UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

November 17, 2011

Mr. Ken Langdon
Vice President Nine Mile Point
Nine Mile Point Nuclear Station, LLC
P.O. Box 63
Lycoming, NY 13093

SUBJECT: NINE MILE POINT NUCLEAR STATION, UNIT NO. 2 – FINAL ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT RELATED TO PROPOSED EXTENDED POWER UPRATE (TAC NO. ME1476)

Dear Mr. Langdon:

Enclosed is a copy of the Final Environmental Assessment (EA) and Finding of No Significant Impact related to the Nine Mile Point Nuclear Station (NMPNS, the licensee) application for amendment dated May 27, 2009[1], as supplemented by additional letters[2] for Nine Mile Point, Unit No. 2 (NMP2). The draft EA was transmitted to NMPNS on March 16, 2010, and published in the *Federal Register* on March 22, 2010 (75 FR 13600).

The proposed amendment would increase the maximum steady-state reactor core power level from 3467 megawatts thermal (MWt) to 3988 MWt, which is an increase from the current licensed of approximately 15 percent. The proposed increase in power level is considered an extended power uprate.

The enclosed final EA is being forwarded to the Office of the Federal Register for publication.

Sincerely,

Richard V. Guzman, Senior Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-410

Enclosure:
Final Environmental Assessment

cc w/encl: Distribution via Listserv

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[1] Agencywide Documents Access and Management System (ADAMS) Accession Package No. ML091610091
[2] August 28, 2009 (ML092460610); December 23, 2009 (ML100190089); February 19, 2010 (ML100550598); April 16, 2010 (ML101120658); May 7 2010 (ML101380306); June 3, 2010 (ML101610222); June 30 (ML101900471); July 9, 2010 (ML101950502); July 30, 2010 (ML102170191); October 8, 2010 (ML102920339); October 28, 2010 (ML103080208); November 5, 2010 (ML103130515); December 10, 2010 (ML103500520); December 13, 2010 (ML103500363); January 19, 2011 (ML110250723); January 31, 2011 (ML110400373): February 4, 2011 (ML110460158); March 23, 2011 (ML110880300); May 9, 2011 (ML111370654); June 13, 2011 (ML111710135); July 15, 2011 (ML11207A069); August 5, 2011 (ML11207A069); August 19, 2011 (ML11242A044); September 23, 2011 (ML112700199); October 27, 2011 (ML113050319); and November 1, 2011 (ML113120336).

[7590-01-P]

NUCLEAR REGULATORY COMMISSION

[NRC-2011-xxxx]

NINE MILE POINT NUCLEAR STATION, LLC

DOCKET NO. 50-410

NINE MILE POINT NUCLEAR STATION, UNIT NO. 2

ENVIRONMENTAL ASSESSMENT AND FINDING OF

NO SIGNIFICANT IMPACT

RELATED TO THE PROPOSED LICENSE AMENDMENT

TO INCREASE THE MAXIMUM REACTOR POWER LEVEL

The U.S. Nuclear Regulatory Commission (NRC) is considering issuance of an amendment for Renewed Facility Operating License No. NPF-069, issued to Nine Mile Point Nuclear Station, LLC (NMPNS, the licensee) for operation of the Nine Mile Point, Unit No. 2 (NMP2), located in Oswego, NY, in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.90. Therefore, as required by 10 CFR 51.21, the NRC performed an environmental assessment (EA). Based on the results of the environmental assessment, the NRC is issuing a finding of no significant impact.

The NRC published a draft EA and finding of no significant impact on the proposed action for public comment in the *Federal Register* on March 22, 2010 (75 FR 13600). No comments were received on the draft EA. The NRC staff did not identify any significant impact from the information provided in the licensee's Extended Power Uprate (EPU) application for NMP2 or during the NRC staff's review of other available information; therefore, the NRC staff is documenting its environmental review in this final EA.

ENVIRONMENTAL ASSESSMENT

Plant Site and Environs:

The NMPNS site is in the town of Scriba, in the northwest corner of Oswego County, New York, on the south shore of Lake Ontario. The site is comprised of approximately 900 acres that includes two nuclear reactors and ancillary facilities. NMP2 uses a boiling-water reactor and a nuclear steam supply system designed by General Electric.

Identification of the Proposed Action:

By application dated May 27, 2009, the licensee requested an amendment for an EPU for NMP2 to increase the licensed thermal power level from 3,467 MWt to 3,988 MWt, which represents an increase of approximately 15% above the current licensed thermal power and approximately 20% over the original licensed thermal power level. This change in core thermal level requires the NRC to amend the facility's operating license. The operational goal of the proposed EPU is a corresponding increase in electrical output from 1,211 MWe to 1,369 MWe. The proposed action is considered an EPU by NRC because it exceeds the typical 7% power increase that can be accommodated with only minor plant changes. EPUs typically involve extensive modifications to the nuclear steam supply system.

The licensee has implemented several physical changes and upgrades to plant components needed to implement the proposed EPU during the 2010 refueling outage; and it plans to complete all remaining physical modifications during the upcoming refueling outage currently scheduled for spring 2012. The actual power uprate, if approved by the NRC, would occur in a single increase following the 2012 refueling outage.

The Need for the Proposed Action:

The proposed action would provide NMPNS with the flexibility to increase the potential electrical output of NMP2 and to supply low cost, reliable, and efficient electrical generation to New York State and the region. The additional 158 MWe would be enough to power

approximately 174,000 homes. The proposed EPU at NMP2 would contribute to meeting the goals and recommendations of the New York State Energy Plan for maintaining the reserve margin and reducing greenhouse gas emissions with low cost, efficient, and reliable electrical generation. The proposed action provides the licensee with the flexibility to increase the potential electrical output of NMP2 to New York State and the region from its existing power station without building a new electric power generation station or importing energy from outside the region.

Environmental Impacts of the Proposed Action:

As part of the licensing process for NMP2, the NRC published a Final Environmental Statement (FES) in May 1985. The NRC staff noted that the impact of any activity authorized by the license would be encompassed by the overall action evaluated in the FES for the operation of NMP2. In addition, the NRC evaluated the environmental impacts of operating NMP2 for an additional 20 years beyond its current operating license, and determined that the environmental impacts of license renewal were small. The NRC staff's evaluation is contained in NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plant, Supplement 24, Regarding Nine Mile Point Nuclear Station, Units 1 and 2" (SEIS-24) issued in May 2006 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML061290310). The NRC staff used information from the licensee's license amendment request, the FES, and the SEIS-24 to perform its EA for the proposed EPU.

The NMP2 EPU is expected to be implemented without making extensive changes to buildings or plant systems that directly or indirectly interface with the environment. All necessary modifications would be performed in existing buildings at NMP2. With the exception of the high-pressure turbine rotor replacement, the required modifications are generally small in scope. Other modifications include providing additional cooling for some plant systems, modifications to feedwater pumps, modifications to accommodate greater steam and

condensate flow rates, and instrumentation upgrades that include minor items such as replacing parts, changing setpoints and modifying software.

The sections below describe the non-radiological and radiological impacts in the environment that may result from the proposed EPU.

Non-radiological Impacts

Land Use and Aesthetic Impacts:

Potential land use and aesthetic impacts from the proposed EPU include impacts from plant modifications at NMP2. While some plant components would be modified, most plant changes related to the proposed EPU would occur within existing structures, buildings, and fenced equipment yards housing major components within the developed part of the site. No new construction would occur outside of existing facilities and no expansion of buildings, roads, parking lots, equipment lay-down areas, or transmission facilities would be required to support the proposed EPU.

Existing parking lots, road access, equipment lay-down areas, offices, workshops, warehouses, and restrooms would be used during plant modifications. Therefore, land use conditions would not change at NMP2. Also, there would be no land use changes along transmission lines (no new lines would be required for the proposed EPU), transmission corridors, switch yards, or substations.

Since land use conditions would not change at NMP2, and because any land disturbance would occur within previously disturbed areas, there would be little or no impact to aesthetic resources in the vicinity of NMP2. Therefore, there would be no significant impact from EPU-related plant modifications on land use and aesthetic resources in the vicinity of NMP2.

Air Quality Impacts:

Air quality within the Nine Mile Point area is generally considered good, with exceptions occurring for designated ozone nonattainment areas. NMPNS is located in Oswego County which is part of the Central Air Quality Control Region covered by Region 7 of the New York State Department of Environmental Conservation. With the exception of ozone, this region is designated as being in attainment or unclassifiable for all criteria pollutants in the Environmental Protection Agency's (EPA's) 40 CFR 81.333.

There are approximately 1,000 people employed on a full-time basis. This workforce is typically augmented by an additional 1,000 persons on average during regularly scheduled refueling outages. For the EPU work in 2012, the workforce numbers would be somewhat larger than a routine outage, but this increase would be of short duration. During implementation of the EPU at NMP2, some minor and short duration air quality impacts would occur. The main source of the air emissions would be from the vehicles of the additional outage workers needed for the EPU work. The majority of the EPU work would be performed inside existing buildings and would not impact air quality. Operation of the reactor at the increased power level would not result in increased non-radioactive emissions that would have a significant impact on air quality in the region. Therefore, there would be no significant impact on air quality during and following implementation of the proposed EPU.

Water Use Impacts

Groundwater:

NMP2 does not use groundwater in any of its water systems and has no plans for direct groundwater use in the future. There are no production wells on the site for either domestic-type water uses or industrial use. Potable water in the area is supplied to residents either through the Scriba Water District, which receives its water from the City of Oswego, or from private wells.

Because of variations in the hydrogeological characteristics of the ground under the reactor building foundation, a permanent dewatering system is required for NMP2. The system consists of perimeter drains and two sumps located below the NMP2 reactor building. The dewatering system is designed to maintain the water table below the reactor building foundation at a stable level. The licensee asserts that implementation of the proposed EPU will not result in a change to the groundwater use program at NMP2. Therefore, there would be no significant impact on groundwater resources following implementation of the proposed EPU.

Surface Water:

NMP2 uses surface water from Lake Ontario for the service water system and for a fish diversion system. As described in the licensee's application, the cooling water system for NMP2 consists of a circulating water system, which circulates cooling water through the main condensers to condense steam after it passes through the turbine, and a service water system which circulates cooling water through heat exchangers that serve various plant components. The service water system for NMP2 is a once-through system withdrawing water from Lake Ontario. However, the circulating water system is a closed-cycle system that uses a natural draft cooling tower. A portion of the cooling water from the service water discharge is used to replace evaporative and drift losses from the cooling tower. NMP2 has its own cooling water intake and discharge structures located offshore in Lake Ontario. The intake and discharge structures are located approximately 950 feet and 1,050 feet offshore. The discharge structure is a two-port diffuser located 3 feet above the bottom approximately 1,500 feet offshore. Because the NMP2 circulating water system is closed-cycle, flows are substantially less than for a typical open-cycle system. During normal operation, an average total flow of 53,600 gallons per minute (gpm) is withdrawn from Lake Ontario, 38,675 gpm for the service water system and, through the plant's service water discharge, makeup to the circulating water system to replace evaporation and drift losses from the cooling tower, and 14,925 gpm for operation of the fish

diversion system. Discharge flow from NMP2 ranges from 23,055 gpm to 35,040 gpm during operation.

The licensee estimates that cooling tower makeup water flow post-EPU would increase by approximately 2,000 – 2,500 gpm; from approximately 18,000 gpm to approximately 20,000 gpm. This increase represents consumptive use of water from Lake Ontario (e.g., due to increased evaporative losses). Because the cooling tower makeup water flow comes from the service water discharge, this number represents water that will not be returned to Lake Ontario. This loss is not significant when compared to the large amount of water that routinely flows out of Lake Ontario (approximate long-term average of 107,700,000 gpm). Therefore, there would be no significant impact on surface water resources following implementation of the proposed EPU.

Aquatic Resources Impacts:

The potential impacts to aquatic biota from the proposed action could include impingement, entrainment, and thermal discharge effects. NMP2 has a fish diversion system at the onshore facility to reduce potential impingement of fish on the intake screens. The proposed EPU is expected to result in a 2,000 - 2,500 gpm increase in cooling tower makeup. However, this makeup water is drawn entirely from the plant's service water discharge, and service water intake flows would remain unchanged by the EPU. As a result, there would be no increase in cooling water withdrawn from the NMP2 intake structure. Therefore, there would be no increase in impingement from the proposed EPU and the increase in entrainment losses, if any, would be very small, and would remain consistent with the NRC's conclusion in the SEIS-24, that the aquatic impacts as a result of NMP2 operation during the term of license renewal would be small.

The issues of discharge water temperature and chemical discharges are regulated by the State of New York with limits specified in the State Pollutant Discharge Elimination System

(SPDES) permit. According to the licensee, the temperature of the discharge water is expected to increase by a maximum of 2 °F as a result of the EPU. In addition, a modeling study performed by the licensee in 2007 of the thermal plume of NMP2 indicated only a minor increase in thermal discharge would be expected from the EPU. Technical reviews and analyses performed by the licensee indicate that the combined service water and blowdown discharge from NMP2 would remain compliant with current limits in the SPDES permit for thermal and physical parameters during both normal operation and normal shutdown conditions.

The circulating water system and service water system for NMP2 are treated with biocides to control biofouling from zebra mussels (*Dreissena polymorpha*) and other organisms, and with other chemical additives to control scaling and corrosion of system components. The licensee's application notes that several of the chemicals used for the above treatments are subject to specific limits in the NMP2 SPDES permit.

Therefore, there would be no significant adverse impacts to the aquatic biota from entrainment, impingement, and from thermal discharges for the proposed action.

Terrestrial Resources Impacts:

The NMPNS site consists of approximately 900 acres, with over 1 mile of shoreline on Lake Ontario. Approximately 188 acres are used for power generation and support facilities. Much of the remaining area is undeveloped, consisting largely of deciduous forest with some old field and shrub land areas that reflect continuing succession of old fields to secondary forest. As previously discussed in the land use and aesthetic section, the proposed action would not affect land use at NMP2. Therefore, there would be no significant impacts on terrestrial biota associated with the proposed action.

Threatened and Endangered Species Impacts:

Animal species found on the NMP2 site are representative of those found within disturbed landscapes of the lower Great Lakes region, and include white-tailed deer and a

variety of smaller mammals, reptiles and amphibians. Correspondence between the licensee and the U.S. Fish and Wildlife Service (FWS) in connection with the NMPNS license renewal environmental review indicated that no federally endangered, threatened, or candidate aquatic species are likely to reside in the vicinity of the NMP2 site. According to the licensee's application and information in the SEIS-24, with the exception of the Indiana bat (*Myotis sodalis*) and occasional transient individuals of the piping plover (*Charadrius melodus*) and the bald eagle (*Haliaeetus leucocephalus*) (now delisted), no other species listed by the FWS as endangered or threatened are likely to reside on the NMPNS site or along Nine Mile Point to the Clay transmission corridor. However, recent onsite surveys conducted by the licensee indicate that there is low likelihood of occurrence for Indiana bat and piping plover because there is no suitable habitat on the site or along the transmission corridor. Regardless, planned construction-related activities related to the proposed EPU primarily involve changes to existing structures, systems, and components internal to existing buildings, would not involve earth disturbance. While traffic and worker activity in the developed parts of the plant site during the 2012 refueling outage would be somewhat greater than a normal refueling outage, the potential impact on terrestrial wildlife would be minor and temporary.

Since there are no planned changes to the terrestrial wildlife habitat on the NMPNS site from the proposed EPU and the potential impacts from worker activity would be minor and temporary, there would be no significant impacts to any threatened or endangered species for the proposed action.

Historic and Archaeological Resources Impacts:

As reported in the SEIS-24, the NRC reviewed historic and archaeological site files in New York, and confirmed that historic and archaeological resources have been identified in the vicinity of NMP2, but no archaeological and historic architectural sites have been recorded on the licensee's site. In addition, the New York State Historic Preservation Office confirmed that

while there are no known archaeological sites within the plant site, the Preservation Office considers Nine Mile Point to be an area that is sensitive for cultural resources because of its environmental setting. However, as reported in the SEIS-24, a site visit performed by NRC staff in 2004 found the presence of archaeological remains associated with several mapped historic locations within the plant lands. For the proposed EPU, the licensee asserts that there would be no new land disturbance activities and there are no plans to construct new facilities or modify existing access roads, parking areas, or equipment lay-down areas. Therefore, there would be no significant impact from the proposed EPU on historic and archaeological resources at NMP2.

Socioeconomic Impacts:

Potential socioeconomic impacts from the proposed EPU include temporary increases in the size of the workforce at NMP2 and associated increased demand for public services and housing in the region. The proposed EPU could also increase tax payments due to increased power generation.

Currently, there are approximately 1,000 full-time workers employed at NMPNS, residing primarily in Oswego County and Onondaga County, New York. During refueling outages approximately every 12 months at NMPNS (every 24 months for each unit) the number of workers at NMPNS increases by as many as 1,000 workers for 30 to 40 days.

As stated in the licensee's application dated May 27, 2009, the proposed EPU was expected to temporarily increase the size of the workforce at NMPNS during the spring 2010 and 2012 refueling outages. The greatest increase would occur during the spring 2012 outage when the majority of the EPU-related modifications would take place. Once completed, the size of the refueling outage workforce at NMPNS would return to normal levels and would remain relatively the same during future refueling outages. The size of the regular plant operations workforce would be unaffected by the proposed EPU.

Most of the EPU plant modification workers would be expected to relocate temporarily to Oswego and Onondaga counties, resulting in short-term increases in the local population along with increased demands for public services and housing. Because plant modification work would be short-term, most workers would stay in available rental homes, apartments, mobile homes, and camper-trailers. Therefore, a temporary increase in plant employment for a short duration would have little or no noticeable effect on the availability of housing in the region.

NMPNS currently pays annual real estate property taxes to the City of Oswego School District, Oswego County, and the Town of Scriba. The annual amount of property taxes paid by NMPNS could increase due to "incentive payments" should NMP2 megawatt production exceed negotiated annual benchmarks as power generation increases. Future property tax agreements with Oswego County, the Town of Scriba, and the City of Oswego could also take into account the increased value of NMP2 as a result of the EPU implementation and increased power generation.

Due to the short duration of EPU-related plant modification activities, there would be little or no noticeable effect on tax revenues generated by temporary workers residing in Oswego County and Onondaga County. Therefore, there would be no significant adverse socioeconomic impacts from EPU-related plant modifications and operations under EPU conditions in the vicinity of NMP2.

Environmental Justice Impacts:

The environmental justice impact analysis evaluates the potential for disproportionately high and adverse human health and environmental effects on minority and low-income populations that could result from activities associated with EPU operation at NMP2. Environmental effects may include biological, cultural, economic, or social impacts. Minority and low-income populations are subsets of the general public residing in the vicinity of NMP2,

and all are exposed to the same health and environmental effects generated from activities at NMP2.

Environmental Justice Impact Analysis:

The NRC staff considered the demographic composition of the area within a 50-mile (80-km) radius of NMP2 to determine the location of minority and low-income populations and whether they may be affected by the proposed action.

Minority populations in the vicinity of NMP2, according to the U.S. Census Bureau data for 2000, indicate that 11.8% of the population (approximately 908,000 individuals) residing within a 50-mile (80-km) radius of NMP2 identified themselves as minority individuals. The largest minority group was Black or African American (approximately 63,000 persons or 7.0%), followed by Hispanic or Latino (approximately 22,000 persons or about 2.4%). According to the U.S. Census Bureau, about 3.5% of the Oswego County population identified themselves as minorities, with persons of Hispanic or Latino origin comprising the largest minority group (1.3%). According to census data, the 3-year average estimate for 2006–2008 for the minority population of Oswego County, as a percent of total population, increased to 4.4%.

According to 2000 census data, approximately 19,600 families and 105,000 individuals (approximately 8.4 and 11.5%, respectively) residing within a 50-mi (80-km) radius of NMP2 were identified as living below the Federal poverty threshold in 1999. The 1999 Federal poverty threshold was $17,029 for a family of four.

According to census data in the 2006–2008 American Community Survey 3–Year Estimates, the median household income for New York was $55,401, while 13.8% of the State population and 10.5% of families were determined to be living below the Federal poverty threshold. Oswego County had a lower median household income average ($43,643) and higher percentages (16.0%) of individuals and families (11.2%) living below the poverty level, respectively.

Potential impacts to minority and low-income populations would mostly consist of environmental and socioeconomic effects (e.g., noise, dust, traffic, employment, and housing impacts). However, noise and dust impacts would be short-term and limited to onsite activities. Minority and low-income populations residing along site access roads could experience increased commuter vehicle traffic during shift changes. Increased demand for inexpensive rental housing during the refueling outages that include EPU-related plant modifications could disproportionately affect low-income populations, however, due to the short duration of the EPU-related work and the expected availability of rental properties, impacts to minority and low-income populations would be short-term and limited.

Based on this information and the analysis of human health and environmental impacts presented in this EA, there would be no disproportionately high and adverse human health and environmental effects on minority and low-income populations residing in the vicinity of NMP2.

Non-radiological Impacts Summary:

As discussed above, the proposed EPU would not result in any significant non-radiological impacts. Table 1 summarizes the non-radiological environmental impacts of the proposed EPU at NMP2.

Table 1. Summary of Non-radiological Environmental Impacts

Land Use	No significant impact on land use conditions and aesthetic resources in the vicinity of NMP2.
Air Quality	Temporary short-term air quality impacts from vehicle emissions related to the workforce. No significant impacts to air quality.
Water Use	Water use changes resulting from the EPU would be relatively minor. No significant impact on groundwater or surface water resources.
Aquatic Resources	No significant impact to aquatic resources due to impingement, entrainment, or thermal discharge.
Terrestrial Resources	No significant impact to terrestrial resources.
Threatened and Endangered Species	No significant impact to Federally listed species.
Historic and Archaeological Resources	No significant impact to historic and archaeological resources on site or in the vicinity of NMP2.
Socioeconomics	No significant socioeconomic impacts from EPU-related temporary increase in workforce.
Environmental Justice	No disproportionately high and adverse human health and environmental effects on minority and low-income populations in the vicinity of NMP2.

Radiological Impacts

Radioactive Gaseous and Liquid Effluents, Direct Radiation Shine, and Solid Waste:

Nuclear power plants use waste treatment systems to collect, process, recycle, and dispose of gaseous, liquid, and solid wastes that contain radioactive material in a safe and controlled manner within NRC and EPA radiation safety standards. Operation at the proposed EPU conditions would not require any physical changes to the gaseous, liquid, or solid waste systems.

Radioactive Gaseous Effluents

Radioactive gaseous wastes principally include radioactive gases extracted from the steam condenser offgas system and the turbine gland seal. The radioactive gaseous waste management system uses holdup (i.e., time delay to achieve radioactive decay) and filtration (i.e., high efficiency filters) to reduce the gaseous radioactivity that is released into the

environment. The licensee's evaluation concluded that the proposed EPU would not change the radioactive gaseous waste licensing basis and the system's design criteria. In addition, the existing equipment and plant procedures that control radioactive releases to the environment will continue to be used to maintain radioactive gaseous releases within the dose limits of 10 CFR 20.1302, Appendix I to 10 CFR Part 50, and 40 CFR Part 190.

Radioactive Liquid Effluents

Radioactive liquid wastes include liquids from various equipment drains, floor drains, containment sumps, chemistry laboratory, laundry drains, and other sources. An evaluation performed by the licensee demonstrates that implementation of the proposed EPU would not significantly increase the inventory of liquid normally processed by the liquid waste management system. This conclusion is based on the fact that the radioactive liquid waste system functions are not changing and the volume inputs would increase less than 10%, which is not an appreciable increase when compared to the liquid radioactive waste system capacity. The proposed EPU would result in a small increase in the equilibrium radioactivity in the reactor coolant which in turn would impact the concentrations of radionuclides entering the waste disposal systems.

Since the liquid volume does not increase appreciably, and the radiological sources remain bounded by the existing design basis, the current design and operation of the radioactive liquid waste system will accommodate the effects of EPU with no changes. In addition, the existing equipment and plant procedures that control radioactive releases to the environment will continue to be used to maintain radioactive liquid releases within the dose limits of 10 CFR 20.1302, Appendix I to 10 CFR Part 50, and 40 CFR Part 190.

Occupational Radiation Dose at EPU Conditions

In-plant radiation levels and associated occupational doses are controlled by the NMPNS Radiation Protection Program to ensure that internal and external radiation exposures

to station personnel, contractor personnel, and the general population will be as low as is reasonably achievable (ALARA). For plant workers, the program monitors radiation levels throughout the plant to establish work controls, training, temporary shielding, and protective equipment requirements so that worker doses will remain within the dose limits of 10 CFR Part 20 and ALARA.

The licensee's analysis indicate that in-plant radiation sources are anticipated to increase linearly with the increase in core power level (approximately 15% greater than the current licensed thermal power), except for nitrogen-16 (N-16) which is expected to increase approximately 30% due to increased steam flow and pressure in some components. Shielding is used throughout NMP2 to protect personnel against radiation emanating from the reactor and the auxiliary systems.

For conservatism, many aspects of NMP2 were originally designed for higher-than-expected radiation sources. NMPNS has determined that the current shielding design is adequate for the increase in radiation levels that may occur after the proposed EPU. Thus, the increase in radiation levels would not affect radiation zoning or shielding in the various areas of NMP2 because of the conservatism in the original design. Therefore, no changes are planned to the plant's shielding design and the ALARA program would continue in its current form.

Offsite Doses at EPU Conditions

The primary sources of normal operation offsite dose to members of the public at NMP2 are airborne releases from the Offgas System and direct dose from gamma radiation (skyshine) from the plant turbines containing radioactive material. During reactor operation, the reactor coolant passing through the core region becomes radioactive as a result of nuclear reactions. The dominant radiation source in the coolant passing through the turbine is N-16. The activation of the water in the reactor core is in approximate proportion to the increase in thermal power. However, while the magnitude of the radioactive source production increases in

proportion to reactor power, the concentration in the steam remains nearly constant. This is because the increase in activation production is balanced by the increase in steam flow. The implementation of the proposed EPU could increase components of offsite dose due to releases of gaseous and liquid effluents by up to 20%. The component of offsite dose due to N-16 radiation emanating from the turbine could increase by as much as 30%. The licensee calculated that the increase in offsite dose from radioactive gaseous and liquid effluents, and skyshine from NMP2 under EPU operating conditions is expected to be less than 1 mrem (0.01mSv) per year. The historical (2003 – 2007) annual doses to a member of the public located outside the NMPNS site boundary from NMP2's radioactive emissions ranged from 0.18 mrem (0.0018 mSv) to 2.01 mrem (0.0201 mSv). These doses are well below the 10 CFR Part 20 annual dose limit of 100 mrem (1.0 mSv) for members of the public and the EPA's 40 CFR Part 190 annual dose standard of 25 mrem (0.25 mSv). Therefore, while the offsite dose to members of the public under EPU conditions is expected to increase slightly, it is expected to remain within regulatory limits. Based on the above, the potential increase in offsite radiation dose to members of the public would not be significant.

Radioactive Solid Wastes:

The radioactive solid waste system collects, processes, packages, monitors, and temporarily stores radioactive dry and wet solid wastes prior to shipment offsite for disposal. Solid radioactive waste streams include filter sludge, spent ion exchange resin, and dry active waste (DAW). DAW includes paper, plastic, wood, rubber, glass, floor sweepings, cloth, metal, and other types of waste routinely generated during site maintenance and outages. The EPU does not generate a new type of waste or create a new waste stream. Therefore, the types of radioactive waste that require shipment are unchanged. The licensee's evaluation indicates that the effect of the EPU on solid waste is primarily from increased input to the reactor water cleanup system (WCS) and condensate demineralizers. The increased use of the WCS and

condensate demineralizers is expected to increase the volume of spent ion exchange resins and filter sludge. The licensee's analysis indicates that the estimated increase in solid radioactive waste is approximately 7%, and can be handled by the existing solid waste management system without modification. Therefore, the impact from the increased volume of solid radioactive waste generated under conditions of the proposed EPU would not be significant.

Spent Nuclear Fuel

Spent fuel from NMP2 is stored in the plant's spent fuel pool. The additional energy requirements for the proposed EPU would be met by an increase in fuel enrichment, an increase in the reload fuel batch size, and/or changes in the fuel loading pattern to maintain the desired plant operating cycle length. NMP2 is currently licensed to use uranium-dioxide fuel that has a maximum enrichment of 4.95% by weight uranium-235. The typical average enrichment is approximately 4.20% by weight uranium-235. For the proposed action, the core design would use a somewhat higher fuel enrichment (4.36%), which remains within the licensed maximum enrichment. The EPU fuel batch size would increase from 276 bundles to 352 bundles. The licensee's fuel reload design goals would maintain the NMP2 fuel cycles within the limits bounded by the impacts analyzed in 10 CFR Part 51, Table S-3 - Table of Uranium Fuel Cycle Environmental Data and Table S-4 – Environmental Impact of Transportation of Fuel and Waste to and from One Light-Water-Cooled Nuclear Power Reactor, as supplemented by NUREG-1437, Volume 1, Addendum 1, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Main Report, Section 6.3 – Transportation Table 9.1, Summary of findings on NEPA issues for license renewal of nuclear power plants." Therefore, there would be no significant impacts resulting from spent nuclear fuel.

Postulated Design-Basis Accident Doses:

Postulated design-basis accidents are evaluated by both the licensee and the NRC staff to ensure that NMP2 can withstand normal and abnormal transients and a broad spectrum of postulated accidents, without undue hazard to the health and safety of the public. The NRC staff previously evaluated and approved an amendment to the NMP2 license (Technical Specification Amendment No. 125, dated May 29, 2008, ADAMS Accession No. ML081230439) which permitted full implementation of the Alternative Source Term (AST) as described in NRC Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors." The licensee's AST analysis was performed at the proposed EPU power level of 3,988 MWt so that the design-basis accident analyses would be applicable to the proposed EPU being evaluated here. In its approval of TS Amendment No. 125, the NRC staff concluded that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public. Therefore, there would be no significant increase in the impact resulting from a postulated accident.

Radiological Impacts Summary:

As discussed above, the proposed EPU would not result in any significant radiological impacts. Table 2 summarizes the radiological environmental impacts of the proposed EPU at NMP2.

Table 2. Summary of Radiological Environmental Impacts

Radioactive Gaseous Effluents	Amount of additional radioactive gaseous effluents generated would be handled by the existing system.
Radioactive Liquid Effluents	Amount of additional radioactive liquid effluents generated would be handled by the existing system.
Occupational Radiation Doses	Occupational doses would continue to be maintained within NRC limits.
Offsite Radiation Doses	Radiation doses to members of the public would remain below NRC and EPA radiation protection standards.
Radioactive Solid Waste	Amount of additional radioactive solid waste generated would be handled by the existing system.
Spent Nuclear Fuel	The spent fuel characteristics will remain within the bounding criteria used in the impact analysis in 10 CFR Part 51, Table S-3 and Table S-4.
Postulated Design-Basis Accident Doses	Calculated doses for postulated design-basis accidents would remain within NRC limits.

Alternatives to the Proposed Action:

As an alternative to the proposed action, the NRC staff considered denial of the proposed EPU (i.e., the "no-action" alternative). Denial of the application would result in no change in the current environmental impacts. However, if the EPU were not approved for NMP2, other agencies and electric power organizations may be required to pursue other means, such as fossil fuel or alternative fuel power generation, to provide electric generation capacity to offset future demand. Construction and operation of such a fossil-fueled or alternative-fueled plant may create impacts in air quality, land use, and waste management significantly greater than those identified for the proposed EPU at NMP2. Furthermore, the proposed EPU does not involve environmental impacts that are significantly different from those originally identified in the NMP2 FES and the SEIS-24.

Alternative Use of Resources:

This action does not involve the use of any different resources than those previously considered in the FES for NMP2, NUREG-1085, dated May 1985 and Final Supplemental Environmental Impact Statement (NUREG-1437, Supplement 24) dated May 2006.

Agencies and Persons Consulted:

In accordance with its stated policy, on March 2, 2010, the NRC staff consulted with the State of New York official, Alyse L. Peterson of the New York State Energy Research and Development Authority regarding the environmental impact of the proposed action. The State official had no comments.

FINDING OF NO SIGNIFICANT IMPACT

On the basis of the details provided in the EA, the NRC concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the NRC has determined not to prepare an environmental impact statement for the proposed action.

For further details with respect to the proposed action, see the licensee's application dated May 27, 2009[1], as supplemented by additional letters[2]. These documents may be examined, and/or copied for a fee, at the NRC's Public Document Room (PDR), located at One White Flint North, Public File Area O1 F21, 11555 Rockville Pike (first floor), Rockville, Maryland. Publicly available documents created or received at the NRC are accessible electronically through the Agencywide Documents Access and Management System (ADAMS) in the NRC

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1 Agencywide Documents Access and Management System (ADAMS) Accession Package No. ML091610091
2 August 28, 2009 (ML092460610); December 23, 2009 (ML100190089); February 19, 2010 (ML100550598); April 16, 2010 (ML101120658); May 7 2010 (ML101380306); June 3, 2010 (ML101610222); June 30 (ML101900471); July 9, 2010 (ML101950502); July 30, 2010 (ML102170191); October 8, 2010 (ML102920339); October 28, 2010 (ML103080208); November 5, 2010 (ML103130515); December 10, 2010 (ML103500520); December 13, 2010 (ML103500363); January 19, 2011 (ML110250723); January 31, 2011 (ML110400373); February 4, 2011 (ML110460158); March 23, 2011 (ML110880300); May 9, 2011 (ML111370654); June 13, 2011 (ML111710135); July 15, 2011 (ML11207A069); August 5, 2011 (ML11207A069); August 19, 2011 (ML11242A044); September 23, 2011 (ML112700199); October 27, 2011 (ML113050319); and November 1, 2011 (ML113120336).

Library at http://www.nrc.gov/reading-rm/adams.html. Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS should contact the NRC PDR Reference staff by telephone at 1-800-397-4209 or 301-415-4737, or send an e-mail to pdr.resource@nrc.gov.

Dated at Rockville, Maryland, this 17th day of November 2011.

FOR THE NUCLEAR REGULATORY COMMISSION

Richard V. Guzman, Senior Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

November 17, 2011

Mr. George H. Gellrich
Vice President Nine Mile Point
Nine Mile Point Nuclear Station, LLC
P.O. Box 63
Lycoming, NY 13093

SUBJECT: NINE MILE POINT NUCLEAR STATION, UNIT NO. 2 – FINAL ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT RELATED TO PROPOSED EXTENDED POWER UPRATE (TAC NO. ME1476)

Dear Mr. Gellrich:

Enclosed is a copy of the Final Environmental Assessment (EA) and Finding of No Significant Impact related to the Nine Mile Point Nuclear Station (NMPNS, the licensee) application for amendment dated May 27, 2009[1], as supplemented by additional letters[2] for Nine Mile Point, Unit No. 2 (NMP2). The draft EA was transmitted to NMPNS on March 16, 2010, and published in the *Federal Register* on March 22, 2010 (75 FR 13600).

The proposed amendment would increase the maximum steady-state reactor core power level from 3467 megawatts thermal (MWt) to 3988 MWt, which is an increase from the current licensed of approximately 15 percent. The proposed increase in power level is considered an extended power uprate.

The enclosed final EA is being forwarded to the Office of the Federal Register for publication.

Sincerely,
/ra/
Richard V. Guzman, Senior Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-410

Enclosure:
Final Environmental Assessment

cc w/encl: See next page

[1] Agencywide Documents Access and Management System (ADAMS) Accession Package No. ML091610091
[2] August 28, 2009 (ML092460610); December 23, 2009 (ML100190089); February 19, 2010 (ML100550598); April 16, 2010 (ML101120658); May 7 2010 (ML101380306); June 3, 2010 (ML101610222); June 30 (ML101900471); July 9, 2010 (ML101950502); July 30, 2010 (ML102170191); October 8, 2010 (ML102920339); October 28, 2010 (ML103080208); November 5, 2010 (ML103130515); December 10, 2010 (ML103500520); December 13, 2010 (ML103500363); January 19, 2011 (ML110250723); January 31, 2011 (ML110400373): February 4, 2011 (ML110460158); March 23, 2011 (ML110880300); May 9, 2011 (ML111370654); June 13, 2011 (ML111710135); July 15, 2011 (ML11207A069); August 5, 2011 (ML11207A069); August 19, 2011 (ML11242A044); September 23, 2011 (ML112700199); October 27, 2011 (ML113050319); and November 1, 2011 (ML113120336).

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Accession Number: ML112460008; Final EA: ML112460009; Package: M112460007

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