RAI) is contained in the enclosure to this letter. Exelon is requested to respond within 30 days of the date of this letter. However, the Exelon staff has requested the following response times for each question:

30 days	**45 days**	**60 days**	**75 days**	**90 days**
02.05.03-2	02.05.03-1	02.05.01-3	02.05.01-20	02.05.01-5
02.05.03-3	02.05.01-2	02.05.01-4		02.05.01-12
02.05.01-11	02.05.01-6	02.05.01-7		
02.05.01-13	02.05.01-9	02.05.01-8		
02.05.01-17	02.05.01-18	02.05.01-10		
	02.05.01-19	02.05.01-14		
		02.05.01-15		
		02.05.01-16		
		02.05.01-21		

If the RAI response involves changes to application documentation, Exelon is requested to include the associated revised documentation with the response.

Should you have questions, please contact Tekia Govan at (301) 415-6197 or Tekia.Govan@nrc.gov.

Sincerely,

/RA/

Tekia V. Govan, Project Manager
BWR Projects Branch
Division of New Reactor Licensing
Office of New Reactors

Docket No. 52-042

Enclosure: Request for Additional Information

Should you have questions, please contact Tekia Govan at (301) 415-6197 or Tekia.Govan@nrc.gov.

Sincerely,

/RA/

Tekia V. Govan, Project Manager
BWR Projects Branch
Division of New Reactor Licensing
Office of New Reactors

Docket No. 52-042

Enclosure: Request for Additional Information

Distribution:

TGovan, NRO	LGoldin, OGC	NRO_DNRL_BWR
SGreen, NRO	SPrice, OGC	
AStieve, NRO	CCook, NRO	

E-RAI Tracking Nos: 5678, 5684

ADAMS Accession No.: ML111260443

OFFICE	BC: NRO/RGS	PM:DNRL:BWR
NAME	CCook*	TGovan*
DATE	4/6/2011	5/6/2011

*Approval captured electronically in the electronic RAI system.

OFFICIAL RECORD COPY

Request for Additional Information No. 5678 Revision 0

Victoria County Station ESP
Exelon Texas
Docket No. 52-042
SRP Section: 02.05.01 - Basic Geologic and Seismic Information
Application Section: 2.5.1

QUESTIONS for Geosciences and Geotechnical Engineering Branch 2 (RGS2)

02.05.01-2

In these questions the growth faults identified in the SSAR are referred to as faults D, E, and K, whether interpreted in subsurface or surficial data sets.

In SSAR Section 2.5.1, several figures illustrate various data sets (seismic reflection, GeoMap, aerial photography, and LiDAR) that lead to your interpretations about the growth faults in the VCNPP vicinity. In order to understand the link between these data and the subsequent interpretations of growth fault structures, and in accordance with 10 CFR 100.23 (d)(2), please provide:

a) A plan-view figure with a scale similar to Figure 2.5.1-41 (i.e., extending a little beyond the 5-mile radius) that contains the following information:

   plant boundary, power block outline, outline of the cooling water basin, and the locations of US Route 77 and McFaddin Rd.

   locations of geotechnical boreholes and cross-section lines from Figures 2.5.1-34 and -35 and 2.5.4-14, -15, -16.

   LiDAR traces for faults D and E and the interpreted zones of deformation bounding these faults.

   LiDAR hillshade base map

   aerial photo lineaments

   GeoMap locations of faults D, E and K as projected to the surface.

   location of the seismic reflection lines and the point locations where faults D, E and K fall on those lines.

   electronic version of this figure that can be magnified to examine the details.

b) A figure that contains a subset of the previous request that includes the LiDAR lineaments from Figure 2.5.1-42, the air photo lineaments from Figure 2.5.1-37 and the GeoMap fault traces from Figure 2.5.1-40 on the LiDAR base map.

02.05.01-3

The characterization (nature and extent) of the growth faults that surround and underlie the Victoria County (VC) vicinity, as presented in SSAR section 2.5.1, are based on GeoMap, LiDAR, seismic reflection and air photo data and previously published geologic cross sections. There are inherent and unquantified uncertainties with respect to the precise location of the growth faults as well as with the correlation of faults between the data sets that have not been wholly discussed in the SSAR. For instance, the GeoMap data, in Section 2.5.1.2.4.2.1.2, were interpreted to contain intersections between growth faults and key stratigraphic horizons (only to the top of Frio Formation) derived from borehole data. You also projected fault traces from the Frio Formation to the ground surface. Fault traces at depth are uncertain due to well spacing, and the surface projection adds additional uncertainty. Uncertainties in the Geomap surface traces are not shown on the maps but the SSAR states that uncertainties are “on the order of several miles.”

In addition, there are unqualified uncertainties with the interpretations of surface lineaments (LiDAR and air-photo) that may have been interpreted as fluvial features rather than fault scarps. The figures in the SSAR show a lack of correlation between the traces of LiDAR or air photo lineaments and GeoMap faults for Fault D. The seismic reflection data are petroleum-standard acquisition, therefore these data will not provide resolution of the shallow horizons needed for precise interpretation about the up dip termination of faults so there is uncertainty about where these faults project, and the kind of characteristics that define the end/tip of these faults.

Therefore, in support of 10 CFR 100.23, please provide the following:

1. Please discuss fault location and fault correlation uncertainties with respect to all specific data sets and as an integrated whole.
2. Please provide a figure(s) to reflect the uncertainties (for example, adjusting the line widths).
3. Please discuss how these uncertainties impact your conclusion that no fault projects beneath the power block footprint.

02.05.01-4

SSAR Section 2.5.1.2.4.2.2 describes criteria used to classify lineaments from airphoto and LiDAR data as related either to growth faulting or to non-tectonic processes. Many lineaments interpreted by you to be of fluvial origin (Figs. 2.5.1-37, 41, 42) lie near and on-trend with surface projections of faults K and D (**see attached Figure 1**). One lineament parallels fault K turn-for-turn for more than 3 km, yet is interpreted as fluvial in origin. Many lineaments interpreted as fluvial scarps trend nearly perpendicular to the regional slope and flow direction, and appear to be southeast-facing, consistent with the slip direction of growth faulting in the region. In support of 10 CFR 100.23 please discuss the alternative interpretation that many of these lineaments are surface manifestations of active growth faulting rather than fluvial processes, and the implications for site safety.

02.05.01-5

In SSAR Section 2.5 there are several cross-sections of shallow subsurface borehole data: Figures 2.5.1-34 and 35, and 2.5.4- 14, -15, and -16. For example, Fig. 2.5.4-14 shows a gentle step in topography and apparent offset of the Sand 1 / Clay 1-B contact between boreholes B-2302A and B-2308, which straddle the mapped trace of fault D.

a. In support of 10 CFR 100.23(d)(2), and in order for the staff to evaluate the shallow subsurface units with respect to the presence (or lack thereof) of the fault, please develop cross-sections orthogonal to the trace of the fault and reevaluate the data to determine if there is an indication of a fault in the shallow subsurface.

   Please add the following on all cross-section figures: stratigraphic or lithologic contacts (e.g. as shown in Figure 2.5.1-34); surface topography based on LiDAR; location of caliche layers; and location of fault(s). Also provide an explanation of the lithologic strip log.

b. In SSAR Section 2.5.1.2.3, you stated that caliche intervals (SSAR Fig. 2.5.1-34 and 35) represent a series of paleosols and that could provide time stratigraphic markers. The staff notes that the paleosols may be more homogeneous and laterally continuous than the morphostratigraphic Beaumont Formation. Please explain why the paleosols were not used as a time-stratigraphic point for assessing the location and the timing of movement on fault D. Please provide descriptions of the calcic soils in all cross sections, such as thickness and stage of carbonate development (e.g. Birkeland, 1999, Soils and Geomorphology, Oxford Univ. Press). Also determine, based on depth measurements to the paleosol horizons across fault D, if any subtle deformation patterns indicate potential off-set on a fault plane.

02.05.01-6

In SSAR Section 2.5.1.2.4.2.3.1 you use petroleum industry seismic reflection profiles to determine the style and extent of deformation associated with growth fault D, including young, near-surface deformation. You interpret a triangular zone of "distributed down-to-the-southeast tilting or folding of strata" associated with fault D (Fig. 2.5.1-48) based on the pattern of reflectors in the seismic reflection data. In response to Question 02.05.01-01, ML 102510229, 8/16/2010, you stated that there is no evidence that growth faults D or E break the surface or form fault scarps and restated that seismic reflection data indicates that while fault D offsets the Horizon 1 reflector, above this horizon deformation is described as distributed folding.

The staff notes that these seismic reflection data may not be appropriate to image the upper several hundred meters of strata; in most cases the spectral bandwidth is too small and the sensor spacing is too coarse. Based on the acquisition parameters, processing parameters, and the time-migrated stack sections of the four proprietary profiles (supplemental seismic reflection data provided for review), the effective dominant frequency for interpreted horizons H3 and H4 is about 40 Hz, as measured on the migrated time sections. From the depth ranges of selected horizons (Table 2.5.1-3) staff infer average P-wave velocities between about 1895 m/s and 2120 m/s to a two-way travel-time of about 530 milliseconds. Thus, dominant seismic wavelengths at shallow depths in these data average about 45 to 55 m. Assuming that features smaller than about 1/4 wavelength cannot be resolved, only vertical offsets larger than about 12 m (on the H3 or H4 horizons, for example) would be detectable.

In accordance with 10 CFR 100.23 (d)(2), please justify your conclusions with respect to the safety significance of the shallow faults in light of the significant limits of the seismic reflection data. Please explain why other types of subsurface geophysical exploration, that specifically target the shallowest sedimentary layers, were not used for the characterization of the growth fault(s), especially in locations near and beneath the power block.

02.05.01-7

The staff notes that velocity fields were developed as part of the data processing for seismic profiles and that each profile crosses at least one other profile. Therefore, the derived velocity fields should be in reasonable agreement where they cross. In accordance with 10 CFR 100.23 (d):

· Provide a discussion on the limitations of this dataset for characterizing growth faults in the VCNPP vicinity

· Describe comparisons of the stacking velocity fields at the profile tie points, and discuss your level of confidence in the interpreted velocity structure

· Describe how sonic log data from deep wells drilled in the vicinity of the VCS site were used in the seismic reflection velocity analysis. For example, were they incorporated directly into the processing or were they compared to the processing-derived velocity field as a quality check?

02.05.01-8

In SSAR Section 2.5.1.2.4.2.3.1.4, you state that "fault-propagation folding has been observed to occur within triangular zones, called "trishear zones," updip of the fault tip (Reference 2.5.1-255). The tilting of discontinuous reflectors above Horizon 4 in the shallow subsurface suggests that trishear fault-propagation folding, or some other mechanism of distributed southeast-down tilting, is the primary mode of Quaternary surface deformation related to activity of fault GM-D rather than discrete surface faulting".

a. In support of 10 CFR 100.23, and to support your conclusion that fault D fault plane does not reach the surface, please provide more details about how you determined that the mode of strain deformation for the shallow expression of fault D was a trishear zone above the tip of the fault plane rather than alternative modes such as simple shear, a single fault plane or even antithetic faulting (2 faults).

   Include in your response how you determined the boundary of the zone of deformation based on seismic reflection; how does the fault project up through the triangle zone. If this feature in the seismic reflection data is a trishear zone, how did that determine where you interpreted the location of the fault at the surface and in the shallow subsurface and how does this impact our understanding of the age of latest movement.

b**.** In response to Question 02.05.01-01, ML 102510229, 8/16/2010, you state that "this style of broad warping is consistent with surface deformation associated with many growth faults throughout the Gulf Coastal Plain." Please cite and describe published examples of folding of surficial deposits over active growth faults elsewhere in the Gulf Coast region that could support a folding origin for fault D subsurface deformation.

02.05.01-9

In SSAR Section 2.5.1.2.4.2.3 you describe the identification of growth faults from aerial photographs and LiDAR topography shaded-relief maps. The staff observes that both air-photo and LiDAR data (Fig. 2.5.1-37, -38, -42) suggest that growth fault D (or a splay thereof) may extend 1-2 km northeastward instead of turning sharply to the southeast near the power block (**see attached Figure 1**). This may be a more linear trace for Growth fault D that would correspond to the more typical trend of other GeoMap faults in the vicinity. In addition, cross-sections in Figure 2.5.4-15, between boreholes B-04 and B-2316 and Figure 2.5.4-16, between boreholes B-2354 and B-2322, show small (~1 m) steps in topography and 1-3 m apparent offsets of several subsurface units that may be evidence of a fault trending in this direction.

In accordance with 10 CFR 100.23 (d), explain why this potential trend was not considered part of fault D. Please provide an evaluation of the borehole data, cited above, with regard to a possible shallow fault trending northeast rather than southeast. Please discuss the safety implications of this possible fault splay, which would be closer to the power block.

02.05.01-10

The LiDAR topography profile presented in SSAR Fig. 2.5.1-48, presumably along seismic reflection line GDI, suggests an alternative zone of deformation between horizontal markers at 22,600 ft. and 26,600 ft, which may be a 4000 ft wide graben-like feature. This alternative deformation zone is more than twice as wide as the zone indicated in SSAR Fig. 2.5.1-48 and encompasses the proposed location of Unit 1. LiDAR Profile 8 in SSAR Fig. 2.5.1-50c shows a similar pattern of topographic disruption. In accordance with 10 CFR 100.23 (d),

1. Please explain your justification for defining the boundary of the zone of deformation as the shaded triangle, as interpreted in the Figure 2.5.1-48, rather than the wider zone of deformation postulated above.
2. Please explain how you used the surficial topographic (LiDAR) data to define your interpreted zone of deformation. Also, please explain how the topography could be used to preclude the existence of a wider zone of deformation associated with fault D.
3. Please provide further justification for your interpretation that the lack of a topography break in LiDAR Profile 7 can be attributed to geomorphic or cultural processes rather than a wider zone of deformation between marker 1550 m southeastward to 2400 m, which encompasses the proposed location of Unit 1.

02.05.01-11

SSAR Section 2.5.1.2.4.2.4 describes fault E as having a similar geomorphic expression as fault D, which may imply that faults D and E are splays and may share a similar, contemporaneous movement history. In support of 10 CFR 100.23, please plot one or more representative LiDAR topographic profiles of faults D and E side-by-side, at the same scale and vertical exaggeration, to facilitate comparisons of their geomorphic expressions.

02.05.01-12

In SSAR Sections 2.5.1.2.4.2.3.3 and 2.5.1.2.4.2.4 you presented slip rate calculations for faults D and E. In addition, in response to Question 02.05.01-01, ML 102510229, 8/16/2010, you stated that growth Fault E experienced movement during the Holocene (from 10,000 years before present up to today) and that growth Fault E is a short splay of Growth Fault D. Based on this structural relationship and the similarity in their surface expressions of deformation, you postulate that “post-Beaumont surface deformation could have occurred contemporaneously on both structures.” This implies that movement on Fault D cannot be limited to Beaumont age (100,000 yr) and may be more recent. However, this is the age you used in your calculation for the age and rate of movement on fault D, implying that it is not active.

In support of 10 CFR 100.23, please provide the following:

1. Present and compare topographic profiles of the fault E lineament in Beaumont, Holocene, and historic-aged deposits that document along-strike variations in fault topographic profile size and morphology. Discuss the implications of these comparisons for the age of initiation of fault E.
2. Discuss evidence for historical activity on faults D and E in light of recent public report that indicates growth fault E offsets pavement 8 inches on McFaddin Rd where the LiDAR lineament crosses this roadway.
3. Provide a re-evaluation of the rate of movement on fault D in light of these concerns and observations.
4. Compare these rates to published rates from other active growth faults in the region such as those in the Houston area.

02.05.01-13

In response to Question 02.05.01-01, ML 102510229, 8/16/2010, you calculate the separation rate on fault E using ages of 350,000 and 100,000 years as the upper- and lower-bound for time of offset. You also state in the same response that "At the southern end of the site area, the surface deformation associated with growth fault E extends into floodplain deposits of the San Antonio River (SSAR Figure 2.5.1-4 and 2.5.1-39). The floodplain surface is inset (topographically lower and younger) into the Beaumont Formation surface. Based on the NCRS soils map, the soils developed in the floodplain deposits are interpreted to be Holocene in age (USDA 2010)".

If the fault deforms or offsets Holocene age sediments or soils, then the oldest age for this calculation would be 10,000 years. Please revise the calculation for fault E presented in response to Question 02.05.01-01 or justify using 100,000 years as the last time of movement in your calculation.

02.05.01-14

In SSAR Section 2.5.1.1.4.3.4.2 you discuss Tertiary growth faults and state: "However, some faults have either remained active at a much lower rate or have been re-activated as evident in the faults that have extended above the Frio and have minor topographic expressions within Pleistocene units (References 2.5.1-132 and 2.5.1-133)".

1. In support of 10 CFR 100.23 please discuss alternative explanations for why some growth faults have stopped moving while others remain active (or have been reactivated), and the implications for VCS growth faults. Include a discussion regarding the uncertainty of subsurface faults that may be propagating to the surface.
2. In SSAR Section 2.5.1.2.4.2 you stated that withdrawal of fluid from subsurface strata is a possible mechanism for modern growth fault movement near VC. Please compare withdrawal rates in Victoria County with those in other areas where growth faults have reactivated. If this mechanism is not the causative reason for growth fault reactivation at VCNPP, please provide an alternative mechanism.

02.05.01-15

High resolution geophysical studies (Engelkemeir and Khan, 2007, 2008; Saribudak and Van Nieuwenhauise, 2006), of active growth faults in the Houston area, which are also a part of the Vicksburg growth fault zone, show shallow distributed zones of shearing and discrete fault planes at very shallow depths beneath surface scarps. They report that rates of movement on these active faults to be as high as 3 cm/year. The faults have caused damage to a variety of man-made structures (buildings, roads, sewer lines, etc.). Fault locations in some cases were unknown until accumulated slip resulted in significant damage. In support of 10 CFR 100.23 and based on the similarity of these growth faults to faults D and E at VCNPP site, please provide the following:

1. Explain why high-resolution techniques were not used to better define the location of potential growth faults at the VC site and to correlate the interpretation from deep seated data sets (seismic reflection and GeoMap) with the topographic breaks interpreted in LiDAR and air photos.
2. Discuss why the Houston area Vicksburg growth faults should not be consider to be an analog for VC vicinity growth faults.
3. Discuss how uncertainties with respect to fault location and fault activity may impact your evaluation of surface fault hazards.

Engelkemeir and Khan, The Leading Edge, August 2007, p. 1004-1008

Engelkemeir and Khan, Lidar mapping of faults in Houston, Texas, USA. Geosphere, 2008, v. 4, no 1 p. 170-182.

Saribudak and Van Nieuwenhauise, The Leading Edge, March, 2006, p. 332-334.

02.05.01-16

In SSAR Section 2.5.1.2.4.2.3.1.4 you describe growth fault stratigraphic and structural relationships and state that in seismic reflection data "Horizon 3 is undeformed above fault K, demonstrating the absence of activity since Early Pliocene time."

The staff notes that in the original GDI profile, two mute zones between about shot points 245 and 251 correspond to acquisition undershoots, areas the seismic field crew could not access (seismic observer logs, supplemental seismic reflection data). Fault K may project to the surface in the region of these mute zones, implying that the power block may be located on the hanging wall of this growth fault. In addition, with minor changes to the interpretation there is evidence to suggest offset of horizons H3 and H4 in this shot point range. In support of 10 CFR 100.23, please address the following:

a. Discuss the potential for Fault K to propagate to the surface and in particular whether the unmigrated seismic data were analyzed in determining if Fault K cuts through the H3 and H4 horizons.

b. Discuss your interpretation of Fault K deformation in light of its potential proximity to the power block.

02.05.01-17

SSAR Section 2.5.1.2.4.2.3.1.3 discusses growth fault structure and listric geometry. A "likely regional" basal detachment fault is interpreted between two-way travel times of about 3.9 and 4.5 seconds on the industry seismic reflection profiles (SSAR Fig. 2.5.1-45, 46, 47). Other than this being the "deepest and most laterally extensive" sub-horizontal horizon in the profiles, however, the criteria used to interpret this detachment at depth are not clearly stated. In addition there is uncertainty due to decreasing signal-to-noise ratios with depth, increasing migration noise tails with depth, and time-varying bandpass filtering. In support of 10 CFR 100.23, discuss the criteria for your interpretation of the basal detachment in order to justify your interpretation that the VC growth faults are shallow and do not penetrate directly to basement.

02.05.01-18

In SSAR section 2.5.1.2.4.2 you stated that the Vicksburg growth faults most proximal to the site overlay the San Marcos Arch, a region with relatively little salt, so many of the growth faults in this area are associated with shale ridges, massifs, or diapirs. In support of 10 CFR 100.23 (d), please discuss the evidence for these shale features associated with the Vicksburg faults in the VCS vicinity and illustrate the location of any shale ridges, massifs or diapirs present in the VCS vicinity.

02.05.01-19

In SSAR Section 2.5.1.1, you described the ancestral Mississippi River contributing classic sediments to the Gulf of Mexico beginning in the Late Jurassic to Early Cretaceous (~ 99-191 Ma) and that there was a large change in deposition during the Upper Cretaceous that lead to a widespread unconformity attributed to a major eustatic lowering of sea level. The staff notes that recent publications argue that the Gulf Coast and Mississippi Embayment unconformity can be attributed to the passing of the Bermuda hotspot under the region in Mid-Cretaceous time and that the Mississippi River did not exist until late Cretaceous (Cox & Van Arsdale, 1997; 2002). In support of 10 CFR 100 23 (d) please include this alternative interpretation in the SSAR discussion about the stratigraphy and tectonics of the Gulf of Mexico.

Cox & Van Arsdale, 1997, Hotspot origin of the Mississippi embayment and its possible impact on contemporary seismicity, Engineering Geology, v. 46, n. 3/4, p. 5-12;

Cox & Van Arsdale, 2002, The Mississippi Embayment, North America: a first order continental structure generated by the Cretaceous superplume mantle event. Journal of Geodynamics, v. 34, p. 163-176

02.05.01-20

In Section 2.5.1.2.5 you stated that no geologic hazards have been identified in the VCS site area and that no deformation zones were encountered in the site investigation. However, you also described in Section 2.5.1.2.4 the presence of growth faults and zones of deformation associated with growth faults at the surface, within the plant boundary and near the power block footprint. In accordance with 10 CFR 100.23 (d), please revise this section to include a discussion of the potential hazards from growth faults within the site vicinity and area. Include a discussion of the uncertainties with respect to the mapped locations and the up-dip limits to the faults.

02.05.01-21

In SSAR Section 2.5.1.2.6.4 you described the effects of human activities on the site which included a map, Figure 2.5.1-51, of active oil wells in the plant vicinity. In support of 10 CFR 100.23 (d), please provide the following:

a. The staff notes that the map is barely legible and cannot be magnified in the electronic version provided. Please provide a map that can be enlarged, and distinguish all oil and gas wells as active, inactive, abandoned, or unknown condition.

b. Volatile and flammable gases are known to potentially accumulate in the shallow subsurface, as well as in buildings, in the vicinity of oil and gas well fields. As such, provide a hazard evaluation for potential explosions or fires from accumulating volatiles on the site property. Please indicate how the condition of the well casings would impact uncertainties with respect to the hazard evaluation.

Request for Additional Information No. 5684 Revision 0

Victoria County Station ESP
Exelon Texas
Docket No. 52-042
SRP Section: 02.05.03 - Surface Faulting
Application Section: 2.5.3

QUESTIONS for Geosciences and Geotechnical Engineering Branch 2 (RGS2)

02.05.03-1

In SSAR sections 2.5.1 and 2.5.3, you discuss the seismic potential of growth faults in the Gulf Coast region and conclude that the numerous growth faults in the region are gravity-driven, rather than tectonic features, and thus cannot be a source of moderate to large earthquakes. However, the 10 February 2006, Mb 5.5 earthquake, on the continental shelf of the Gulf of Mexico is thought to have occurred on a gravity-driven, shallowly dipping surface at an unknown but probably shallow depth . Dewey and Dellinger (2008) conclude that the dearth of high-frequency energy produced by the earthquake is consistent with either faulting within the sedimentary section or a large landslide. Dokka et al. (2006) attributes the 10 February 2006 and other earthquakes in the immediate vicinity to active tectonic processes, presumably by movement on growth faults within the sedimentary section. The SSAR does not refer to the possibility that the 10 February 2006 earthquake was related to movement on a growth fault in its discussions of the seismic potential of growth faults in the vicinity of the VCS.

In support of 10 CFR 100.23 please provide an examination of the seismic potential of growth faults in the vicinity of the VCS site in the light of the possible relationship between the 10 February 2006 Mb 5.5 earthquake and growth faulting in the Gulf of Mexico.

Dewey, J.W., and Dellinger, J.A., 2008, Location of the Green Canyon (Offshore Southern Louisiana) Seismic Event of February 10, 2006: U.S. Geological Survey Open-File Report 2008-1184, 30 p.

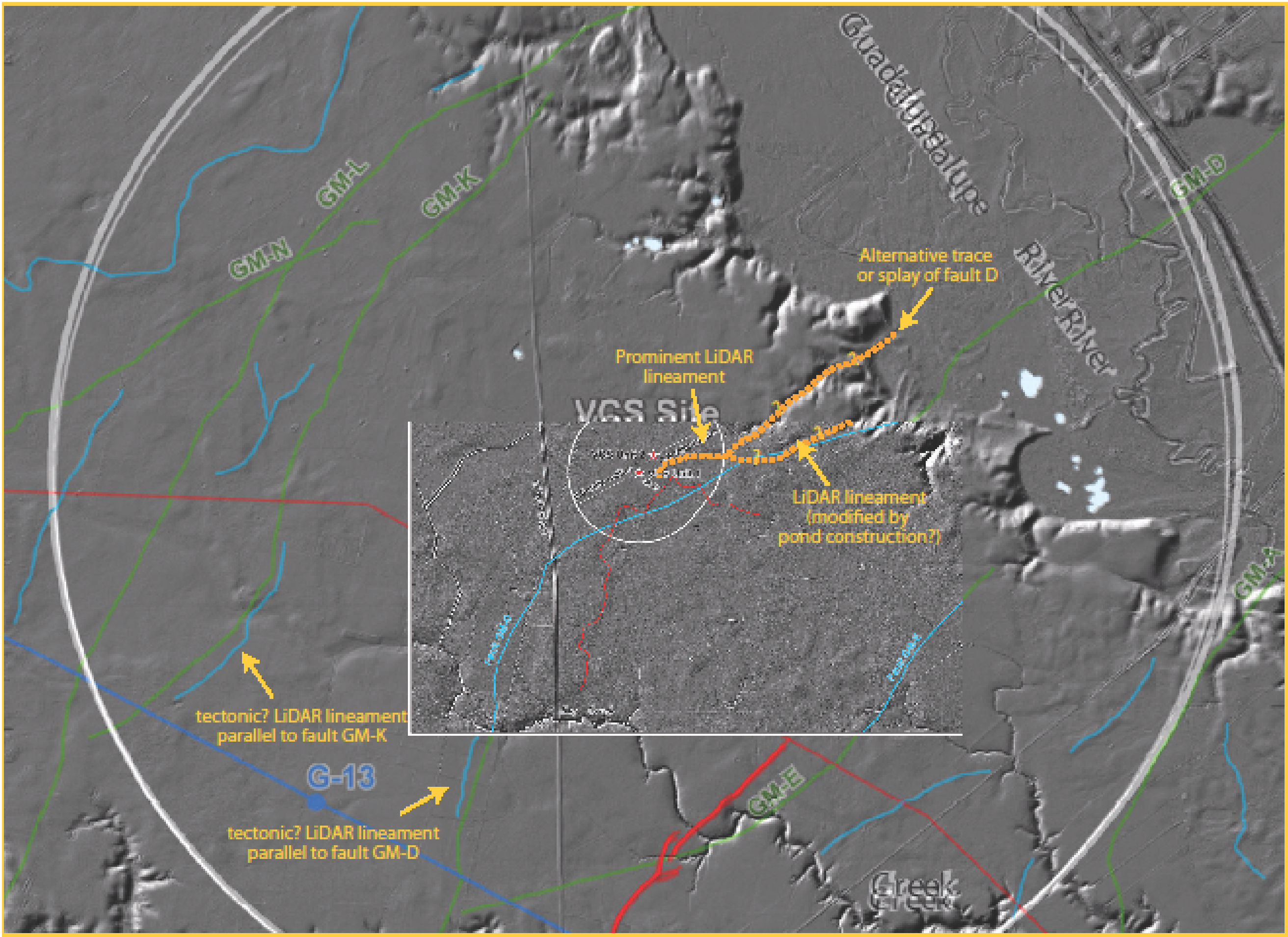
Dokka, R.K., Sella, G.F., and Dixon, T.H., 2006, Tectonic control of subsidence and southward displacement of southeast Louisiana with respect to stable North America: Geophysical Research Letters, v. 33, L23308, doi:10.1029/2006GL027250, 5 p.

02.05.03-2

In SSAR Section 2.5.3.1, you cite discussions with current researchers in the area as a basis in your assessment for tectonic and non-tectonic deformation potential. Please provide summary details of these discussions that specifically pertained to active growth faulting.

02.05.03-3

Regulatory Guide 1.208, Appendix C, Section C.24 states “growth faults can be identified and avoided in siting and their displacements can be monitored”. Due to the uncertainties in the location of the growth faults in the vicinity of the site, the uncertainties with respect to the rate of slip on these faults, and their potential impact on the stability of the structures, please discuss how you will monitor displacements or the activity of the growth faults.



USGS RAI 2.5.1-Figure 1. Composite of parts of figures 2.5.1-38, 40, and 42, showing alternative traces or splays of fault D (orange dashed lines). Also highlighted are two LiDAR lineaments interpreted as fluvial features by the Applicant that closely parallel the projected traces of faults GM-K and GM-D, suggesting a tectonic origin.