

August 18, 2008

MEMORANDUM TO: Richard P. Raione, Chief
Environmental Projects Branch 2
Division of Site and Environmental Reviews
Office of New Reactors

FROM: H. Brent Clayton, Chief /RA/
Environmental Technical Support Branch
Division of Site and Environmental Reviews
Office of New Reactors

SUBJECT: TRIP REPORT – MAY 6 - 7, 2008, READINESS ASSESSMENT (C-1)
VISIT FOR A COMBINED LICENSE APPLICATION AT THE NINE MILE
POINT NUCLEAR PLANT SITE

This report summarizes the staff's May 6 - 7, 2008, pre-application/readiness assessment (C-1) visit related to the environmental portion of a future combined license (COL) application for the Nine Mile Point Nuclear Plant site. Unistar has indicated its intent to submit a COL application for this site. Unistar selected the Evolutionary Power Reactor design for the proposed new nuclear station.

The purpose of this visit was to acquaint the review staff with the nuclear station site, focusing on potential locations for siting Unit 3 and its associated facilities and those areas likely to be affected by its proposed construction and operation. The staff was also assessing the applicant's readiness and its progress toward submitting a COL application. The visit took place at the site, located in Oswego County, New York, approximately six miles northeast of Oswego, New York. Enclosure 1 provides a list of attendees. Enclosure 2 is the agenda used during the visit. Enclosure 3 is a summary of the more significant issues that were discussed and Enclosure 4 lists representatives from various civic and local government organizations with whom the staff met with during the visit. Enclosure 4 also includes a copy of a resolution from The City of Oswego given to the U.S. Nuclear Regulatory Commission (NRC) staff during the May 6 - 7, 2008 visit.

The staff participated in both general site and discipline-specific tours to understand the site-specific issues and concerns related with this proposed action. General tours included the probable locations of the Unit 3 reactor center line/power block and cooling tower and the sites of the existing meteorological tower, monitoring wells, switchyard, rail spur, transmission line access road, and firing range. Additional ecology and hydrology tours provided the opportunity to view the proposed intake area, a pond, numerous wetlands areas, and the wooded area where a new site access road is proposed. A health physics tour visited the proposed site of an Independent Spent Fuel Storage Installation for Units 1 and 2, the nearest residence location, and locations of air sampling stations and environmental thermoluminescence dosimeter around the site.

CONTACT: Michael Masnik, NRO/DSER/RENV
301-415-1191

R. Raione

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In summary, the staff did not identify any issues that would indicate that Unistar would not be ready by the planned date of application. However, this was not a formal or comprehensive staff review and additional issues could be identified during the staff's formal review after the application is submitted.

The staff is planning a C-3 Records and Products Assessment and a C-4 Public Information Meeting during the week of August 18 - 22, 2008.

Project No. 746

Enclosures:

As stated.

cc: George Wrobel
Unistar Nuclear Energy, LLC
750 E. Pratt Street, 14th Floor
Baltimore, MD 21202

R. Raione

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Attendees – Nine Mile Point C-1 Readiness Assessment Visit

Location: Nine Mile Point Nuclear Plant Site, Oswego County, New York
May 6 – 7, 2008

Name	Affiliation
Michael T. Masnik	U.S. Nuclear Regulatory Commission (NRC)
Laura Quinn	NRC
Dan Mussatti	NRC
Irene Yu	NRC
Tom Fredricks	NRC
Harriet Nash	NRC
Michael Willingham	NRC
Phil Brandt	NRC
Richard Emch	NRC
Many Ann Parkhurst	Pacific Northwest National Laboratory (PNNL)
Gene Carbaugh	PNNL
Tom Secrest	PNNL
Amanda Stegen	PNNL
Roy Kropp	PNNL
Jenny Field	PNNL
Gene Whelan	PNNL
Dave Anderson	PNNL
Greg Stoetzel	PNNL
Tara O'Neil	PNNL
Jim Droppo	PNNL
George Wrobel	UniStar
Sarah Barnum	Normandeau Associates
Paul Geoghegan	Normandeau Associates
Joe Savage	UniStar
Nadia Glucksberg	MACTEC
Bill Elzinga	MACTEC
Tom Demitrack	UniStar
Rick Zeroka	CH2M HILL
Darrell Gardner	AREVA
Martin Owens	AREVA NP
Dennis Napior	AREVA
Mark Rutherford	AREVA
Rich Masters	Normandeau Associates
Barbara Hubbard	AREVA
Yvonne Abernathy	Unistar
Cynthia Fasano	AREVA
Sarah Faldetta	ESS
Charlie Uhlarik	CH2M HILL
Michael E. Lukey	MACTEC
Dick Harmon	MACTEC
Pat Garrow	MACTEC

Greg Poremba	ERM
Paul Jacobson	Alion
Eric C. Gwin	UniStar
Bill Burch	MACTEC
J. H. Snooks	AREVA NP
Mark Abrams	ABS Consulting
Ted Messier	AREVA NP
Kent Stoffle	Unistar
Cheryl Baker	CH2M HILL
Lisa Dashnau	UniStar
David Klinch	ENSR
David Sullivan	UniStar

Nine Mile Point C-1 Environmental Review Meeting Agenda
May 6 - 7, 2008

Monday, May 5, 2008

1900 hrs Meet in the lobby of the Best Western Captain's Quarters, Oswego, NY for a brief meeting.

Tuesday, May 6, 2008

0715 hrs Meet in the Lobby of Best Western Captain's Quarters to travel to site. Please be on time and ready to go. All personnel are to have State or Federal Issue picture ID. Those personnel planning to do specialized tours around the site – remember, it is one giant wetland; dress accordingly.

0715 – 0800 hrs Travel to the Niagara Mohawk Power Corporation (NMP) site. See directions to the old Nine Mile Point Visitors Center on the western side of the site. You need to pass through the guard shack and show picture ID.

0800 – 0930 hrs Welcome and introductory remarks.

- Welcome
- Opening Remarks, Potential Applicant, and the Nuclear Regulatory Commission (NRC)
- Introductions
- Orientation to Site, Health and Safety

0930 – 1100 hrs General tour of the site

1100 -1200 hrs Breakout sessions back at the visitor's center

1200 – 1300 hrs Lunch (Catered – Recommended NRC Contribution = \$10/day)

1300 – 1700 hrs Meetings in the old visitor's 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.

Wednesday, May 7, 2008

0715 hrs Meet in the Lobby of Best Western Captain's Quarters to travel to site. Please be on time and ready to go. All personnel are to have State or Federal issued picture ID.

0715 – 0800 hrs Travel to NMP site. See directions to the old Nine Mile Point visitor's center on the western side of the site. You need to pass through the guard shack and show picture ID.

0800 -1030 hrs Breakout sessions

1030-1100 hrs NRC closed door session

1100 -1130 hrs NRC closeout with applicant

1145 hrs Adjourn

Note: There is no lunch planned for Wednesday; you are on your own.

Additional Information Summarizing the Nine Mile Point Nuclear Plant
Readiness Assessment Visit (C-1)
Location: Nine Mile Point Nuclear Plant Site, Oswego County, New York
May 6 - 7, 2008

Overall, Unistar appears to be on track for gathering most, if not all, of the needed data that will allow it to submit an adequate environmental report (ER) in support of a combined license application (COLA). During the site visit, several issues were identified that warrant attention by Unistar. The following sections, listed by discipline, describe the results of the U.S. Nuclear Regulatory Commission (NRC) staff visit.

Land Use/Transmission Lines

The Nine Mile Point Nuclear Plant (NMP) site consists of 900 acres on the southeastern shore of Lake Ontario and currently hosts two reactors and associated facilities. The James A. Fitzpatrick Nuclear Power Plant run by Entergy is located directly east of the site, and the Ontario Bible Conference Camp lies to the west. Two possible areas have been identified for siting Unit 3; the preferred footprint is in the southwest corner of the property. The undeveloped portions of the property are largely forested and contain an abundance of wetlands.

A rail spur that would service a new facility is completely overgrown and appears abandoned and will need significant reconditioning for the expected loads associated with plant construction. No additional rail line route would be needed. Because Unit 3 would be a merchant plant, the State Independent System Operator (ISO) is the independent broker for determining transmission needs and associated impacts. The Scriba substation is expected to require expansion and upgrading. Substantial rerouting of transmission lines onsite also would be required, but no new transmission corridors are expected. Existing 345- kV lines and towers would be reconducted to handle load from the new facility. A new switchyard is proposed and is likely to be located at the site of the current firing range. No onsite barge traffic is planned to haul in equipment or materials.

The NMP site is in the coastal zone and subject to the Coastal Zone Management Act (CZMA) and the State of New York's implementing regulations. The state has not yet been contacted regarding CZMA compliance.

The New York State Environmental Quality Review is equivalent to a state implementation of the National Environmental Policy Act (NEPA) and is required for the Unit 3 siting. This review involves state and local government agencies including Oswego County, Public Service Commission, and Department of Environmental Conservation. This review takes one to two years and is funded by the applicant. It is expected that this review will result in mitigation strategies for all land use impacts including wetlands impacts and lakeshore management requirements.

Meteorology and Air Quality

The meteorological tower used at NMP is non-standard in that the tower is a large structure with stairs and the local surface cover around the tower is rock and gravel. This tower, which also serves as the meteorological tower for the Fitzpatrick plant, is located near the water's edge.

A change in the location of the tower to a more inland location is being considered, which is likely to cause changes in the characterization of intercepted winds and a reevaluation of chi/Q values. Unistar also monitors winds on two other towers; one is near the water shore, and one is located inland.

The observations show very consistent winds among all three towers. Sufficient meteorological data have been collected to support the COLA. The county is a nonattainment area for particulate matter smaller than 2.5 micrometers.

Information on specific air permitting requirements is not yet available, and an analysis of drift from the cooling tower has not been done pending final selection of the cooling tower systems.

Hydrology

There are no plans to withdraw water from any of the four aquifer formations. Precipitation appears to provide all water to the Surficial Glacial Till and wetlands, which are pervasive at this site. Both the Surficial Glacial Till and the Oswego Formation flow to Lake Ontario. Monthly groundwater levels are being measured at 38 new monitoring wells where Unit 3 is proposed to be constructed. These new wells began collecting data in September 2007. The area has a high water table, and the water table surface appears to vary only about two feet (ft). During the wet season, the water table surface is within one ft of the land surface. Pumping around Unit 2 on the order of 100 gallons per minute lowers the water table. The water is sent to a sump and storm water outfall to Lake Ontario. There appears to be no evidence of water drawdown outside the site boundary.

Lake Ontario will provide all station make-up water through two parallel pipe channel intakes about 300 ft apart. Lake Ontario is also the ultimate heat sink. These channels will be tunneled through bedrock at a depth of 25 ft and will extend 1600 ft and 2500 ft into the lake. The blowdown discharge pipe will be inside one of the intake pipes and extend well beyond the end of the intake structure. Subsurface investigation for the two intake tunnels was being conducted during the site visit. Possible interaction with the existing intakes, the Fitzpatrick intake, and discharge structures has not been explored. Water quality in the lake is good, but total dissolved solids can occasionally be high. Inflow from the other Great Lakes tends to be responsible for water quality issues. Cooling water, wastewater, and stormwater would be regulated by New York.

Wetlands are precipitation-fed and appear very connected. Because soil is so tight, there is little recharge from the wetlands to the aquifer. Historically, there have been no issues related to drought. Two surface water streams (Blue Line Channel and an unnamed creek) run through the site. Blue Line Channel follows the south boundary while the unnamed stream is just to the south of the ball fields, running parallel to the shoreline (east to west) before turning north to drain into Lake Ontario, just west of the current meteorological tower. There are ice effects due to snow. A Stormwater Management Plan will be required, as snowmelt and potential blockage of drainage ways may occur. All construction and operation potable water will be supplied by the City of Oswego, which obtains its water from Lake Ontario.

There are no onsite Clean Water Act (CWA) Section 303d streams. Unistar expects to receive a CWA Section 401 permit and a Section 404 certification. No decision has been made regarding the disposition and timing of a CWA Section 316 permit. No information on contaminant loads in the water bodies onsite or in Lake Ontario was provided. No dredging is planned except as related to the end of the intake tunnels. Unistar is currently using the Cornell Mixing Zone Expert System (CORMIX) model to simulate thermal plumes.

Terrestrial Ecology

Undeveloped portions of the site are largely forested. The predominant forest type is palustrine forest consisting of broadleaf trees, such as green oak. There is also a palustrine scrub-shrub community onsite. Poison ivy has a large presence onsite and was the focus of a safety presentation prior to the site tour.

Opportunistic pedestrian surveys of terrestrial resources were conducted the fall of 2008 and the spring of 2008 focusing on upland areas. During these surveys, data were collected on plants, mammals, reptiles, amphibians, and birds. No systematic surveys have been conducted.

It is unclear whether all wetland areas have been characterized or if jurisdictional wetlands have been delineated without characterization of other wetlands. Many of the species of concern could reside in the wetland areas. A large wetland area near the transmission lines was identified as being good habitat for bog turtles, but no formal surveys were completed to detect and assess their presence.

Terrestrial communities onsite have been mapped, and the approximate acreage likely to be affected by construction has been determined. A rare plant survey is planned for late spring/summer 2008, focusing on two spike rushes and one bull rush that may be present in wetland areas.

The leopard frog (indicator species), white-tailed deer (recreationally important), and osprey (state species of concern) were identified as ecologically important species for evaluation in the draft ER. Several other state species were listed in the license renewal Supplemental Environment Impact Statement (NUREG-1437 Supplement 24) as having potential to occur in the vicinity of NMP.

Aquatic Ecology

The aquatic resources that would be affected by construction and operation of a new reactor and associated facilities are Lake Ontario and a complex upland system wetlands, small to large ponds, a freely flowing perennial stream (the Blue Line Channel), and an unnamed creek. Wetlands comprise about 114 acres (65%) of the study area. A wetlands study began in late 2006, and a wetlands delineation began the spring of 2007 following procedures outlined in the United States Army Corps of Engineers 1987 manual. The study stops at the project area boundary even though the wetlands are very interconnected with wetlands beyond the study area.

Sampling in Lake Ontario by Unistar and Entergy for the existing facilities has included water quality, fish, and impingement/entrainment. Ecologically important species were identified, and this list appeared to be complete. The ER will include the historical data for most characterizations and the 2007 results for impingement/entrainment. It does not appear that new sampling is planned nor that benthic sampling has ever been conducted.

A primary concern is that the upland aquatic resources have only been characterized in the wetlands review. There are no data available to allow characterization of the biotic communities (flora, fauna) in the extensive freshwater systems of the uplands area. There are plans to collect data, but no sampling details were provided. Although specific details were lacking at this stage in the process, the applicant's consultants seemed to understand the need for quantitative data. There are no data on benthic communities present in the locations of pipelines and risers in Lake Ontario nor were there discussions of plankton or thermophilic organisms.

Socioeconomics/Environmental Justice

The socioeconomic and environmental justice sections were patterned after the Calvert Cliffs COL ER and were preliminary. Discussions centered on data and information provided in figures and tables. Most of the data collected to date was through web-based sources, and no contact had yet been made with local organizations or with the Department of Environmental Conservation in Albany. The license renewal Supplemental Environmental Impact Statement (SEIS) contained limited socioeconomic information, but the SEIS helped guide the identification of local and regional organizations to contact (see Enclosure 4 for the list of those contacted during this visit).

Offsite discussions concerning local community issues identified that public transportation is insufficient, the minority population is small but expanding, there is excess capacity in Oswego's schools, some area highway upgrades are scheduled, and there may be a lack of suitable housing for workers though there is currently a high vacancy rate in Oswego County. Unistar considers only Oswego and Onondaga Counties in its workforce analysis even though there are other counties nearby. Unistar will need to justify this decision or expand its analysis to other surrounding counties.

Potable water to the plant is provided jointly by Oswego and Scriba; an excess capacity of about 5 million gallons per day (MGD) exists. Wastewater treatment is provided by the East Treatment Plant with a capacity of about 1-1/2 MGD. These sources are expected to provide services to the proposed Unit 3.

The 50-mile radius from the proposed facility encompasses three county equivalents in Canada. Some discussion on how these jurisdictions may be affected should be included in the ER.

Cultural Resources

The area of potential effect (APE) was designed to cover the areas where ground disturbance is likely. In this case, the APE has been extended to the property line. No visual APE has yet been defined. The Phase 1A cultural resources survey is currently underway, and ongoing fieldwork has resulted in the discovery of several historic sites consisting of foundations, wells, and rock walls from farms from the late 1800s. No shovel testing or archaeological tests have been conducted on the property. Unistar may be advised by its contracted archaeologist to begin the Phase 1B survey and reporting immediately to save time on this analysis.

The approach to collecting cultural resources information was developed with the assistance of a professional archaeologist but without the involvement of the New York State Historic Preservation Officer (SHPO). Consultation with the SHPO will be an important part of continued site evaluations. A comprehensive package addressing archaeology, architecture, and submerged cultural resources is being prepared by Unistar for presentation to the SHPO.

It is not certain that Unistar has time to collect the Phases 1A and 1B information necessary, and resolve any issues associated with defining the APE, and assess impacts prior to submitting the COLA. Additionally, the Tribal contact process needs to be initiated.

Radiological Evaluations

The radiological evaluation encompassed radiological impacts of construction and operation, radiological monitoring, radwaste systems, uranium fuel cycle impacts, and transportation impacts. Working drafts of many of these sections of the draft ER were available for review. Unistar has developed a very sophisticated model for determining doses to construction workers that incorporates doses from gaseous and liquid effluents from NMP Units 1 and 2 and the Fitzpatrick unit, external dose from ^{16}N in the turbine building, external dose from the proposed NMP Independent Spent Fuel Storage Installation, and other plant sources of external radiation. The GASPARE and LADTAP codes were used to calculate doses to the maximally exposed individual, population, and biota from gas and liquid effluent releases.

Unistar believes that, with a few exceptions, the current radiological environmental program will be adequate for covering Unit 3. Additional monitoring is expected at the nearest residence (the Bible Camp) and of groundwater between the proposed Unit 3 and Lake Ontario as part of the Nuclear Energy Institute (NEI) Groundwater Protection Initiative.

The proposed Unit 3 has a planned net electrical output of 1600 megawatts electric with a 95% capacity factor. Unistar plans to scale its impact analysis for the uranium fuel cycle to those in Table S-3 as recommended in the revision to Section 5.7 of NUREG-1555. When compared to the Table S-3 reference reactor, a scaling factor of two appears appropriate. The thermal power rating for a U.S. Evolutionary Power Reactor (EPR) is 4590 megawatts thermal (MW(t)), which is greater than the 3800 MW(t) limit established in Table S-4. Consequently Unistar noted that it cannot rely on Table S-4 to bound the transportation impacts on Unit 3. As a result, Unistar is proceeding with a separate evaluation of transportation impacts from incident-free and accident situations using appropriate models.

Accidents

Unistar is evaluating the design basis accident scenarios from the U.S. EPR design certification document. The MACCS2 code is being used to evaluate severe accident impacts. Unistar is using non-regulatory models to evaluate atmospheric dispersion and deposition characteristics for routine effluents and accident radiological impacts. As a result, a greater level of documentation of the assumptions used in the calculations will be needed for reviewing the computations in the draft ER.

Need for Power

With a merchant plant, there is no specific trigger for demonstrating the need for power, other than completing the environmental review and securing all needed permits. However, the need for power evaluation needs more explanation of the New York evaluation process and the participants. The New York Public Service Commission relies on the State Environmental Quality Review process to approve transmission line routing.

Benefit Cost

Generally speaking, Unistar is tiering from the Calvert Cliffs COL and adjusting the numbers for the NMP site.

Alternatives

The alternative analysis process was still underway. Several concerns were raised that need evaluation. These are:

- The draft ER lacks a concise description of the region of interest (ROI) for this wholesale market plant, including an explanation of why Pennsylvania was not considered in its region.
- As recommended in NEI guidance, Unistar's site-selection process uses a generic greenfield site as its basis rather than an identified and characterized greenfield site. By using a generic greenfield site and comparison to a brownfield or site with an existing unit(s), Unistar concluded that the elimination of any greenfield site from further consideration is assured. This concept will need further explanation.
- In addition to the alternatives to NMP needed in the NMP Unit 3 COLA, NMP is an alternative site for the Calvert Cliffs Unit 3 COLA. The justification of the selection of NMP Unit 3 as both a proposed site for a COLA as well as an alternative site for the Calvert Cliffs Unit 3 COLA needs to be developed. The Calvert Cliffs site-selection evaluation preceded the NMP site selection for a COLA. At the time that the Calvert Cliff's COLA was being developed, Unistar determined that the NMP and the R. E. Ginna Nuclear Plant sites could conceivably support at least one additional unit. Both the Ginna and NMP sites were selected as alternative sites for Calvert Cliffs. Later, the NMP site was selected as a site for a potential additional COLA. There was discussion during the readiness assessment visit about an additional (fourth) reactor site located to the south of the NMP COLA site. Regarding the possibility of the NMP site having sufficient land to support two additional units, the preliminary answer is that another location onsite was evaluated and may support an additional unit. The Calvert Cliffs Environmental Impact Statement may need to consider the NMP site for a fourth reactor in the alternatives evaluation.

Assessment of Readiness

The team found that the Unistar staff and contractors were implementing lessons learned from the Calvert Cliffs COLA and have an understanding of most of the expectations of the information that needs to be in the ER. In general, the applicant was reasonably close to where it should be at this stage of application development. Nevertheless, identification of new issues is still occurring, monitoring is still being performed, and considerable analysis and ER development has yet to be completed. Concerns were noted above in the discipline- by-discipline analysis.

List of Offsite Contacts – Nine Mile Point C-1 Readiness Assessment Visit

Location: Oswego County, New York
May 6 – 7, 2008

Name	Title	Agency/Organization
Paul Jacobson	Senior Science Advisor	Alion Science and Technology
Greg Porembra	(Consultant)	ERM (Environmental Resources Management)
Melanie Trexler	Executive Director	United Way of Greater Oswego County
Mary Vanouse	Director	City of Oswego, Community Development Office
Anthony Leotta	City Engineer	City of Oswego, Engineering/Zoning Office
Kennith & Corinne Hayes	Captains	The Salvation Army [Oswego]
Jennifer Hill	Executive Director	Greater Oswego-Fulton Chamber of Commerce
Donna Scanlon	Deputy Director	Oswego County Planning Board
Karen Noyes	Associate Planner	Oswego County Department of Planning and Community Development
Martin Weiss	--	Oswego County Department of Planning and Community Development
Karen Ferguson	Branch Director	American Red Cross