CCNPP3COLA NPEmails

From: William Johnston [wj3@comcast.net]
Sent: Friday, February 05, 2010 1:47 PM
To: Klein, Josh (Cardin); Debra Moldover (Mikulski); Quinn, Laura
Cc: David Nitkin Balto Sun; Peter Vogt; Bruce Gordon; Chris Bush; Kullen, Sue Delegate (Laptop); Marty Madden; Jeff Newman; Christie Goodman
Subject: expedite CCNPP3?
Attachments: Nuclear 2009 appeal Vogt refs.doc; ATT00003.htm; nuclear PSC appeal demand projection.docx; ATT00004.htm

Josh, Debra,

Sorry to have received no indication of interest yet from yourselves or your offices (of Senators Cardin and Mikulski) on these continuing important issues, after so many emails to you over the past year and longer.

Both "appeals" by Vogt attached below would support denial of state agreement to expediting the ongoing (just starting) federal permit process for CCNPP3, now the subject of MD PSC #9128 to commence Feb. 16. Our local papers and even the Washington Post continue likewise to ignore the issues, apparently as part of the conspiracy of silence by our local leaders on the issues of long term storage of nuclear waste locally, among other relevant important issues not being presented to the public at this crucial time of environmental degradation and continuing population growth. It seems we can only hope the Balto Sun will feel differently. Maybe a few of us will just have to slog ahead on our own in PSC 9128 and with the NRC's draft EIS to be released next month, we were told. I'm sure that draft EIS will also be a cop out, failing to fairly compare nuke vs clean energy including environmental effects and costs. We fear the NRC will rely on the stale scoping meeting of March 2008 to justify limits on the EIS evaluation, and that it will take a lawsuit to get a fair and viable comparison.

If any super-dooper cooling tower is to be built at the site, like the one proposed for the new unit #3, the first one should be to get the two existing nukes off the Bay (3.5 billion gallons of Bay water per day, with entrainment losses and chemical addition), now that their operating lives have been extended 20 years. Is more than one such cooling tower at the site possible, or would one for #3 preclude one later for #1,2? The EIS should address this, but the draft will not. This issue might be important to Bay recovery, which has yet to begin after decades now of promises and insufficient action. Indeed, its degradation continues.

Recently we learn of likely tritium releases at the plant, again apparently not newsworthy, to judge from the coverage, absent such conspiracy, however implicit.

Any chance of your Senators meeting with us, or taking a stand, such as urging the NRC to make a fair and viable comparison of alternatives, since the nukers now urge a nuclear renaissance with many new units nationwide of a supposedly revolutionary nuclear power technology? As to whether any of these questions deserve public answers, before commitment to the nukers' proposals? We submit there are fundamental opportunities here for the nation's economy and environment, amounting to lack of patriotism should they not be addressed and disseminated for public consideration.

William Johnston, Huntingtown, Calvert County, for Pete Vogt of Port Republic and Bruce Gordon of Easton also, be assured.

443 968 2314

(this email and any fair rewording is herewith offered as a letter to the editor of any newspaper)

Begin forwarded message:

From: William Johnston <wj3@comcast.net>
Date: February 3, 2010 2:32:18 PM EST
To: Bruce Gordon <jyp@dmv.com>, Chris Bush <chris.bush@verizon.net>, Cathy Garger <savorsuccesslady3@yahoo.com>, Allison Fisher <afisher@citizen.org>, June Sevilla <qmakeda@chesapeake.net>, Tom Deming Esq <tdeming@cablespeed.com>, Julia Clark <Sonnets2@hotmail.com>
Cc: James Mason <solar.plan@verizon.net>, Marty Madden <editorial@calvertindependent.com>, Jeff Newman <jnewman@somdnews.com>, Christie Goodman <goodmanc@washpost.com>, Peter Vogt <ptr_vogt@yahoo.com>, Paulette Hammond <phamm001@earthlink.net>, Norman Meadow <meadownd@jhu.edu>, "Kullen, Sue Delegate (Laptop)" <Delegate.S.Kullen@house.state.md.us>
Subject: CCPNN3---geologic fault and demand reduction

See 2 attachments ("appeals" by Vogt) at bottom below. Both of these should be filed in PSC 9128, to support PSC denial of the nukers' request there for state approval to expediting the federal permit process. Can't we all file them jointly?

Btw, today when addressing the Dems, Obama stressed the significance of clean energy as an economic driving force. More or less, to paraphrase since his exact words escape me, that the nation that leads in their development will reap great economic rewards, as China and many others well understand. SUPPORT A FAIR AND VIABLE Environmental Impact Statement BY NRC ON CCNPP3!! Is the draft EIS still expected in March?

WJ

Begin forwarded message:

From: Peter Vogt <ptr_vogt@yahoo.com>
Date: February 3, 2010 11:03:46 AM EST
To: William Johnston <wj3@comcast.net>
Subject: Re: update your stuff for Feb 16?

OK, I'll ask Sandra. Also intend to let Sue Kullen know about the upcoming geothermal talk. Attached are the two "draft" appeals I sent you last year. Feel free to use, but I have no time to get involved or attend or testify, certainly not before 15 March.

BTW The seasonal ups (winter and summer) and downs (spring and fall) in monthly residential KWhrs in SMECOland provide a lower limit to the grid power need that could be eliminated by switching to geothermal (approx 75% of the difference between max and min monthly demand). A serious switch to geothermal would provide many jobs! right now at best a couple percent of houses have geothermal. (only 3 total systems in supposedly high tech savvy, environmentally responsible, educated Scientists Cliffs !!!)

The utilities like Constellation are answerable to their stockholders, and have no incentives to promote off-grid energy sources like geothermal. That is, unless they also have a financial interest in eg geothermal systems. It would be good to know if Constellation does or does not have such an interest. However, I suspect that a 5 billion investment in nuclear CC3, their managers and bankers would scarcely be overjoyed at a massive switch to eg geothermal.

BTW2--when I visited Allison Fisher late last fall, she claimed that PSC HAD contracted and obtained a study of demand projection. Have you or any on your list found this report, Allison claimed it was accessible online, but she was in a hurry, so I never saw it on her screen or on paper.

From: William Johnston <wj3@comcast.net>
To: Peter Vogt <ptr_vogt@yahoo.com>
Sent: Wed, February 3, 2010 10:43:29 AM
Subject: Re: update your stuff for Feb 16?

Peter, maybe you could get me on that list, for notices as to the Green Matters meetings, not that I qualify for membership. Bill
On Feb 2, 2010, at 2:06 PM, Peter Vogt wrote:

Bill, feel free to submit my two 'appeals'. I'm bogged down right now trying to prepare a poster paper for the NE Section Geol Soc American March meeting in Baltimore.

I emailed Mike Phipps some time ago (presuming he's still on the SMECO board), asking him to ask SMECO (Sonja Cox) to provide me with the monthly residential KWhr demand average, so I can add to the six years' data submitted in the appeal.
No answer--I hope he didnt get into trouble due to my using the SMECO data to undermine the arguments for new grid power.

I'm toying with the idea of writing a letter to local papers bringing up the 12 Jan Haiti 7.0, which got many people to think about earthquakes, before they go on to other interests, like the Academy Awards :-) The northern major fault in Hispaniola is the Septentrional--a long segment in the Dominican Republic hasnt failed for ca 800 years! when it does, a M7.5 is likely.

Sandra Jarrett whom you probably know or knew started an SCA group called "Green Matters"--to be rescheduled (due to snow) is a talk by Brian Hammett of Tri_County Aire, an expert on Geothermal. Ramping up the installation of geothermal residential and even commercial would cut into demand for grid power in a serious way!

Peter

From: William Johnston <wj3@comcast.net>
To: Peter Vogt <ptr_vogt@yahoo.com>
Cc: Bruce Gordon <iyp@dmv.com>; Tom Deming Esq <tdeming@cablespeed.com>; James Mason Mason <solar.plan@verizon.net>
Sent: Mon, February 1, 2010 1:23:44 PM
Subject: update your stuff for Feb 16?

Peter,

It has been derelict of me, to not have worked up into a single document for the record in 9127 all your great work on the geologic fault issue and demand reduction, burt it looks like we have another chance now in 9128, especially if there are significant updates available, that could not have been offered previously.

The same goes for James Mason's stuff. Here it seems we should particularly stress OPPORTUNITY COST, ie, locking into nuke technology for a decade when renewables are blossoming, and the pressure of population and demand slowing even while conservation is realized, all giving us more time to carefully consideer committing scarce resources (money).

Maybe it is worth a shot, with exch of us updating what we can, and having it ready to submit Feb. 16, even as we ask for more time?

Bill

Hearing Identifier: CalvertCliffs_Unit3Cola_NonPublic_EX
Email Number: 3275

Mail Envelope Properties (D7BB58B5-4CF2-40AD-BD51-0DC3597FE184)

Subject: expedite CCNPP3?
Sent Date: 2/5/2010 1:46:31 PM
Received Date: 2/5/2010 1:46:36 PM
From: William Johnston

Created By: wj3@comcast.net

Recipients:
"David Nitkin Balto Sun" <david.nitkin@baltsun.com>
Tracking Status: None
"Peter Vogt" <ptr_vogt@yahoo.com>
Tracking Status: None
"Bruce Gordon" <iyp@dmv.com>
Tracking Status: None
"Chris Bush" <chris.bush@verizon.net>
Tracking Status: None
"Kullen, Sue Delegate (Laptop)" <Delegate.S.Kullen@house.state.md.us>
Tracking Status: None
"Marty Madden" <editorial@calvertindependent.com>
Tracking Status: None
"Jeff Newman" <jnewman@somdnews.com>
Tracking Status: None
"Christie Goodman" <goodmanc@washpost.com>
Tracking Status: None
"Klein, Josh (Cardin)" <Josh_Klein@cardin.senate.gov>
Tracking Status: None
"Debra Moldover (Mikulski)" <deborah_moldover@mikulski.senate.gov>
Tracking Status: None
"Quinn, Laura" <Laura.Quinn@nrc.gov>
Tracking Status: None

Post Office: comcast.net

Files	**Size**	**Date & Time**
MESSAGE	9952	2/5/2010 1:46:36 PM
Nuclear 2009 appeal Vogt refs.doc	52288	
ATT00003.htm	2287	
nuclear PSC appeal demand projection.docx	15967	
ATT00004.htm	434	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

A) SUMMARY OF APPEAL: The appellant notes that PSC CCNPP report and all previous reports/studies, dealing with possible risks to CCNPP, especially the proposed third reactor, have failed to note the probable presence of a potentially active earthquake fault which intersects the Calvert Cliffs 1 ¼ mile south of CCNPP, and is likely to pass closer to CCNPP. This is the only such structure known along the entire Calvert Cliffs. Appellant strongly recommends delaying any permit until geological mapping by experts demonstrates said fault is real (not mapping errors), and if so demonstrated, that boreholes with sediment cores be taken on land, and seismic chirp profiling conducted offshore, to determine the strike (map trend) and dip (incline) of the fault, and its history of activity.

B) BACKGROUND FOR APPEAL: Among the risks that have to be evaluated at proposed and present sites of nuclear power plants are the risks from shaking from earthquakes. Most earthquakes are caused by failure (rupture) of the earth's crust or upper mantle along faults; occasionally they are associated with volcanic eruptions and very rarely, including the very greatest, by comet or asteroid impacts. Even though the reactor containment structure may be engineered to withstand a major earthquake, coolant pipes with small defects (e.g. bad welds) may break, or alarm systems triggered, and in areas such as Calvert Cliffs where earthquakes are rare, power plant employees fooled into an inappropriate response.

These risks are generally estimated statistically, e.g. 'the probability this structure will be exposed to ground motion accelerations at least Y, of type X is estimated to be less than Z per year". Such statistics are obtained from 1) earthquake seismicity data during about the last half century of instrumentally recorded shocks, 2) historical accounts of earthquake-induced observations, including damage, which along the Eastern US coastal areas extend back 300-400 years; and 3) geological mapping of 'geologically recent' structures (faults or folds) in the earth's surface and shallow subsurface geology. However, many if not most major earthquakes are caused by failure along deeply buried faults, and have no surface or near-surface expression. The absence of earthquake seismicity during the instrumentally recorded and even the 'historical' reporting periods does not necessarily mean that no major earthquake could occur with small but significant probability over the expected lifetimes of a nuclear power plant (25-50+ years?). **A case in point is the 31 Aug 1886 Charleston, SC event (estimated at Richter magnitude between 6.6 and 7.3). There had been few or no earthquakes reported in this area prior to the shock. Had this earthquake not yet occurred, a low seismic risk would now still be assigned to the Charleston area.**

The CCNPP site, including proposed third reactor, is located on the US eastern seaboard (Coastal Plain), since the advent of plate tectonics placed more or less in the middle of the North America plate (Simkin et al.,2006), far from the seismically very active plate boundaries. However, the region (except for Florida) is not aseismic; earthquakes do occur, but less frequently. Much of the North America plate between the western North Atlantic and the Rockies appears to be under horizontal NE/ENE

compression (e.g., Zoback et al.,1986). Most earthquakes in the region are caused by rupture along deeply buried, ancient faults, which this current stress pattern is 'reactivating' because the old faults remain zones of persistent weakness. Faults which rupture and displace young, near surface sediments of the Coastal Plain are uncommon but exist. The Stafford Fault (Virginia) is a good example.

Major earthquakes, capable of massive damage, have occasionally occurred within the interior of the North American Plate. For example, a series of four major earthquakes with estimated "Richter" magnitudes from 7.0 to 8.1, struck the area of New Madrid, Missouri from 16 Dec, 1811 (largest) to 7 Feb 1812. Fortunately this area was then only sparsely populated, but New Madrid was destroyed and many houses damaged in St. Louis. The seismic waves were felt on the US East Coast, and were reported to have cracked ice on the Chesapeake Bay. The recurrence times for similar shocks in the same area are now estimated at ca. 300-500 years, several times longer than for large plate boundary earthquakes e.g. along the San Andreas fault in California.

On 31 Aug 1886, a ca. 6.6-7.3 magnitude event caused severe damage in Charleston, SC, and some damage as far north as southern Virginia. It was strong enough in Calvert County to be noted by the Drum Point lighthouse keeper and to scare guests in the old Evans Hotel to flee the building, as reported by the Calvert Gazette. Significant to this appeal is the fact that little or no prior earthquake activity had been reported in the Charleston area. Lesser earthquakes, felt but not damaging, have occurred (that is, their epicenters) historically in Maryland and surrounding states.

Geological mapping of the sedimentary strata (layers) exposed in the Calvert Cliffs (most recently conducted and summarized by Kidwell, 1997) shows the layers are more or less continuous (no faults) and only very gently folded, except at one place, hereafter called Moran's Landing (ML), located near (ca. 1 ¼ mile) south of CCNPP. At this point (See Figure) there appears to be a break in the strata, either due to mapping errors (considered possible but unlikely) or a neotectonic structure, hereafter called the "Moran's Landing Fault ?" or "MLF?" (The question mark needs to be retained pending certain verification or falsification). Because at present only the intersection of the MLF? with the Calvert Cliffs is known, its trend (and trace, or intersection with the ground surface, in a map view) remains unknown. **Therefore the closest approach of the fault to the CCNPP and to the site of the proposed third reactor is unknown, but cannot geometrically be any more than 1 ¼ mile, and could be much closer.** The south side of the MLF? appears offset "up" relative to the north side (see Figure), so the **structure is probably a thrust fault with the crust to the south shoved over the top of the crust to the north**. Thrust faulting is consistent with the regional NE to ENE compression of this region (e.g., Zoback et al., 1986). Because the shallow marine Miocene-aged strata (ca. 12 to 10 million years old at this site) are offset, the faulting must postdate this time. The offset appears to continue into the overlying 'Upland Gravel' formation, meaning the faulting was still going on until after about 2 or 3 million years ago. Based on this interpretation of long term and geologically "neo-tectonic" (post-Miocene) activity, the structure is unlikely to be extinct. For the purposes of risks (*sensu lato*) to nuclear power plants, it is not enough to say that CCNPP

is located in a region where destructive earthquakes occur rarely, if at all. Surface topography might help shed light on possible fault trends—because faulting generally loosens and weakens earth materials, facilitating erosion by water. GOOGLE-EARTH imagery suggests linear ravine/stream valley trends of about WNW and NW-NNW in the area from the Calvert Cliffs State Park north to the CCNPP area, so these are possible, but unproven fault strikes. If the MLF? strikes NW-NNW, it would pass through the CCNPP property not far from the present two and proposed third reactor.

Establishing an annual probability at less than 1:1,000,000 that an event with magnitude at least 7 or 7.5 occurs within 100 miles of CCNPP in a given year is very different from saying this probability is less than 1:500 or 1:1000. The point of this appeal is to emphasize that these probabilities (large shocks with low recurrence times) are not well established, due to the short historical and instrumental records and lack of detailed subsurface mapping. This makes it essential to evaluate and factor in any significant evidence for neotectonic structures such as the MLF?, which has been ignored, notwithstanding e.g. Kidwell's 1997 publication 12 years ago.

RECOMMENDATION: Given the possibility, or even probability, that a significant neotectonic structure ,"Moran's Landing Fault?"—a post-Miocene and potentially active earthquake-generating fault that offsets the strata exposed in the Calvert Cliffs such that the land on the south side has moved up relative to the north side- passes within 1 ¼ mile or less of the Calvert Cliffs Nuclear Power Plant, and that past CCNPP risk assessments—including the 2009 preliminary PSC report-- have failed to take this potentially seismically active (with high-frequency accelerations due to fault proximity) structure into account, this appeal recommends the following:

1) **No permit should be issued by PSC until detailed geological mapping, by experts, of the cliff exposures for at least several hundred meters on either side of the Moran's Landing area can discriminate with certainty between the "neotectonic fault" interpretation (considered more likely) and the "mapping errors" interpretation (considered less likely).** If (but only if) mapping errors are demonstrated, this appeal is groundless.

2) **In the event the Moran's Landing Fault (MLF?) is demonstrated to be real, no permit should be issued before a A) series of shallow (several hundred meters depth) boreholes have been placed, with core recovery and analysis, to determine the strike (trend) and dip (incline) of the fault, and of its offset history (when it was active, with an estimate of how often on average a fault offset occurred); and B) as a minimum a seismic 'chirp' profiler grid survey (similar to those conducted further north; see Vogt et al., 2000ab) be conducted in the Chesapeake Bay in the area where the putative MLF? would extend in the subbottom**. The chirp profiler could reveal evidence (or lack thereof) for offset of young sediment strata. The nearshore (with a mile or so of the cliffs) unconsolidated sediments range in age from a few thousand years (at most, a mile out) to zero (at the beach and in the shallow subbottom), so any offset of such strata along a fault would increase the odds of a new rupture in the future. It would

also be helpful to **deploy a small array of seismometers for several months to detect any local, low-magnitude activity, below the threshold felt by humans or detected by regional networks**.

APPPENDIX : CREDENTIALS OF APPELLANT AND DISCLAIMERS, and GEOLOGICAL REFERENCES: The following is an abbreviated Curriculum Vitae, with selected publications. Disclaimer: The appellant is speaking as a geoscientist and long-time (40 year) Calvert County resident for himself only, and in no way on behalf of any institution or employer with whom he is or has been associated. While a geophysicist by profession, the appellant does not claim specialized expertise in the fields of earthquake seismology nor in engineering applications of such knowledge. While the appellant is familiar with the geology of the Calvert Cliffs, he defers to Prof. Susan Kidwell, University of Chicago, as the geologist most knowledgeable in this field, having herself mapped the geology exposed in the Calvert Cliffs. The primary basis for this appeal is the apparent break in continuity (suggesting an earthquake fault) mapped by Prof. Kidwell (Kidwell, 1997) at just one locality along the entire cliffs: the site she labels as Moran's Landing, about 1 ¼ miles south of the BG&E/Constellation CEG nuclear power plant and proposed site of third reactor. Publications cited in this appeal are prefaced by an asterisk (*).

1) **Curriculum Vitae and selected publications by appellant**

Home Address:
3555 Alder Rd.
Port Republic, MD 20676

Phone: 410-586-0067
EMAIL: ptr_vogt@yahoo.com

Education:

PhD (Oceanography) Univ. of Wisconsin, Madison	1968
MA (Oceanography) Univ. of Wisconsin, Madison	1965
BS (Science; Geophysics; "With Honor"), Caltech	1961

Von Karman Scholarship 1957-61
US Fulbright Scholarship, Univ. Innsbruck, Austria (Glaciology) 1962-63

Professional Positions:

Currently (2009): Research Associate, Smithsonian Institution; Adjunct Professor, Horn Point Environmental Laboratory ; Professional Researcher, Marine Science Inst., Univ. California at Santa Barbara

Marine Geophysicist, US Naval Oceanographic Office- 1967-1975
Marine Geophysicist, Naval Research Laboratory - 1976-2004
Sabbatical, Univ. Oslo, Norway - 1978-1979

Professional Awards:

Within Navy:
Henry Kaminski Award, Research Society of America, 1971
(US Naval Oceanographic Office)
Alan Berman Research Publication Award, 1980, 1986, 1995
(Naval Research Laboratory)

Academia:
Fellow, Geological Society of America, 1973
Honorary Doctorate, Univ. Bergen, Norway, 2000
Foreign Member, Norwegian Academy of Science and Letters, 2000
Distinguished Alumni Award, Univ. of Wisconsin, 2003

Publications: over 150 authored or coauthored, and peer-reviewed professional publications, starting 1965. Those excerpted below demonstrate appellant's geoscience research publication history in the Chesapeake Bay, the western North Atlantic Ocean, global synthesis including seismicity, and geology of Calvert County, including the Calvert Cliffs.

Estuarine Processes & Gassy sediments: Chesapeake Bay

Hagen, R.A. and **Vogt, P.R.,** 1999, Seasonal variability of shallow biogenic gas in Chesapeake Bay, Mar. Geol., 158, 75-88.

***Vogt, P.R.**, Halka, J.P., Hagen, R.A. and Cronin, T., 2000, Geophysical environment in Chesapeake Bay: *Marion-Dufresne* Sites MD99-2205, 2206 and 2208, in Cronin, T., ed., Initial Report on IMAGES V Cruise of the *Marion-Dufresne* to the Chesapeake Bay June 20-22, 1999, USGS Open File Report 00-306, p.18-31.

***Vogt, P.R.,** Czarnecki, M. and Halka, J.P., 2000, *Marion-Dufresne* Coring in Chesapeake Bay: Geophysical Environments at Sites MD99-2204 and 2207, in: Cronin, T., ed., Initial Report on IMAGES V Cruise of the *Marion-Dufresne* to the Chesapeake Bay June 20-22, 1999, USGS Open File Report 00-306, p. 32-39.

Halka, J.P.,**Vogt, P.R.,** Colman, S.M. and Cronin, T.M., 2000, Geophysical Environment: Site MD99-2209, in: Cronin, T., ed., Initial Report on IMAGES V Cruise of the *Marion-Dufresne* to the Chesapeake Bay, June 20-22, 1999, USGS Open File Report 00-306, p. 40-48.

Colman, S.M., Baucom, P.C., Bratton, J.F., Cronin, T.M., McGeehin, J.P., Willard, D., Zimmerman, A.R. and **Vogt, P.R.,** 2002, Radiocarbon dating, chronologic

framework, and changes in accumulation rates of Holocene estuarine sediments from Chesapeake Bay, Quat. Res., 57, 58-70.

Shah, A.J., Brozena, J., **Vogt, P.**, Daniels, D., and Plescia, J., 2005, New surveys of the Chesapeake Bay impact structure suggest melt pockets and target-structure effect, Geology, 33, 417-420, doi:10.1130/G21213.1

Cronin, T.M., **Vogt, P.R**., Willard, D.A., Thunell, R., Halka, J., Berke, M., and Pohlman, J., 2007, Rapid sea level rise and ice sheet response to 8,200-year climate event, Geophys. Res. Lett., L20603, doi:10.1029/2007GL031318

Synthesis and Review

Vogt, P.R. and Tucholke, B.E., eds., 1986, The Western North Atlantic Region, v. M of The Geology of North America, Geol. Soc. Amer., Boulder.

Vogt, P.R. and Tucholke, B.E., 1989, North Atlantic Ocean Basin; Aspects of geologic structure and evolution: An overview, in Palmer, A. et al., eds., v. A. of The Geology of North America, p.53-80.

Regional and Global Charts:

Simkin, T., Unger, J.,Tilling, R.I., **Vogt, P.R.** and Spall, H., 1994, This Dynamic Planet—World map and interpretations of volcanoes, earthquakes, plate tectonics and bolide impact craters, Second Edition, US Geological Survey (Chart).

*Simkin, T., Tilling, R.I., **Vogt, P.R.,** Kirby, S., Kimberly, P. and Stewart, D., 2006, This Dynamic Planet, Third Edition (chart and website), US Geological Survey Geologic Investigations Series, Map I-2800

Local (Southern Maryland) geology:

***Vogt, P.R.** and Eshelman, R., 1987, Maryland's Cliffs of Calvert: A fossiliferous record of Mid-Miocene inner shelf and coastal environments, in: Roy, D.C., ed., Geological Society of America Centennial Field Guide-Northeastern Section, v.5, Geol. Soc. Amer., p.9-14.

***Vogt, P.R.,** 1991, Estuarine stream piracy: Calvert County, US Atlantic Coastal Plain, Geology, 19, 41-44.

---

2) OTHER PUBLICATIONS RELATED TO THIS APPEAL:

*Kidwell, S.M., 1997, Anatomy of extremely thin marine sequences landward of a passive-margin hinge zone; Neogene Calvert Cliffs succession, Maryland, USA, Jour. Sedimentary Research, 67(2), 322-340.

*Zoback, M.L., Nishenko, S.P., Richardson, R.M., Hasegawa, H.S., and Zoback, M.D., 1986, Mid-plate stress, deformation, and seismicity, in **Vogt, P.R**. and Tucholke, B.E., The Western North Atlantic Region, v. M in The Geology of North America, Geol. Soc. Amer., Boulder, p.297-312.

Begin forwarded message:

From: Peter Vogt <ptr_vogt@yahoo.com>
Date: February 3, 2010 11:17:18 AM EST
To: William Johnston <wj3@comcast.net>
Subject: 2009 Vogt 'appeal' demand projection

2009 vogt demand projectin 'appeal' attached

APPEAL TO PSC initial findings (draft 3 June 2009)

Appellant: Peter R Vogt (PhD), 40 year resident of Calvert County, home address 3555 Alder Road, Port Republic, MD 20676. Marine geophysicist by profession. Email ptr_vogt@yahoo.com

Home phone 410-586-0067

SUMMARY OF APPEAL

Before issuing the Certificate of Convenience and **Necessity** for the proposed third nuclear reactor (Constellation Energy Group, CEG)) at the Calvert Cliffs Nuclear Power Plant (CCNPP), the PSC must demonstrate the **NECESSITY** of this 1600 MW power plant. Appellant considers this necessity not adequately justified, and requests that this be done prior to PSC approval. Appellant notes that per capita annual KW-hr use in the US has flattened in recent years (even prior to the economic downturn); appellant adduces per residence electric use in the Southern Maryland area (SMECO data) to demonstrate that per residence use has not only leveled off but actually declined over the last five years. Given these data, and probable further declines due to improved conservation, off-grid generation, etc., appellant argues that effect on total grid demand of population growth (ca. 1% per year in MD; ca. 0.9% per year in US) can easily be compensated with increased use of renewable energy, as this is less than already planned by State of Maryland.

BACKGROUND DISCUSSION

In making a decision whether to approve the construction of a major nuclear power plant (1600 MW), which will be in operation for decades and which imposes certain risks to the regional population, the PSC needs to evaluate statistically and realistically the long-term demand projections, and to share with the public the caveats , methodology, and uncertainties, statistical and otherwise, in such demand projections. The Maryland public deserves answers to three basic questions need to be answered, and these answers supported with quantitative data:

1) What do the per capita and per residence usage trends for recent years (5 to 10) predict, were these trends to continue?
2) What is the likelihood that such recent historical usage trends can be projected into the future?
3) When these usage projections are multiplied by plausible population growth rates and allowance is made for long term demographic trends, why cannot the State of MD's proclaimed leadership role in clean, renewable energy easily compensate for the ca. 1% annual growth rate?

Appellant does not have access to all industry data, but directs PSC attention to the following:

1) US per capita electric consumption stopped increasing around 1998 (Fig. 1-7, p. 9 of Makhijani, 2007; reproduced from Fig. 7, p. 13 of Chang et al., 2007). The annual per capita consumption has leveled out to around 12,000 kW-hr per year.

To obtain an example of residential consumption trends in the Mid-Atlantic (general area of Constellation/BG&E grid service), the appellant queried his own long-time provider, Southern Maryland Electric Cooperative (SMECO). SMECO kindly compiled the monthly electricity they had to purchase for their customers for the five years ending in 2008. They kindly also provided heating and cooling degree-days for each month, to help understand and correct for seasonal HVAC-related variability. These data (attached table and apellant's interpretation) suggest that not only has demand per residence leveled off, but has actually declined somewhat.

2) Appellant notes that demand projections using data from the recent real estate bubble, and prior to serious and unprecedented new US National policies to promote clean renewable energy (nuclear is not included in this category), such demand projections are very likely to strongly OVERESTIMATE future increases in demand. The PSC should take note of what happened to electricity consumption as a result of the 1973 OPEC oil embargo (Fig. 1-7 of Mahijani, 2007): The essentially exponential increase of US per capita consumption changed rather abruptly to a slower, linear rate of increase. In California the 1973 change was even more dramatic, with essentially flat consumption around or a bit above 7000 Kw-hr per year holding nearly steady for the last 35 years. The main point here is that US electricity consumption is not engraved in stone. Demand predictions made in 1973, using historical data for the previous decade would have wildly overestimated the future increase in per capita demand and thus new power plants. While no-one has a crystal ball, per capita or per residence demand projections based on the last 5 to 15 years are likely to overestimate, perhaps also wildly, the increased demand. Per capita demand is likely to slow further due to overseas export of manufacturing, better insulation and more efficient appliances, a reversal of trends to McMansions,

The public has the right to see and evaluate the demand projections made by industry to support the claimed need for the new CCNNP reactor at a time when so much (politically, economically, and technically) is in a change of rapid flux. As a minimum, several years of new consumption data are needed before realistic demand projections can be made. A third reactor at CCNPP, if built, would probably be in operation for the next half century. Building it is a sure way to handicap and thus slow conversion to clean energy technology.

3) Appellant notes that Maryland State government has recently proclaimed the state as a US leader in clean energy. State of MD plans for substantial reductions in traditional electricity demand and replacement with clean energy (e.g., solar photovoltaic, offshore wind turbines, ground loop geothermal, much improved insulation, etc) call for demand reductions in excess of the 1% per year required to compensate for population growth. Photovoltaic panels are rapidly declining in

cost, due largely to large scale production. Advanced thin film photovoltaic technology is under rapid development. The Atlantic continental shelf off the Mid-Atlantic is prime real estate for offshore wind farms. If clean energy, along with increasing efficiency and insulation, are able to compensate for the ca. 1% annual population growth rate—a rate which will almost certainly, based on all models, decline over the lifetime of the proposed third reactor-then no new fossil or nuclear grid power is required.

REFERENCE

Makhijani, A., 2007, Carbon-free and nuclear-free, IEER Press, Takoma Park, MD, 257 p.

ATTACHMENT

SMECO residential use in early 21st century and interpretation; SMECO data.