March 30, 2009

MEMORANDUM TO: Robert Schaaf, Chief
Environmental Projects Branch 3
Division of Site and Environmental Reviews
Office of New Reactors

FROM: Thomas Fredrichs **/RA/**
Environmental Projects Branch 3
Division of Site and Environmental Reviews
Office of New Reactors

SUBJECT: TRIP REPORT – CALVERT CLIFFS ALTERNATIVE SITES MARCH 20 AND MAY 5-6, 2008

In its combined license (COL) application dated July 13, 2007, UniStar identified one site in Maryland and two sites in upstate New York as its three alternative sites for the Calvert Cliffs Unit 3 proposed site. All four sites have ties to Constellation Energy Group. On March 20, 2008, NRC and PNNL staff traveled to the C.P. Crane site in Maryland. On May 5 – 6, 2008, NRC and PNNL staff traveled to the R. E. Ginna and Nine Mile Point sites, both located in New York.

The staff performed walk downs of the sites and conducted discussions with the applicant's staff. Enclosure 1 summarizes the staff's observations. Enclosure 2 provides a list of those in attendance.

Docket No. 52-016

Enclosure:
1. Trip Report
2. List of Attendees

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301-415-5971

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Calvert Cliffs Alternative Sites Audit Trip Report
Calvert Cliffs Nuclear Power Plant (CCNPP), Unit 3 COL
March 20 and May 5-6, 2008

Overview

In its combined license (COL) application, UniStar identified one site in Maryland and two sites in upstate New York as its three alternative sites for the Calvert Cliffs Unit 3 proposed site. All four sites have ties to Constellation Energy Group. The reactor type selected for UniStar's proposal is the AREVA U.S. Evolutionary Power Reactor (U.S. EPR) design. A cooling tower system would be used for reactor heat dissipation.

The Maryland alternative site, northeast of Baltimore, currently houses the CP Crane (Crane) coal plant. The New York alternative sites are within the existing properties of the RE Ginna and Nine Mile Point (NMP) nuclear plants. The visit to the Crane site was conducted on March 20, 2008, immediately after the Calvert Cliffs site audit and scoping meeting in southeast Maryland. The New York alternative site visits were conducted on May 5 and 6, 2008. Concurrently, NRC conducted a C-1 Pre-Application visit at Nine Mile Point on May 6 and 7. Ginna and Nine Mile Point units renewed their operating licenses in 2004 and 2006, respectively, and their Supplemental Environmental Impact Statements (EISs) were available for use as baseline site information. Staff attending one or more of these visits are listed below.

NRC Team

All Three Sites

• Tom Fredrichs	Team Lead
• Laura Quinn	Deputy Team Lead
• Irene Yu	Alternative Sites and Cultural Resources
• Harriet Nash	Ecology, Land Use

CP Crane and NMP

• Nebiyu Tiruneh	Hydrology

RE Ginna and NMP

• Mike Masnik	Ecology and Hydrology
• Dan Mussatti	Socioeconomics and Environmental Justice

CP Crane

• John Fringer	Shadow
• Phil Brandt	Shadow

PNNL Team

All Three Sites

• Mary Ann Parkhurst	Team Lead/Alternative Sites
• Gene Whelan	Hydrology
• Roy Kropp	Aquatic Ecology

- Tom Secrest — Socioeconomics, Environmental Justice, Land Use, Alternatives

CP Crane

- Robin Durham — Deputy Team Lead
- Corey Duberstein — Terrestrial Ecology
- Carl Berkowitz — Team Lead Shadow
- Mike Fayer — Hydrology Shadow

Schedule of Activities

Thursday, March 20, 2008 – CP Crane

0730 – 0900 hrs Drive from Solomons to the CP Crane site northeast of Baltimore
0930 – 1200 hrs Site visit and discussions

Monday, May 5, 2008 – RE Ginna

0830 – 1200 hrs Ginna Site visit; discussions and site tour

Tuesday, May 6, 2008 – NMP

0800 – 0930 hrs Welcome and introductory remarks

- Welcome
- Opening Remarks – Potential Applicant and NRC
- Introductions
- Orientation to Site, Health and Safety

0930 – 1100 hrs General tour of site

1100 – 1200 hrs Breakout sessions back at Visitors Center

1200 – 1300 hrs Lunch

1300 – 1700 hrs Meetings in Visitors Center

- Presentations by Applicant on Alternative Site Selection and Transmission Lines
- Specialized tours
- Breakout sessions

1700 – 1730 hrs NRC closed door session

1730 hrs – Adjourn except for small contingent to remain and brief Applicant on the day's progress and preliminary findings. (Meetings related to the C-1 Pre-Application continued through 12 pm on May 7.)

CP Crane

The CP Crane Generating Station is located on a peninsula in the Chesapeake Bay at the northeastern edge of Baltimore County. It is owned and operated by Constellation Energy Group. The site is accessed by a single 1.7-mi road. The site currently hosts two coal-fired units operating since 1958 and 1961, respectively, and an oil-fired boiler added later. The staff walked around the perimeter of the facility and viewed the cooling water canal, the barge landing, the rail car coal unloading operation, and the coal stock pile. Staff members were accompanied by George Wrobel and David Murphy (UniStar), Bill Butler and Sandy Buxbaum (Crane/Constellation), and Martin Owens and James Linville (AREVA).

The CP Crane site consists of about 157 acres, including the coal pile and rail car loading area, which is large enough to contain a U.S. EPR unit and associated structures (final footprint of about 45 acres) but may be insufficient to accommodate construction and equipment laydown space requirements. Additional land purchase may be needed to meet the overall acreage requirement. Nearby farmland could potentially provide additional space.

The Crane site and surrounding lands are designated as critical areas under the 1984 Chesapeake Bay Critical Area law. The adjacent land area is predominantly wetlands and is zoned for resource conservation. This latter designation apparently relates to the avoidance of subdividing land into parcels of less than 5 acres, which would not of itself prevent its use as laydown space. The Crane site itself is zoned for power generation. It has rail and barge access and transmission corridors believed to be sufficient for nuclear plant output.

The facility is at the edge of a little side-bay of the Chesapeake, and is subject to daily variations in wind, with the primary direction for wind flow being from the west. The closest meteorology observations mostly likely is at Aberdeen Proving Ground, about 17 miles to the northeast or at one of the nearby airfields or small airports.

All make-up cooling water for the existing plant is from the Chesapeake Bay and cycles through a once-through canal. The NPDES discharge permit does not set a limit on temperature discharge. Dredging was done for coal barge unloading, and it is expected that there would be no need for additional dredging. City water supplies all potable needs and sanitary streams. No groundwater is used by the facility. The city water is supplied by a series of reservoirs and a tie to the Susquehanna River.

The site has an intake bay area, fish screens and a fish return system, and a fairly large discharge canal, which is mainly an engineered channel. Phragmites (reeds) wetlands are located along the southern site perimeter, and areas to the west are wooded. Many kinds of water birds, herons, ospreys, and gulls were visible during the visit. Eagles may be moving onto Carroll Island.

The site is on the outskirts of suburban Baltimore. To the east is Carroll Island, a U.S. Army livefire range. The nearest residential neighborhood can be seen across the small bay to the southwest of the plant. Open and wooded areas block the view from residents northwest of the plant. The Chesapeake Bay lies to the northwest, east, and southeast of the plant, and wooded islands lie to the north and northeast. Major roadways are nearby. UniStar believes that the Carroll Island Road leading to the plant would be affected during morning and evening commutes by construction traffic but that other roadways would be able to handle this increase in traffic.

An issue related to population density needs further exploration as it relates to the preferred population density limits identified in Regulatory Guide 4.7, a standard primarily for emergency planning. However, according to the regulatory guide, "consideration will be given to other factors such as safety, environmental, or economic considerations, which may result in the site with the higher population density being found acceptable."

One of the reasons the Crane site was selected as an alternative was because it was listed as being slated for decommissioning in a 1999 report, which assumed that retrofitting various fossil fuel plants, including Crane, to meet the Maryland Healthy Air Act would be cost prohibitive. However, site personnel were not aware of any plans to decommission the facility.

RE Ginna

The RE Ginna Nuclear Power Plant is located four miles north of Ontario, New York, on the south shore of Lake Ontario. The plant has one PWR unit rated at 490 MWe and uses once-through cooling. It was formerly owned by Rochester Gas and Electric Corporation and is now a Constellation plant. Ginna lies in a rural surrounding with flat fields and gently rolling hills. It consists of 467 acres and has about 1.5 miles of shoreline. No groundwater is used at the site. The existing facility encompasses about 50 acres. About half of the site's acreage is leased for agricultural use and cabbage and corn fields are located just south of the site. Discussions about the Ginna site and the possibility of locating a U.S. EPR unit onsite were led by George Wrobel (UniStar). Mary Ellen Dangler (Constellation), Charlie Uhlarik and Cheryl Baker (CH2M Hill), and Martin Owens and Darrell Gardner (AREVA) also participated in these discussions.

A vehicle tour of the site included two separate areas that could hold a U.S. EPR and associated structures, one east and one west of the existing facility. The west side is larger but has unrestricted development including new residences within 1/2 mi at the west edge of the property that limits expansion. The west property consists of a mixture of apple orchards, fields, and forested areas and saturated areas with standing water that may not constitute true wetlands. Deer and Mill Creeks cross the property, and if a site were to be located on the western property, some reconfiguration of the creeks would be needed. A firing range on the west side is under construction. Several abandoned summer cottages overlook the lake.

There is a greater potential to acquire land on the east side, and the east side would avoid constraints with creek relocation and probably has more room and less woods to remove. Unlike the west side, however, an issue on the east side is bank erosion of the lake. Intermittent riprap is currently in place to protect the shoreline. Armor stone may be necessary to enhance stability.

A new unit would require a new intake and discharge structure, probably set farther and deeper into Lake Ontario than the current one, which is located about 3000 feet offshore. This location would allow for more consistent intake temperature and avoid frazzle ice while creating less opportunity for fish interaction. Impingement and entrainment data related to the current intake are available for evaluating potential impacts of the plant. The license renewal evaluation found no federally listed species on or near the Ginna site. No information on other important aquatic or terrestrial species was provided during the visit, nor was detailed ecological information available pertaining to areas where a new unit might be located. However, the sites appear to be primarily orchards and abandoned fields with relatively little undisturbed habitat having the potential for being impacted.

The nearest access to rail lines is about 3 miles away. A barge slip is about 1-1/2 miles away. The site's present transmission lines would not be able to handle the increased load from a new plant. The existing right-of-way probably could handle new transmission towers.

The 5-mile radius population density is <200 persons/mi^2. Rochester to the west is within the 20-mile radius and helps raise the density within this larger area to about 900 persons/mi^2. The area around Ginna appears to be in the early stages of transforming from strictly agricultural to mixed agriculture and housing development to accommodate urban growth. Given the surrounding population and land uses, there is little likelihood of impacts on minority or low-income communities.

Straight and wide two-lane roads in the vicinity appear suitable to accommodate the increase in construction activity. These roads are connected to a nearby interstate network serving the cities of Rochester (to the west) and Syracuse (to the east). With regard to local services, there currently exists an overcapacity with both water availability and treatment.

Nine Mile Point

The Nine Mile Point Nuclear Station (NMP) is located on the southeastern shore of Lake Ontario in the town of Scriba, New York, about 5 miles northeast of Oswego, and 36 miles north of Syracuse. The nuclear station consists of two BWR units with capacities of 615 and 1144 MWe respectively, and associated facilities. Unit 1 uses once-through cooling from Lake Ontario. Unit 2 is cooled using a natural draft cooling tower. No groundwater is used for the site. The NMP site consists of 800 acres on the southeastern shore of Lake Ontario. The setting is rural and the terrain consists of gently rolling hills. The James A. Fitzpatrick Nuclear Power Plant operated by Entergy is located directly east of the site, and the Ontario Bible Conference Camp lies to the west.

Because the pre-application C-1 meeting was also being held, a large contingent of Unistar, Constellation, AREVA, and their contractors were present. Of this group, George Wrobel, Stephen Geier, and Eric Gwin (UniStar), Cheryl Baker and Charlie Uhlarik (CH2M Hill), and Martin Owens and Darrell Gardner (AREVA) were involved in discussion of alternative sites. A listing of NRC, UniStar, and contractor staff participating in the C-1 meetings is attached.

A vehicle tour of the site was conducted, including the proposed site of the power block, a second site that could host a new plant, various clearings around the site, several wetlands areas, the existing meteorology tower, the firing range, and the existing switchyard. A drive down part of the main transmission lines was also part of the tour. Additional tours were provided for the hydrologists and ecologists. Tours more specifically related to pre-application activities were arranged for the meteorological tower, cultural resources areas, and radiological monitoring stations.

UniStar proposes to provide all make-up water through two parallel pipe channel intakes about 300 feet apart into Lake Ontario. These channels would be tunneled through bedrock at a depth of 25 feet and would extend 1600 feet and 2500 feet into the lake. The discharge pipe would be inside one of the intake tunnels and extend well beyond the end of the intake structure. The current water quality is good, but total dissolved solids can occasionally be high as the result of inflow from the other Great Lakes.

The ecologists visited the shoreline locations of the intake and discharge pipes, an onsite pond, an offsite location where this channel crosses under the road, and the wooded area of the proposed new access road. The ecologists concluded that the site has a complex upland system of wetlands comprising about 114 acres within the defined area and a freely flowing perennial stream. The wetlands have been delineated, but the characterization of the aquatic resources that could be affected by the proposed action is incomplete. Terrestrial surveys have been opportunistic rather than systematic, and it is possible that species of concern have been overlooked. Undeveloped portions of the site are largely forested. The predominant forest type is palustrine (marshy) forest consisting of broadleaf trees. A palustrine scrub shrub community also exists onsite. No aquatic threatened and endangered species were described for uplands aquatic resources. Three rare species of rushes might exist in the wetlands. The leopard frog, white-tailed deer, and osprey were identified as ecologically important species. Terrestrial species surveys that need to be conducted include those for the bog turtle, wood duck, merganser, and amphibians.

A rail spur that would service a new facility will need significant reconditioning for the expected loads associated with plant construction. A new switchyard is proposed and is likely to be located at the site of the current firing range. The onsite substation is expected to require expansion and upgrading and substantial rerouting of transmission lines onsite also would be required. However, new transmission corridors are not expected. No use of barge traffic is planned for hauling in equipment or materials.

The primary access to NMP is a two-lane paved roadway that connects with county roads, all of which are in good condition. A capacity analysis performed for a proposed gas turbine power plant 2 miles west of NMP found that the intersections were within acceptable operating conditions with the exception of the Route 1 eastbound approach at Route 1/Route 1A during morning peak conditions. A study of traffic patterns of local major roads for the proposed NMP-3 concluded that traffic counts were within acceptable levels.

Oswego and Scriba are expected to provide water to the site and currently have an excess capacity. Wastewater treatment would be provided by the East Treatment Plant.

List of NRC Staff Attending NMP C-1 Site Visit	
Discipline	**Name**
Team Lead	Mike Masnik
Principal Support and NP/Cost Benefit	Laura Quinn
Socioeconomics and EJ	Dan Mussatti
Alternatives	Irene Yu
Historical/Cultural Resources	Tom Fredrichs
Aquatic Ecology	Harriet Nash
Terrestrial Ecology/Land Use	Michael Willingham
Rad Protection/Rad systems	Rich Emch
Hydrology	Phil Brandt
Non Rad Waste/Transmission	Jessie Muir

List of PNNL/Duxbury Staff Attending NMP C-1 Site Visit	
Discipline	**Name**
PNNL Team Lead	Mary Parkhurst
Team Lead Shadow	Gene Carbaugh
Terrestrial Ecology	Amanda Stegen
Aquatic Ecology	Roy Kropp
Aquatic Ecology (shadow)	Jenny Field
Hydrology	Gene Whelan
Meteorology/Air Quality	Jim Droppo
Rad Protection/Rad Systems	Greg Stoetzel
Land Use/ Transmission	Dave Anderson
Cultural Resources	Tara O'Neil
Socioeconomics/EJ	Tom Secrest

List of UniStar/Constellation/Contractor Attendees at NMP C-1 Site Visit

Name	Affiliation
George Wrobel	UniStar
Lisa Dashnau	UniStar
Tom Demitrack	UniStar
Stephen Geier	UniStar
Eric C. Gwin	UniStar
Joe Savage	UniStar
David Sullivan	UniStar
Yvonne Abernathy	Constellation
Kent Stoffle	Constellation
Martin Owens	AREVA NP
Cynthia Fasano	AREVA
Darrell Gardner	AREVA
Barbara Hubbard	AREVA
Ted Messier	AREVA NP
Dennis Napior	AREVA
Mark Rutherford	AREVA
J. H. Snooks	AREVA NP
Sarah Barnum	Normandeau Associates
Paul Geoghegan	Normandeau Associates
Rich Masters	Normandeau Associates
David Klinch	ENSR
Cheryl Baker	CH2M HILL
Charlie Uhlarik	CH2M HILL
Rick Zeroka	CH2M HILL
Paul Jacobson	Alion
Sarah Faldetta	ESS
Bill Burch	MACTEC
Bill Elzinga	MACTEC
Pat Garrow	MACTEC
Nadia Glucksberg	MACTEC
Dick Harmon	MACTEC
Michael E. Lukey	MACTEC
Greg Poremba	ERM
Mark Abrams	ABS Consulting