U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

NUREG-1437, Supplement 38,
Vol. 3

Generic Environmental Impact Statement for License Renewal of Nuclear Plants

Supplement 38

Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3

Final Report Public Comments Continued, Appendices

Office of Nuclear Reactor Regulation

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ABSTRACT

The U.S. Nuclear Regulatory Commission (NRC) considered the environmental impacts of renewing nuclear power plant operating licenses for a 20-year period in NUREG-1437, Volumes 1 and 2, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (hereafter referred to as the GEIS),[1] and codified the results in Title 10, Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," of the *Code of Federal Regulations* (10 CFR Part 51). In the GEIS (and its Addendum 1), the NRC staff identified 92 environmental issues and reached generic conclusions related to environmental impacts for 69 of these issues that apply to all plants or to plants with specific design or site characteristics. Additional plant-specific review is required for the remaining 23 issues. These plant-specific reviews are to be included in a supplement to the GEIS.

This supplemental environmental impact statement (SEIS) has been prepared in response to an application submitted to the NRC by Entergy Nuclear Operations, Inc. (Entergy), Entergy Nuclear Indian Point 2, LLC, and Entergy Nuclear Indian Point 3, LLC (all applicants will be jointly referred to as Entergy) to renew the operating licenses for Indian Point Nuclear Generating Unit Nos. 2 and 3 (IP2 and IP3) for an additional 20 years under 10 CFR Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants." This SEIS includes the NRC staff's analysis which considers and weighs the environmental impacts of the proposed action, the environmental impacts of alternatives to the proposed action, and mitigation measures available for reducing or avoiding adverse impacts. It also includes the NRC staff's recommendation regarding the proposed action.

Regarding the 69 issues for which the GEIS reached generic conclusions, neither Entergy nor the NRC staff has identified information that is both new and significant for any issues that apply to IP2 and/or IP3. In addition, the NRC staff determined that information provided during the scoping process was not new and significant with respect to the conclusions in the GEIS. Therefore, the NRC staff concludes that the impacts of renewing the operating licenses for IP2 and IP3 will not be greater than the impacts identified for these issues in the GEIS. For each of these issues, the NRC staff's conclusion in the GEIS is that the impact is of SMALL[2] significance (except for the collective offsite radiological impacts from the fuel cycle and high-level waste and spent fuel, which were not assigned a single significance level).

Regarding the remaining 23 issues, those that apply to IP2 and IP3 are addressed in this SEIS. The NRC staff determined that several of these issues were not applicable because of the type of facility cooling system or other reasons detailed within this SEIS. For the remaining applicable issues, the NRC staff concludes that the significance of potential environmental impacts related to operating license renewal is SMALL, with three exceptions—entrainment, impingement, and heat shock from the facility's heated discharge. Overall effects from entrainment and impingement are likely to be MODERATE. Impacts from heat shock potentially

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(1) The GEIS was originally issued in 1996. Addendum 1 to the GEIS was issued in 1999. Hereafter, all references to the "GEIS" include the GEIS and its Addendum 1.

(2) Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.

range from SMALL to LARGE depending on the conclusions of thermal studies proposed by the New York State Department of Environmental Conservation (NYSDEC). Based on corrected data received since completing the draft SEIS, NRC staff concludes that impacts to the endangered shortnose sturgeon – which ranged from SMALL to LARGE in the draft SEIS – are likely to be SMALL.

The NRC staff's recommendation is that the Commission determine that the adverse environmental impacts of license renewals for IP2 and IP3 are not so great that preserving the option of license renewal for energy planning decision makers would be unreasonable. This recommendation is based on (1) the analysis and findings in the GEIS, (2) the environmental report and other information submitted by Entergy, (3) consultation with other Federal, State, Tribal, and local agencies, (4) the NRC staff's own independent review, and (5) the NRC staff's consideration of public comments received during the scoping process and in response to the draft SEIS.

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EXECUTIVE SUMMARY

By letter dated April 30, 2007, Entergy Nuclear Operations, Inc. (Entergy) submitted an application to the U.S. Nuclear Regulatory Commission (NRC) to renew the operating licenses for Indian Point Nuclear Generating Unit Nos. 2 and 3 (IP2 and IP3) for an additional 20-year period. If the operating licenses are renewed, State regulatory agencies and Entergy will ultimately decide whether the plant will continue to operate based on factors such as the need for power, issues falling under the purview of the owners, or other matters within the State's jurisdiction, including acceptability of water withdrawal. Two state-level issues (consistency with State water quality standards, and consistency with State coastal zone management plans) need to be resolved. On April 2, 2010, the New York State Department of Environmental Conservation (NYSDEC) issued a Notice of Denial regarding the Clean Water Act Section 401 Water Quality Certification. Entergy has since requested a hearing on the issue, and the matter will be decided through NYSDEC's hearing process. If the operating licenses are not renewed, then IP2 and IP3 must be shut down at or before the expiration date of their current operating licenses which expire September 28, 2013, and December 12, 2015, respectively.

The NRC has implemented Section 102 of the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321), in Title 10, Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," of the *Code of Federal Regulations* (10 CFR Part 51). In 10 CFR 51.20(b)(2), the Commission requires preparation of an environmental impact statement (EIS) or a supplement to an EIS for renewal of a reactor operating license. In addition, 10 CFR 51.95(c) states that the EIS prepared at the operating license renewal stage will be a supplement to NUREG-1437, Volumes 1 and 2, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (hereafter referred to as the GEIS).[1]

Upon acceptance of the IP2 and IP3 application, the NRC began the environmental review process described in 10 CFR Part 51 by publishing a notice of intent to prepare an EIS and conduct scoping. The NRC staff visited the IP2 and IP3 site in September 2007, held two public scoping meetings on September 19, 2007, and conducted two site audits on September 10–14, 2007, and September 24–27, 2007. In the preparation of this supplemental environmental impact statement (SEIS) for IP2 and IP3, the NRC staff reviewed the IP2 and IP3 environmental report (ER) and compared it to the GEIS; consulted with other agencies; conducted an independent review of the issues following the guidance in NUREG-1555, "Standard Review Plans for Environmental Reviews for Nuclear Power Plants, Supplement 1: Operating License Renewal," issued October 1999; and considered the public comments received during the scoping process and in response to the draft SEIS. The public comments received during the scoping process that were considered to be within the scope of the environmental review are contained in the Scoping Summary Report for Indian Point Nuclear Generating Unit Nos. 2 and 3, issued by NRC staff in December 2008. In Appendix A of this SEIS, the NRC staff adopts, by reference, the comments and responses in the Scoping Summary Report and provides information on how to electronically access the scoping summary or view a hard copy.

[1] The GEIS was originally issued in 1996. Addendum 1 to the GEIS was issued in 1999. Hereafter, all references to the "GEIS" include the GEIS and its Addendum 1.

The NRC staff held public meetings in Cortlandt Manor, New York, on February 12, 2009 and described the preliminary results of the NRC environmental review, answered questions, and provided members of the public with information to assist them in formulating comments on the draft SEIS. The NRC staff considered and addressed all of the comments received. These comments are reflected in the SEIS or addressed in Appendix A, Part 2, to this SEIS.

This SEIS includes the NRC staff's analysis that considers and weighs the environmental effects of the proposed action, the environmental impacts of alternatives to the proposed action, and mitigation measures for reducing or avoiding adverse effects. It also includes the NRC staff's recommendation regarding the proposed action.

The Commission has adopted the following statement of purpose and need for license renewal from the GEIS:

> The purpose and need for the proposed action (renewal of an operating license) is to provide an option that allows for power generation capability beyond the term of a current nuclear power plant operating license to meet future system generating needs, as such needs may be determined by State, utility, and, where authorized, Federal (other than NRC) decision makers.

The purpose of the NRC staff's environmental review, as defined in 10 CFR 51.95(c)(4) and the GEIS, is to determine the following:

> …whether or not the adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy planning decision makers would be unreasonable.

Both the statement of purpose and need and the evaluation criterion implicitly acknowledge that there are factors, in addition to license renewal, that will ultimately determine whether an existing nuclear power plant continues to operate beyond the period of the current operating license (or licenses).

NRC regulations (10 CFR 51.95(c)(2)) contain the following statement regarding the content of SEISs prepared at the license renewal stage:

> The supplemental environmental impact statement for license renewal is not required to include discussion of need for power or the economic costs and economic benefits of the proposed action or of alternatives to the proposed action except insofar as such benefits and costs are either essential for a determination regarding the inclusion of an alternative in the range of alternatives considered or relevant to mitigation. In addition, the supplemental environmental impact statement prepared at the license renewal stage need not discuss other issues not related to the environmental effects of the proposed action and the alternatives, or any aspect of the storage of spent fuel for the facility within the scope of the generic determination in 10 CFR 51.23(a) ["Temporary storage of spent fuel after cessation of reactor operation–generic determination of no significant environmental impact"] and in accordance with 10 CFR 51.23(b).

The GEIS contains the results of a systematic evaluation of the consequences of renewing an operating license and operating a nuclear power plant for an additional 20 years. It evaluates 92 environmental issues using the NRC's three-level standard of significance—SMALL, MODERATE, or LARGE—developed using the Council on Environmental Quality (CEQ)

guidelines.

The following definitions of the three significance levels are set forth in footnotes to Table B-1 of Appendix B, "Environmental Effect of Renewing the Operating License of a Nuclear Power Plant," to 10 CFR Part 51, Subpart A, "National Environmental Policy Act—Regulations Implementing Section 102(2)":

> SMALL—Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.
>
> MODERATE—Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.
>
> LARGE—Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

For 69 of the 92 issues considered in the GEIS, the analysis in the GEIS reached the following conclusions:

(1) The environmental impacts associated with the issue have been determined to apply either to all plants or, for some issues, to plants having a specific type of cooling system or other specified plant or site characteristics.

(2) A single significance level (that is, SMALL, MODERATE, or LARGE) has been assigned to the impacts (except for collective offsite radiological impacts from the fuel cycle and from high-level waste and spent fuel disposal).

(3) Mitigation of adverse impacts associated with the issue has been considered in the analysis, and it has been determined that additional plant-specific mitigation measures are not likely to be sufficiently beneficial to warrant implementation.

These 69 issues were identified in the GEIS as Category 1 issues. In the absence of new and significant information, the staff relied on conclusions in the GEIS for issues designated as Category 1 in Table B-1 of Appendix B to 10 CFR Part 51, Subpart A.

Of the 23 issues that do not meet the criteria set forth above, 21 are classified as Category 2 issues requiring analysis in a plant-specific supplement to the GEIS. The remaining two issues, environmental justice and chronic effects of electromagnetic fields, were not categorized. Environmental justice was not evaluated on a generic basis and must be addressed in a plant-specific supplement to the GEIS. Information on the chronic effects of electromagnetic fields was not conclusive at the time the GEIS was prepared.

This SEIS documents the NRC staff's consideration of all 92 environmental issues identified in the GEIS. The NRC staff considered the environmental impacts associated with alternatives to license renewal and compared the environmental impacts of license renewal and the alternatives. The alternatives to license renewal that were considered include the no-action alternative (not renewing the operating licenses for IP2 and IP3), alternative methods of power generation, and conservation. The NRC staff also considered an alternative that included continued operation of IP2 and IP3 with a closed-cycle cooling system. This alternative is considered for several reasons. First, the New York State Department of Environmental Conservation (NYSDEC) issued a preliminary determination in its 2003 draft and 2004 revised draft State Pollutant Discharge Elimination System (SPDES) permits that closed cycle cooling is the site-specific best technology available (BTA) to reduce impacts on fish and shellfish;

currently the revised draft SPDES permit is the subject of NYSDEC proceedings, and the existing SPDES permit continues in effect at this time. Second, NYSDEC affirmed this view in its April 2, 2010, Notice of Denial of Entergy's Clean Water Act Section 401 Water Quality Certification, indicating that closed cycle cooling would minimize aquatic impacts; that determination is currently subject to further State-level adjudication. Third, NYSDEC has published a draft policy on BTA indicating that "Wet closed-cycle cooling or its equivalent" is the "minimum performance goal for existing industrial facilities that operate a CWIS [cooling water intake system] in connection with a point source thermal discharge." Public comments on that draft policy were submitted through July 9, 2010.

Entergy and the NRC staff have established independent processes for identifying and evaluating the significance of any new information on the environmental impacts of license renewal. Neither Entergy nor the staff has identified information that is both new and significant related to Category 1 issues that would call into question the conclusions in the GEIS. Similarly, neither the scoping process nor the NRC staff has identified any new issue applicable to IP2 and IP3 that has a significant environmental impact. Therefore, the NRC staff relies on the conclusions of the GEIS for all of the Category 1 issues that are applicable to IP2 and IP3.

Entergy's license renewal application presents an analysis of the 21 Category 2 issues that are applicable to IP2 and IP3, plus environmental justice and chronic effects from electromagnetic fields, for a total of 23 issues. The NRC staff has reviewed the Entergy analysis and has conducted an independent assessment of each issue. Six of the Category 2 issues are not applicable because they are related to a type of existing cooling system, water use conflicts, and ground water use not found at IP2 and IP3. Entergy has stated that its evaluation of structures and components, as required by 10 CFR 54.21, "Contents of Application—Technical Information," did not identify any major plant refurbishment activities or modifications as necessary to support the continued operation of IP2 and IP3 for the license renewal period. Entergy did, however, indicate that it plans to replace reactor vessel heads and control rod drive mechanisms at IP2 and IP3. The NRC staff has evaluated the potential impacts of these activities using the framework provided by the GEIS for addressing refurbishment issues.

Seventeen environmental issues related to operational impacts and postulated accidents during the renewal term are discussed in detail in this SEIS. These include 15 Category 2 issues and 2 uncategorized issues, environmental justice and chronic effects of electromagnetic fields. The NRC staff also discusses in detail the potential impacts related to the 10 Category 2 issues that apply to refurbishment activities. The NRC staff concludes that the potential environmental effects for most of these issues are of SMALL significance in the context of the standards set forth in the GEIS with three exceptions—entrainment, impingement, and heat shock from the facility's heated discharge. The NRC staff jointly assessed the impacts of entrainment and impingement to be MODERATE based on NRC's analysis of representative important species. Impacts from heat shock potentially range from SMALL to LARGE depending on the conclusions of thermal studies proposed by the NYSDEC. Based on corrected data received since completing the draft SEIS, the NRC staff concludes that impacts to the endangered shortnose sturgeon – which ranged from SMALL to LARGE in the draft SEIS – are likely to be SMALL.

The NRC staff also determined that appropriate Federal health agencies have not reached a consensus on the existence of chronic adverse effects from electromagnetic fields. Therefore, no further evaluation of this issue is required.

For severe accident mitigation alternatives (SAMAs), the staff concludes that a reasonable, comprehensive effort was made to identify and evaluate SAMAs. Based on its review of the SAMAs for IP2 and IP3 and the plant improvements already made, the NRC staff concludes that several SAMAs may be cost-beneficial. However, these SAMAs do not relate to adequate management of the effects of aging during the period of extended operation. Therefore, they do not need to be implemented as part of license renewal pursuant to 10 CFR Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants."

Cumulative impacts of past, present, and reasonably foreseeable future actions were considered, regardless of what agency (Federal or non-Federal) or person undertakes such other actions. For purposes of this analysis, the NRC staff determined that the cumulative impacts to terrestrial and aquatic resources in the IP2 and IP3 environs would be LARGE, due primarily to past development and pollution, much of which preceded IP2 and IP3 or occurred as a result of other actions (for example, suburban development and hardening of the Hudson River shoreline).

The NRC staff's analysis indicates that the adverse impacts of potential alternatives will differ from those of the proposed action. Most alternatives result in smaller impacts to aquatic life, while creating greater impacts in other resource areas. Often, the most significant environmental impacts of alternatives result from constructing new facilities or infrastructure.

The recommendation of the NRC staff is that the Commission determine that the adverse environmental impacts of license renewals for IP2 and IP3 are not so great that not preserving the option of license renewal for energy planning decision makers would be unreasonable. This recommendation is based on (1) the analysis and findings in the GEIS, (2) the ER and other information submitted by Entergy, (3) consultation with other Federal, State, Tribal, and local agencies, (4) the staff's own independent review, and (5) the staff's consideration of public comments received during the scoping process and in response to the draft SEIS.

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Abbreviations/Acronyms

°	degree(s)
µm	micron(s)
3D	three dimensional
ACAA	American Coal Ash Association
ac	acre(s)
AC	alternating current
ACC	averted cleanup and decontamination
ADAMS	Agencywide Documents Access and Management System
ADAPT	Atmospheric Data Assimilation and Parameterization Technique
ACEEE	American Council for an Energy Efficient Economy
AEC	Atomic Energy Commission
AFW	auxiliary feed water
AGTC	Algonquin Gas Transmission Company
ALARA	as low as reasonably achievable
ANOVA	analysis of variance
AOC	averted off-site property damage costs
AOE	averted occupational exposure costs
AOSC	averted on-site costs
APE	averted public exposure
ASA	Applied Science Associates
ASME	American Society of Mechanical Engineers
ASMFC	Atlantic States Marine Fisheries Commission
ASSS	alternate safe shutdown system
ATWS	anticipated transient without scram
AUTOSAM	Automated Abundance Sampler
BA	biological assessment
BO	Biological Opinion
Board	Atomic Safety and Licensing Board
Bq/L	becquerel per liter
Bq/kg	becquerel per kilogram
BSS	Beach Seine Survey
BTA	best technology available
BTU	British thermal unit(s)
C	Celsius
CAA	Clean Air Act
CAFTA	computer aided fault-tree analysis code
CAIR	Clean Air Interstate Rule
CAMR	Clean Air Mercury Rule
CCF	common cause failure
CCMP	Comprehensive Conservation and Management Plan
CCW	component cooling water

CCWD	Cortlandt Consolidated Water District
CDF	core damage frequency
CDM	Clean Development Mechanism
CET	Containment Event Tree
CEQ	Council on Environmental Quality
CFR	*Code of Federal Regulations*
cfs	cubic foot (feet) per second
CHGEC	Central Hudson Gas & Electric Corporation
Ci	curie(s)
CI	confidence interval
cm	centimeter(s)
CMP	Coastal Management Plan
CMR	conditional mortality rate
CNP	Cook Nuclear Plant
CO	carbon monoxide
CO_2	carbon dioxide
COE	cost of enhancement
COL	Combined License
Con Edison	Consolidated Edison Company of New York
CORMIX	Cornell University Mixing Zone Model
CPUE	catch-per-unit-effort
CRDM	control rod drive mechanism
CST	condensate storage tank
CV	coefficient of variation
CWA	Clean Water Act
CWIS	Circulating Water Intake System
CZMA	Coastal Zone Management Act
dB(A)	decibel(s)
DBA	Design-basis accident
DC	direct current
DDT	dichloro-diphenyl-trichloroethane
DEIS	Draft Environmental Impact Statement
DF	Decontamination Factor
DNA	deoxyribonucleic acid
DNR	Department of Natural Resources
DO	dissolved oxygen
DOC	dissolved organic carbon
DOE	U.S. Department of Energy
DOS	Department of State
DOT	U.S. Department of Transportation
DPS	Distinct Population Segment
DSEIS	Draft Supplemental Environmental Impact Statement
EA	Environmental Assessment
ECL	Environmental Conservation Law
EDG	emergency diesel generator

EIA	Energy Information Administration
EIS	environmental impact statement
EFH	Essential Fish Habitat
ELF-EMF	extremely low frequency-electromagnetic field
EMR	entrainment mortality rate
Entergy	Entergy Nuclear Operations, Inc.
EOP	emergency operating procedure
EPA	U.S. Environmental Protection Agency
EPRI	Electric Power Research Institute
ER	Environmental Report
ER-M	effects-range-median
ESA	Endangered Species Act
F	Fahrenheit
F&O	Facts and Observations
FAA	Federal Aviation Administration
FDA	Food and Drug Administration
FEIS	Final Environmental Impact Statement
FERC	Federal Energy Regulatory Commission
FES	Final Environmental Statement
FJS	Fall Juvenile Survey
FPC	Federal Power Commission
fps	feet per second
FPS	fire protection system
FR	*Federal Register*
FSAR	Final Safety Analysis Report
FSS	Fall Shoals Survey
ft	foot (feet)
ft^2	square feet
ft^3	cubic feet
FWS	U.S. Fish and Wildlife Service
g	gram(s)
gal	gallon(s)
gC_{eq}/kWh	gram(s) of carbon dioxide equivalents per kilowatt-hour
GEIS	*Generic Environmental Impact Statement for License Renewal of Nuclear Plants, NUREG-1437*
GHG	greenhouse gas
GL	Generic Letter
gpm	gallon(s) per minute
GW	gigawatt
ha	hectare(s)
HAP	hazardous air pollutant
HLW	high-level waste
hr	hour(s)
HRA	Human Reliability Analysis

HRERF	Hudson River Estuary Restoration Fund
HRFI	Hudson River Fisheries Investigation
HRPC	Hudson River Policy Committee
HRSA	Hudson River Settlement Agreement
IAEA	International Atomic Energy Agency
IMR	impingement mortality rate
in.	inch(es)
INEEL	Idaho National Energy and Environmental Laboratory
IP1	Indian Point Nuclear Generating Unit No. 1
IP2	Indian Point Nuclear Generating Unit No. 2
IP3	Indian Point Nuclear Generating Unit No. 3
IPE	individual plant examination
IPEEE	individual plant examination of external events
ISFSI	Independent Fuel Storage Installation
ISLOCA	Interfacing Systems Loss of Coolant Accidents
IWSA	Integrated Waste Services Association
kg	kilogram(s)
km	kilometer(s)
km^2	square kilometer(s)
kV	kilovolt(s)
kWh	kilowatt hour(s)
lb	pound(s)
L	liter(s)
LERF	Large Early Release Frequency
LLMW	low-level mixed waste
LLNL	Lawrence Livermore National Library
LOCA	loss of coolant accident
LODI	Lagrangian Operational Dispersion Integrator
LOE	Line(s) of Evidence
lpm	liters per minute
LRA	license renewal application
LR	linear regression
LRS	Long River Survey
LSE	load serving entities
m	meter(s)
mm	millimeter(s)
m^2	square meter(s)
m^3	cubic meter(s)
m^3/sec	cubic meter(s) per second
MAAP	Modular Accident Analysis Program
MACCS2	MELCOR Accident Consequence Code System 2
MBq	megabecquerel
mg	milligram(s)

mgd	million gallons per day
mg/L	milligram(s) per liter
mGy	milligray
mi	mile(s)
min	minute(s)
MIT	Massachusetts Institute of Technology
mL	milliliter(s)
MLES	Marine Life Exclusion System
MMBtu	million British thermal unit(s)
mps	meter(s) per second
mrad	millirad(s)
mrem	millirem(s)
mRNA	messenger ribonucleic acid
MSE	mean squared error
MSL	mean sea level
MSPI	Mitigating Systems Performance Indicator
mSv	millisievert
MT	metric ton(s)
MTU	metric ton of uranium
MW	megawatt
MWd	megawatt-days
MW(e)	megawatt(s) electric
MW(h)	megawatt hour(s)
MW(t)	megawatt(s) thermal
MWSF	Mixed Waste Storage Facility
NAAQS	National Ambient Air Quality Standards
NARAC	National Atmospheric Release Advisory Center
NAS	National Academy of Sciences
NEA	Nuclear Energy Agency
NEPA	National Environmental Policy Act of 1969, as amended
NESC	National Electric Safety Code
NGO	Nongovernmental Organization
NHPA	National Historic Preservation Act
NIEHS	National Institute of Environmental Health Sciences
NIRS	Nuclear Information and Resource Service
NMFS	National Marine Fisheries Service
NJDEP	New Jersey Department of Environmental Protection
NO_2	nitrogen dioxide
NO_x	nitrogen oxide(s)
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
NRHP	National Register of Historic Places
NSSS	nuclear steam supply system
NWJWW	Northern Westchester Joint Water Works
NY/NJ/PHL	New York/New Jersey/Philadelphia

NYCA	New York Control Area
NYCDEP	New York City Department of Environmental Protection
NYCRR	New York Code of Rules and Regulations
NYISO	New York Independent System Operator
NYPA	New York Power Authority
NYPSC	New York Public Service Commission
NYRI	New York Regional Interconnect, Inc.
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSERDA	New York State Energy Research and Development Authority
NYSHPO	New York State Historic Preservation Office
O_3	ozone 8-hour standard
OCNGS	Oyster Creek Nuclear Generating Station
ODCM	Offsite Dose Calculation Manual
OMB	Office of Management and Budget
OPR	Office of Protected Resources
PAB	primary auxiliary building
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyls
pCi/L	picoCuries per liter
pCi/kg	picoCuries per kilogram
PDS	plant damage state
PILOT	payment-in-lieu-of-taxes
PM	particulate matter
$PM_{2.5}$	particulate matter, 2.5 microns or less in diameter
PM_{10}	particulate matter, 10 microns or less in diameter
POC	particulate organic carbon
PORV	power operated relief valve
POST	Parliamentary Office of Science and Technology
ppm	parts per million
ppt	parts per thousand
PRA	probabilistic risk assessment
PSA	probabilistic safety assessment
PV	photovoltaic
PWR	pressurized water reactor
PWW	Poughkeepsie Water Works
PYSL	post yolk-sac larvae
REMP	Radiological Environmental Monitoring Program
R-EMAP	regional environmental monitoring and assessment program
RAI	request for additional information
RCP	reactor coolant pump
RCRA	Resource Conservation and Recovery Act
RCS	reactor cooling system
REMP	radiological environmental monitoring program

RHR	residual heat removal
Riverkeeper	Hudson River Fishermen's Association
RIS	Representative Important Species
RKM	river kilometer(s)
RM	river mile(s)
RMP	Risk Management Plan
ROD	Record of Decision
ROI	region of influence
ROW	right-of-way
RPC	long-term replacement power costs
rpm	revolutions per minute
RRW	risk reduction worth
RWST	refueling water storage tank
s	second(s)
SAFSTOR	safe storage condition
SAMA	severe accident mitigation alternative
SAR	Safety Analysis Report
SAV	submerged aquatic vegetation
SBO	station blackout
Scenic Hudson	Scenic Hudson Preservation Conference
SCR	selective catalytic reduction
SECPOP	sector population, land fraction and economic estimation program
SEIS	Supplemental Environmental Impact Statement
SFP	Spent Fuel Pool
SGTR	Steam Generator Tube Ruptures
SI	Safety Injection
SO_2	sulfur dioxide
SO_x	sulfur oxide(s)
SPDES	State Pollutant Discharge Elimination System
SPU	stretch power uprate
sq mi	square mile(s)
SR	segmented regression
SRP	Standard Review Plan
SRT	Status Review Team
SSBR	spawning stock biomass per-recruit
SSE	safe shutdown earthquake
Sv	person-sievert
SWS	service water system
t	ton(s)
TDEC	Tennessee Department of Environment and Conservation
TI-SGTR	thermally-induced Steam Generator Tube Ruptures
TLD	Thermoluminescent dosimeter
TOC	total organic carbon
TRC	TRC Environmental Corporation

U.S.	United States
U.S.C.	United States Code
USACE	U.S. Army Corps of Engineers
USAEC	U.S. Atomic Energy Commission
USCB	U.S. Census Bureau
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
UWNY	United Water New York
V	volt(s)
VALWNF	value of non-farm wealth
VOC	volatile organic compound
WCDOH	Westchester County Department of Health
WISE	World Information Service on Energy
WJWW	Westchester Joint Water Works
WOE	weight of evidence
WOG	Westinghouse Owner's Group
YSL	yolk-sac larvae
YOY	young of year
yr	year(s)

Appendix A

Comments Received on the Environmental Review

Continued from Volume 2

MR.OROS: Mine's easy. It's Soros without the `S` or the billions. My name is George Oros. I'm a member of the Westchester County Board of Legislators. I represent the people that live in the shadow of Indian Point. The people of Buchanan, Cortland, Northern Yorktown and Peekskill. And it's ironic to me, as I often argue at my colleagues down-county how those of us who live closest to the plant have the least amount of alarm and concern. And that's probably because those of us that live closest, know the most about the plant and how it operates. One of the things I think has to be brought into mind, in addition to how this plant curbs the carbon emissions, how it's clean energy, how it provides the energy for about 21% of the region's needs. Beyond all of that there's another factor. This plant is a major employer of the people that live in my legislative district. In addition, it is the largest taxpayer to the school district, to the village of Buchanan, and believe it or not, this plant pays 1% of Westchester Counties property taxes. At a time when the economy is hurting, when the people I represent are hurting, we cannot afford to overlook that. You know, a few years ago there was a resolution passed by our Board of Legislators about Indian Point and the relicensing. But I would hope that those that want to use that as some sort of hammer to try to what prevent the relicensing read it carefully. Because that resolution is conditioned, very

130-a-AQ/ SR

specifically, upon three things happening. 130-a-AQ/SR contd.

One of them is someone's going to have to replace the amount of tax dollars that this plant pays before it could close or not be relicensed. Secondly, hire the 900 people. Find them good meaningful jobs that are going to support their families and third replace all of the energy that this plant produces. I don't believe any of those three criteria can be met in the next decade and therefore I don't see how, if you just consider those factors and all the other factors, this plant cannot be relicensed. I'm sure the NRC, I'm sure the operators of this plant, I'm sure the State of New York, the local officials here in the county will do all they can to make sure that this plant is safe. That it is operated properly. I think that with all of those safeguards in place, the relicensing is something that we would all support here locally. So with that, I want to thank you for the opportunity to address you. I've never done this before, by the way, but I get a little tired of hearing the people out there who don't live in our community and they come to this community. We are in a community here, where we live very peacefully with Indian Point and appreciate what it does for our community. Thank you. 130-b-OP/SO/SR

MR. OTIS: Hi. My name is Mike Otis. I'm an electrical and computer engineering professor at a local university in New York State. I teach a variety of engineering courses as well as a non-engineering course entitled "Renewable Energy". This course looks at several of energy providing solutions for the future by exploring different technologies and uses a scientific approach in doing so. Nuclear energy plays a very important role in this course is an excellent topic to study when discussing viable solutions as well as public policy. It really makes for a great debate. I am pleasantly surprised by the open-mindedness of my students when they explore such controversial and interesting topic using research and math and science as their tools. At the beginning of this course, many of them had already drawn conclusions about nuclear energy that were based on fear rather than fact. For most, the fear is gone and their conclusions have changed. Now shifting gears to my engineering department. Our primary goal of the engineering department is to engage our engineering students in the learning process through hands-on experiences. So the intertwined roles of both conducting student research and acquiring scholarship funds are both seen as critical components in educating this nations next generation of scientists, mathematicians and engineers. This investment is exactly why I hear today. 131-a-OS

I want to make sure that you understand the important 131-b-SE

partnership my university has forged with Entergy and the Indian Point Energy Center in seeding the development of our students. Together with Entergy, we have created an excellent internship program at Indian Point for both electrical and computer engineering students. This site serves as one of the key locations for students. For the past three summers, young men and women have gained invaluable experiences in their focus of study. This has far exceeded all my expectations. Entergy is an investor in our students' futures, as well as the nation's future. We are developing the next generation of engineers that this country so desperately needs. Yet we have come to the realization that their education cannot be confined within the four walls of the classroom. So field experience, working side-by-side with experienced engineers and technicians has enhanced our students chances for success and invaluable for those entering the workforce. The re-licensing of Indian Point is critical to the future of our students, the future of the state economy and the future of nuclear power in the United States. Entergy exemplifies the best of corporate philanthropy and they're providing the leadership and investment in education while others are cutting and slashing their commitments to educate today's and tomorrow's youth. That is why I strongly support the re-licensing of Indian Point for an additional 20 years. Thank you.

131-b-SE contd.

131-c-SE/ SR

Testimony of Michael Otis

Hello, my name is Michael Otis, and I am an Electrical/Computer Engineering Professor at a local (New York) university. I teach a variety of engineering courses as well as a non-engineering course for the masses titled "Renewable Energy." This course looks at several energy-providing solutions for the future by exploring different technologies and using a scientific approach.

Nuclear energy plays a very important role in this course and is an excellent topic to study when discussing viable solutions as well as public policy – it makes for great debate! I am pleasantly surprised by the open-mindedness of my students when they explore such a controversial (and interesting) topic using research (and math/science) as their tools.

At the beginning of this course many of them had already drawn conclusions (about nuclear energy) that were based on fear rather than fact. For most, that fear is gone, and their conclusions have changed.

A primary goal of our Engineering department is to engage our (engineering) students in the learning process through hands-on experiences, so the intertwined roles of both conducting student research and acquiring scholarship funds are both seen as critical components in educating this nation's next generation of scientists, mathematicians and engineers.

This investment is exactly why I am here today, before this distinguished panel of fellow men and women of science. I want to make sure that you understand the

131-d-SE

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important partnership my university has forged with Entergy and the Indian Point Energy Center in seeding the development of our students.

Together with Entergy, we have created an excellent internship program at Indian Point for both Electrical and Computer Engineering students. This site serves as one of the key locations for students in the School of Engineering, and for the past 3 summers, young men and women have gained invaluable experiences in their focus areas of study – far exceeding my expectations.

The reason this program works so well is because Entergy employees share the school's passion for science, and learning more about how we can continue harnessing nuclear power for a cleaner energy future for the country, if not the world.

Entergy is an investor in our students' futures, as well as this nation's future. We are developing the next generation of engineers that this country so desperately needs. Yet, we have come to the realization that their education cannot be confined to staying within the four walls of a classroom, and so field experience – working side-by-side with experienced engineers and technicians – has enhanced our students' chances for success and invaluable for those entering the workforce.

131-d-SE contd.

However, the benefit of Indian Point to our students and faculty runs deeper than just their investment in education. Indian Point provides affordable, clean energy to the New York Power Authority through long-term contracts, and that NYPA power flows through the heart of school systems just like ours throughout New York State. Therefore, during this time of great economic need, when our students are being asked to pay more for their education, I am frightened to think

131-e-AQ/EC/SR

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of the impact much-higher electricity prices would have on the public education system of this state.

How can we afford to both lose 2,000 megawatts of much-need power, and lose our capabilities to attract and educate those New York residents seeking a quality and affordable education -- especially in those important areas of math and science we so desperately need in this state?

Equally CRITICAL and certainly overlooked is the simple fact that Indian Point generates electricity without producing virtually any greenhouse gas emissions, unlike natural gas or coal facilities. Annually, nuclear power in New York avoids 42,000 tons of nitrous oxide, which is the equivalent of 22 million passenger cars on our roads.

The relicensing of Indian Point is critical to the future of our students, the future of the state economy, and the future of nuclear power in the United States. Entergy exemplifies the best of corporate philanthropy, and they are providing the leadership and investment in education, while others are cutting and slashing their commitments to educate today's and tomorrow's youth.

That is why I strongly support the relicensing of Indian Point for an additional 20 years.

Thank you.

131-e-AQ/EC/SR contd.

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MR. PARKER: Thank you, Lance. Good afternoon everyone. My name is John Parker and I am the regional attorney for the Department of Environmental Conservation Region 3. I'm here today in my official capacity representing the executive agencies of the State of New York. I wanted to welcome the NRC, NRC staff, the applicant, local residents and others to our wonderful lower Hudson Valley region. We appreciate the opportunity to present to the NRC our comments on Supplement-38 to the Generic Environmental Impact Statement. We will submit more detailed written comments by the close of the comment period on March 18th.

There has never been a complete and thorough environmental review of Indian Point, even though environmental reviews are routinely done on applications like this one. The State of New York has and will continue to participate in this process, but the draft is inadequate, incomplete and reaches the wrong conclusion preliminarily. There's a commitment by New York to bring renewable energy and energy conservation measures to the forefront of a sustainable energy future. These efforts are part of the state's action to reduce climate change impacts. Yet this review today remains in many ways isolated from all of the change going on around it. 132-a-AL

We call upon NRC to do a full and thorough environmental review required by law as this process moves from 132-b-NE

a draft to a final stage. On balance, the state is convinced that a full and complete record will lead to only one conclusion about the environmental impacts of this facility. The Draft Supplemental EIS, which has been issued by NRC ostensibly to fulfill its obligations underneath NEPA, which is the National Environmental Policy Act, that requires the government to look at the environmental impact of the decisions before it makes them. Now, Indian Point is a nuclear generating facility, as we all know. The license is for an additional 20 years. But let's look at the environmental impacts. 132-b-NE contd.

In the process of generating electricity, Indian Point consumes 2.5 billion gallons of Hudson River water each day. This process has significant impacts and kills billions of fish and other aquatic organisms each year in addition to numerous other impacts. The Draft Supplemental EIS, as we've learned, concludes preliminarily that the environmental impacts would not preclude a 20-year extension. This Supplemental EIS accepts significant environmental impacts as quote unavoidable. We do not accept this premise nor that they are inevitable. 132-c-AE 132-d-GI/LR

The Department of Environmental Conservation, or DEC, commented on the scope in the fall of 2007, and we submitted detailed written comments in October of 2007 as well. These comments raised several environmental issues that are not addressed in a December 2008 draft that we are to talk about 132-e-AE

today. Turning to some of those issues. New York raised the category of aquatic ecology. As you've heard: entrainment, impingement and thermal impacts to the Hudson River. The NRC's analyses of these impacts undermines its conclusions. We have many questions regarding these analyses, including whether the data reviewed were analyzed correctly. Whether the data support the conclusions reached. Whether the conclusions that the NRC reached our consistent with state and federal standards for the Hudson. And importantly, whether these conclusions are consistent with parallel proceedings before our agency, DEC. 132-f-AE

MR. RAKOVAN: Mr. Parker, if you can summarize, please. I'm sorry.

MR. PARKER: Okay. I do show -- it's difficult for multiple agencies.

MR. RAKOVAN: I understand, but I've got a lot of people who want to speak.

MR. PARKER: I have about -- OK. Additional issues which we have a concern with are endangered species, the socioeconomic impacts, historical impacts, impacts of the coastal zone, which we feel are not adequately addressed. We also have concerns about the generic nature of the review and the failure to address site specific issues such as the evacuation planning, seismic earthquake hazards, possibility of terrorist attacks and long-term storage of spent nuclear fuel. 132-g-GI/LR

In conclusion, there is nothing inevitable or unavoidable about the environmental impacts of the operation of Indian Point.

The Draft SEIS review inadequately addresses many of the environmental issues that the NRC is obligated to analyze and assess. Yet despite these shortcomings, or perhaps because of them, the Supplement concludes that the current level of environmental impacts do not need to be altered or changed and that these impacts should not serve as impediment to license renewal. We disagree and note that the NRC's conclusions do not address issues raised by the State of New York in its scoping process. Thank you.

132-g-GI/LR contd.

MS. PERRY: Okay, I just want to make a correction. Good afternoon, my name is Sharonee Perry. I am a community activist and consultant. As a former chairperson of community Board 3 in Brooklyn, I would like to take this time to discuss the many reasons I believe that Indian Point Energy Center should receive a new license valid for 20 years. In this time of financial crisis, we much carefully examine any proposal that would cause costs to rise for New York City families. Currently Indian Point helps to stabilize energy costs in Brooklyn. While the cost of oil and gas energy can change dramatically based on factors beyond our control, nuclear energy costs are relatively consistent. Many of the lower income communities of Brooklyn, rising costs are making it increasingly difficult for families to survive in order to heat their homes. 133-a-EC/ SO/SR

Independent studies show that closing Indian Point can raise energy costs for families by thousands of dollars per year. Stabilizing energy costs isn't the only reason to keep Indian Point open for our communities. The quality of air that we breathe decreases as more and more people move into Brooklyn, increasing the number of cars that are being used. New York City's air is already harmful. It violates federal safety standards. Because of the poor air quality, our children suffer from asthma. I am a witness to that who has a grandson who is a 133-b-EC 133-c-AQ

chronic asthmatic, who I almost lost twice. The poor air quality in our community is particularly caused by the same dirty power plants that would replace Indian Point if it closed.

133-c-AQ contd.

Brooklyn cannot afford to have more of these dirty plants pumping toxic fumes into the air, putting our families in more danger. Unlike dirty plants, Indian Point provides clean and affordable energy to New York City. Re-licensing Indian Point would keep Brooklyn's air-quality from becoming more harmful and pave the way for New York to develop clean energy sources throughout the city. As Chair of Community Board 3, I've worked with many people, businesses and institutions that keeps Brooklyn strong. Indian Point is part of the larger community affecting Brooklyn that we cannot afford to lose. Thank you.

133-d-AL/ AQ/SR

MS. PERRY: Good evening. I'm Donzella Perry. I am a Brooklyn resident in support of re-licensing Indian Point. New York City's air quality is so dangerous that it falls far below already lax federal standards. Yet, opponents to Indian Point want to close the Center forcing the construction of dirty power plants that will cause our air quality to plummet even further. Indian Point offers clean, affordable energy to New York City and reduces the overall carbon footprint of the city. I along with the members of my community support relicensing Indian Point because it reduces the amount of greenhouse gas emissions and pollution and sets a precedent for the rest of the city to offer clean energy sources throughout New York. The dangers air-quality in Brooklyn is particularly to the most vulnerable of our society, children in low-income families. Our children have breathed dirty city air for their entire lives and have asthma rates that are four times the national average.

134-a-AL/AQ/GI

Parents in low income families cannot afford to pay for proper care and medication to keep their children's asthma under control. As a result, low income children miss school days and must depend on emergency care to respond to preventable asthma attacks. The cause for the high incidence of asthma, poor air-quality, is man-made and preventable. Closing Indian Point will only make matters worse. New York should be moving

134-b-AL/AQ/EJ

towards making all of its power plants cleaner, more efficient and more affordable for our communities. Closing Indian Point and relying on dirty power plants to pick up the slack is not only dangerous for our families, it is irresponsible for the future of our city. Our children that are severely asthmatic are our endangered species.

134-b-AL/AQ/EJ contd.

IPRenewalCEmails ML090940200

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From: Leslie Pilder [lpilder@optonline.net]
Sent: Thursday, February 26, 2009 8:31 PM
To: IndianPointEIS Resource
Subject: Indian Point

Dear Sir or Madam:

I oppose the license renewal of Indian Point, and am most disturbed by the most recent leak. We have been lucky so far; are we really going to wait until people die before we shut down this plant?

135-a-LE/OR

I am particularly concerned about the following environmental impacts:

•The continuing leak of radioactive water from the Indian Point 2 spent fuel pool into the groundwater and Hudson River, and the residual contamination caused by the plumes of contaminated groundwater that slowly leach toxic strontium-90 and cesium-137 into the Hudson River.

135-b-LE

•The long term storage of thousands of tons of highly toxic nuclear waste on the banks of the Hudson River, currently housed in poorly maintained spent fuel pools and "dry casks" that are vulnerable to terrorist attack.

135-c-RW/ST

Thank you for your time.
Sincerely,

Leslie Pilder
Nyack, NY 10960

MR. POCKRISS: Good afternoon. I'm Peter Pockriss, Director of Development for Historic Hudson Valley. And I appreciate the opportunity to say a few words to you today. We're a non-profit organization that operates six historic sites along the Hudson River, including Van Cortlandt Manor, which is not too far from here and is the site of the great Jack-o-lantern Blaze which many of you may be familiar with. Our museum properties are treasured community resources. They're tourist destinations that attract thousands of visitors from across the world. They are learning laboratories that serves some 35,000 school children a year. Many from disadvantaged backgrounds. Entergy has been a longtime philanthropic investor in our mission. The companies partnership has enabled us to launch the great Jack-o-lantern Blaze and Winter Wonderlights. These family events have become cherished holiday traditions for the people of our communities. These heritage tourism events are also important engines of the local economy. 136-a-CR/SO/SR

Many of the 85,000 people who attended last year stayed in area hotels, dined in restaurants and shopped on our main streets. Blaze and Wonderlights have also had a tremendous impact on Historic Hudson Valley's own work, boosting revenue, our membership base and awareness about our 136-b-SO/SR

sites and educational programs. Entergy truly represents the gold standard for corporate philanthropy here in Westchester County. Historic Hudson Valley and other non-profits across the county and across the nation have benefited from millions of dollars in philanthropic support from Entergy.

136-b-SO/SR contd.

But beyond contributed dollars, we also benefit in a variety of other meaningful ways. From the guidance and expertise of the leadership team at Entergy's regional headquarters. From the volunteer hours donated by Indian Point employees. From Entergy sponsored workshops and seminars, which empower our staffs. From networking opportunities, which foster greater cooperation among those of us in the non-profit sector. And from promotional initiatives that drive people to our programs and our events. All of us at Historic Hudson Valley are proud to call Entergy a friend, a committed neighbor and a partner in our efforts to enrich the quality of life along the Hudson. It's our great hope to continue to work side-by-side with Entergy for many years to come. Thank you.

136-c-SE

MS. PUGLISI: Hi everybody, welcome to the Town of Cortlandt. As he said, my name is Linda Puglisi. I've been supervisor of our lovely town for a several years now. Entergy/Indian Point is in our great village of Buchanan, in our town of Cortlandt. Our role over the years has been to monitor the safety, security of the facility prior to Entergy owning it. And of course now that Entergy owns it, and if I say so myself, Entergy has done a better job. I was here for many years before, so I can tell you other stories, but that's not the point for this evening. Our town board and I have not said close the plant. We have said consistently, keep it safe. Please keep it safe for our residents. 137-a-SA/SR

As I said before, this has been our role. To go all the meetings. We've gone to many meetings, public hearings. Raised our questions. Asked the pertinent questions, which we have the right to know to disseminate the information to our citizens. We realize this forum tonight is not to address the safety and security of the facility, but to address the environmental issues, so if I just may raise some things that I would like the NRC to please consider as they proceed in this process. Please address the storage of the spent nuclear waste on-site in the DSEIS. Consider all feasible alternatives regarding severe accident mitigation alternatives are important. Thank you. Take a hard look at releases of radiological 137-b-GW/RW/PA/SF

contaminants into groundwater and into the atmosphere of course. In the year 2000, I think it was, there was a release that we had to monitor and be on concerned about as you all recall. And address the storage of the spent nuclear waste on the site. 137-b-GW/RW/PA/SF contd.

Under NEPA, an agency must take a hard look at the consequences of its proposed actions and provide important information to the public. Under an EIS, an EIS cannot rely solely on unsubstantiated assertions. We have a whole list, which I've submitted to the NRC. I won't go through all the list, I promise you, but there are many points that we would like the NRC to consider as they review the environmental aspects of this secret process. 137-c-NE

One thing that was really upsetting to us on the town board, as I said in my opening remarks that it's in the town of Cortlandt, we had passed a resolution sent it onto the NRC wanting to be an intervener. Which means that we wanted to have a chair at the table, a seat at the table, to raise our questions and be there as the process goes on. But we were denied and so I just have a little point to make about that that I think that the host community should've been seated at the table. Then the gentleman brought up before about, bring back the National Guard. We wrote a letter to the governor saying, please return the National Guard, Coast Guard cutters, no-fly zone. I've been saying for a decade, let's keep them. Let's 137-d-LR/ST

bring them back. These are things that we need. Safety and security is what I monitor. That's what our town board monitors. I thank you very much for listening to me tonight. 137-d-LR/ST

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LINDA D. PUGLISI
TOWN SUPERVISOR

TOWN OF CORTLANDT

OFFICE OF THE SUPERVISOR
TOWN HALL
1 HEADY STREET
CORTLANDT MANOR, N.Y. 10567-1254
(914) 734-1002
(914) 734-1003 fax
www.townofcortlandt.com

TOWN BOARD
RICHARD H. BECKER
FRANCIS X. FARRELL
ANN LINDAU
JOHN E. SLOAN

February 12, 2009

Nuclear Regulatory Commission
Region I 475 Allendale Road
King of Prussia, Pennsylvania 19406

To Whom It May Concern,

Enclosed please find the recommendations regarding the Indian Point Entergy Nuclear Facility's license renewal, from the Cortlandt Town Board and Supervisor. As you are aware, the Indian Point Entergy Facility is located in the Town of Cortlandt, New York. Please review the recommendations and contact me if you should have any questions.

Sincerely,

Linda D. Puglisi
Town Supervisor

LDP/jp

LINDA D. PUGLISI
TOWN SUPERVISOR

TOWN OF CORTLANDT

OFFICE OF THE SUPERVISOR
TOWN HALL
1 HEADY STREET
CORTLANDT MANOR, N.Y. 10567-1254
(914) 734-1002
(914) 734-1003 fax
www.townofcortlandt.com

TOWN BOARD
RICHARD H. BECKER
FRANCIS X. FARRELL
ANN LINDAU
JOHN E. SLOAN

February 12, 2009

Chief, Rules Review and Directives Branch
U.S. Nuclear Regulatory Commission
Mail Stop TWB-05-B01
Washington, D.C. 20555-0001

Re: Comments to Draft Supplemental Environmental Impact Statement Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3

Dear Sir or Madam:

The Town of Cortlandt ("Cortlandt") surrounds the Indian Point Nuclear Reactor, and its residents would be amongst the hardest hit if there was any leak or other malfunction at Indian Point. Nevertheless, Cortlandt is cognizant of the country's need for alternate energy sources and the suggestion by many that nuclear energy is part of the solution to our energy and related national security problem.

We realize that this forum is concerned about the adequacy of the Draft Supplemental Environmental Impact Statement ("DSEIS") as it relates to the relicensing of Indian Point, and therefore the competing issues of safety and national security cannot be resolved in this proceeding. However, the competing issues cause us to focus on what must be the central concern of these proceedings, the ongoing safety of Indian Point and the potential harm to human health and the environment. The Nuclear Regulatory Commission ("NRC") must put aside procedural technicalities about what should be studied outside of the re-licensing process and address to the satisfaction of Cortlandt and the people of America that if Indian Point Units 2 and 3 are re-licensed, there will be no threat to human health, no adverse impact on the environment, and that Entergy, the applicant, under the watchful eye of a diligent government, will take all the necessary steps to insure that these goals are met.

137-e-LR

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To this end, we must be assured that the requirements of the National Environmental Policy Act ("NEPA") are carried out with the utmost diligence and dispatch. However, the substantial inadequacies found in the DSEIS demonstrate that the NRC Staff has not satisfied its responsibilities under NEPA or the regulations implementing it. We address, in detail, the following issues:

- The DSEIS does not adequately address the storage of spent nuclear waste on-site;
- The DSEIS fails to adequately assess the impacts of cooling towers on transportation, aesthetics, and historic resources;
- The DSEIS fails to consider all feasible alternatives regarding Severe Accident Mitigation Alternatives ("SAMAs");
- The DSEIS fails to take a "hard look" at releases of radiological contaminants into groundwater;
- The DSEIS unlawfully defers discussion and analysis of the potential replacement of reactor vessel heads and control rod drive mechanisms ("CRDMs"); and
- The DSEIS unlawfully defers discussion of decommissioning of Indian Point.

137-f-AL/LE/ PA/RF/SF

A. The DSEIS does not adequately address the storage of spent nuclear waste on-site

Entergy has not adequately addressed the facility's capability to store spent nuclear waste on-site if Indian Point is re-licensed for an additional twenty years. Until July 2008, Entergy shipped a portion of its radioactive waste to facilities in Tennessee, Utah, and South Carolina. In July of last year, the State of South Carolina closed access to its radioactive waste generators to states that are not part of the Atlantic Low-Level Waste Compact, thus prohibiting Entergy from shipping any of its radioactive waste to facilities in South Carolina. Although Entergy claims that they will be able to safely store the additional low-level waste on site, they have not even completed their comprehensive plan to address these long-term storage needs. Neither Entergy nor NRC Staff explain how this extra waste will be safely stored on-site nor does the DSEIS discuss the environmental impacts of storing this extra waste. Under NEPA, an agency must take a "hard look" at the consequences of its proposed actions and provide important information to the public. Further, an EIS cannot rely on unsubstantiated assertions. By failing to provide the public with Entergy's comprehensive plan to address its storage needs, NRC Staff has not provided important information to foster informed public participation, and therefore does not ensure that the public and the environment will be protected from the impacts of storing this additional waste.

137-g-NE/RW

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B. Closed-Cycle Cooling Tower

The New York State Department of Environmental Conservation has determined that it will most likely require a closed-cycle cooling system at Indian Point instead of the existing once-through cooling system if the facility is re-licensed. The DSEIS fails to adequately assess the impacts of a cooling tower system on transportation, land use, and historic resources and does not study the logistics for constructing the cooling towers.

The DSEIS states that although "some adverse transportation impacts are likely" such impacts would occur during site excavation and construction of the towers and "would return to current levels following construction" and states that "the closed-cycle cooling system would have little to no effect on transportation, and . . . [a]s noted previously, fogging and icing is not expected to be significant." However, the DSEIS does not state that fogging and icing effects will be insignificant. Rather, it states that the towers will produce a visible fog. The DSEIS in one breath says that there will be no effect, and in the next states that there will be an effect. Such inconsistencies, without any justification, demonstrate NRC Staff's failure to comply with the requirements of NEPA and the inadequacy of this EIS.

Additionally, the DSEIS fails to analyze the impacts of cooling towers on numerous historically and culturally significant resources in previously undisturbed areas. Even more egregious is the fact that Entergy admits that it must conduct such a survey but has not yet done so. An EIS may not defer assessment of impacts to historical and cultural resources until some point after the NEPA process is complete. Nor may an EIS allege that the impacts of an action are "SMALL" before conducting the necessary studies.

137-h-AL

C. Severe Accident Mitigation Alternatives (SAMAs)

The DSEIS states that areas exist "in which risk can be further reduced in a cost-beneficial manner through the implementation of . . . cost-beneficial SAMAs" and that "further evaluation . . . is warranted." However, the DSEIS improperly defers further analysis of these SAMAs, claiming that because they do not "relate to adequately managing the effects of aging" during the re-licensing period, Entergy does not have to conduct such analysis now. An EIS must rigorously explore and objectively evaluate all reasonable alternatives, the heart of an EIS, and not defer their analysis to some undetermined point in the future. The cost-beneficial SAMAs are feasible alternatives which must be analyzed in this DSEIS.

137-i-PA

D. Radiological Releases

The DSEIS describes the radiological releases from Indian Point's spent fuel pools as new but not significant information, thereby enabling Entergy to hide behind the GEIS and not conduct any site-specific analysis. Release of radiological contaminants into groundwater is both new and significant. By not sufficiently addressing radiological releases, NRC Staff has failed to take the requisite "hard look."

137-j-RI

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Entergy admits that consumption of fish and invertebrates from the Hudson River is a "noteworthy dose pathway" for human exposure to radionuclides released from Indian Point's spent fuel pools, but that the calculated dose to the public is below the federal limits. The DSEIS also states that no radioactivity above background levels was detected during NRC Staff's "most recent sampling and analysis of fish and crabs taken from the affected portions of the Hudson River." However, the sampling results are not included in the DSEIS, and thus, hidden from public scrutiny. Other than taking Entergy at its word, which Cortlandt is not willing to do, there is no way to justify this statement.

137-j-RI contd.

E. Potential replacement of reactor vessel heads and control rod drive mechanisms (CRDMs)

Entergy stated that it may replace the reactor vessel heads and CRDMs if Indian Point's license is renewed. However, neither the Environmental Report nor the DSEIS discuss the impacts of replacing this equipment or any mitigation measures that may be necessary. It is settled law that an EIS cannot defer the identification and assessment of mitigation measures to some future date, thus denying the public the opportunity to review and comment on proposed mitigation. Nor can this DSEIS defer its discussion of the impacts of replacing the reactor vessel heads and CRDMs.

Because the NRC Staff refuses to analyze the impacts of replacing this equipment, the DSEIS does not provide a cost-benefit analysis for their replacement – information that is essential for the public to be able to adequately comment on this EIS. The DSEIS must include a cost-benefit analysis because it is essential for determining the alternatives considered and is relevant to mitigation.

137-k-RF

F. Decommissioning

NRC Staff claims that decommissioning is not a site-specific issue, and therefore does not have to be addressed in this DSEIS. However, South Carolina's recent legislation prohibiting Entergy from disposing Indian Point's radioactive waste at its repositories is both new and significant information. As a result, Entergy will have to store more waste on-site, and thus manage a greater amount of waste during decommissioning.[1] However, the DSEIS fails to discuss the environmental impacts of this new and significant information. Impacts of this storage, alternatives to storing on-site, and mitigation measures to storing additional radioactive waste must be addressed in the DSEIS.

137-I-DC/RW

G. Conclusion

For the reasons stated above, both individually and in the aggregate, NRC Staff must address the following issues: (1) storage of additional radioactive nuclear waste on-site; (2) impacts of a closed-cycle cooling tower on transportation and historic resources; (3) feasible alternatives regarding SAMAs; (4) impacts of radiological releases from spent fuel pools into groundwater and the Hudson River; (5) impacts, alternatives, and mitigation measures for the

[1] If NRC does not renew Indian Point's license, the facility must still manage and store five (5) years additional waste for Indian Point Unit 2 and seven (7) years additional waste for Indian Point Unit 3.

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potential replacement of reactor vessel heads and CRDMs; and (6) impacts of decommissioning on the surrounding environment.

Very truly yours,

Linda D. Puglisi
Supervisor, Town of Cortlandt

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LINDA D. PUGLISI
TOWN SUPERVISOR

TOWN OF CORTLANDT

OFFICE OF THE SUPERVISOR
TOWN HALL
1 HEADY STREET
CORTLANDT MANOR, N.Y. 10567-1254
(914) 734-1002
(914) 734-1003 fax
www.townofcortlandt.com

TOWN BOARD
RICHARD H. BECKER
FRANCIS X. FARRELL
ANN LINDAU
JOHN E. SLOAN

A PRACTICAL PLAN
for:
Indian Points Entergy Nuclear Facility License Renewal

Recommendations by
Town of Cortlandt Supervisor
Linda D. Puglisi and Town Board
To the NRC
August 1, 2007

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1. Re-licensing decisions of Indian Point 2 and Indian Point 3 nuclear reactors should not be made or progressed in the time line schedule proposed until all of the environmental issues and problems have been adequately addressed, studied and corrected. (e.g.: recently discovered storage unit of radiological matters found due to the comprehensive baseline evaluation by the NRC; conclusive findings of the groundwater leaks discovered during the construction of dry cask storage units for the radioactive spent fuel rods; in-depth air and soil testing.)

   Note: The Town Board and I have supported Congressional bills for independent audits of these issues. Yes, we are aware that there are other tests underway by Entergy, NRC and the NYS DEC. However, we support a total independent audit be completed, as well.

137-m-LR

2. The sixty (60) days, with the clock ticking, is **not** sufficient amount of time for **all** interested parties, entities and individuals to prepare their comments and submit reports to be entered into the record. July and August, of which the sixty days include, are summer vacation months and therefore, many groups or individuals may not have ample time to put together their opinions and documents. An extension of the sixty (60) days is needed and necessary. A decision of this importance deserves more time for commentary.

137-n-LR

3. If the NRC, after the three-year period and review of all comments decides to grant a re-licensing of Entergy Nuclear facilities, a twenty (20) year extension is too great. It would allow the owner, Entergy, even though they would state all good intentions, to relax to some degree. It's human nature. Therefore, I suggest consideration of a shorter interval for an extension, perhaps five years and then thorough baseline studies should again be completed due to the age of these plants before another five- year extension is considered and granted by the NRC. Also, an increase in betterments/benefits for the community.

137-n-LR contd.

4. If the NRC **decides not** to grant re-licensing of the Entergy Nuclear facilities at Indian Point then there has to be strong consideration given to address the economics, reclamation, security, and safety at this site.

   The workers cannot lose their jobs. Many individuals have spent their entire professional careers working diligently at these plants. Tax revenue and now a P.I.L.O.T. agreement (payment in lieu of taxes) are distributed amongst three levels of government; a school district, a library system and a fire district. All entities depend on these monies to offset their annual budgets and therefore assist the local taxpayers.

   Therefore, these critical issues must be resolved similar to what occurred with the closure of the General Motors Plant (3,000 jobs) in the Village of Sleepy Hollow, Westchester County in the late 1980's. Individuals were retrained and relocated to other General Motors plants and the revenue issue was also spread over several years in an agreement. Entergy would need to keep a workforce at this location for various current and future tasks. Security and safety of this facility would always be a factor, since the radiological spent fuel rods are and will remain for many years at this location, if not permanently.

137-o-SO

5. Safety and security issues lead me to my ongoing request and plea to have a total **no-fly zone** over these nuclear plants. I've been publicly calling for this action since the tragedy of 9/11/01. I had a press release a few days after this terrible incident and sent it to our Federal and State officials. I have been told that there are fewer flights, however, this is not satisfactory, especially since we recently learned that re-routing of flights could increase activity in our area. This FAA decision is not acceptable and must be challenged. Once again, we need a no fly zone over Indian Point.

137-p-ST

6. The Town of Cortlandt retained a consultant to assist the Town Board and I with local planning in case of an emergency at Indian Point. The recommendations can also be utilized for other emergencies (e.g. hurricane, tornado, earthquake, severe flooding etc.) This report will be submitted to the public in September 2007 and its goal is to partner with and enhance the existing Evacuation Plan with more specific recommendations for the local level

137-q-EP

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7. **Finally:** I have publicly stated many times that a Blue Ribbon Commission/task force needs to be appointed by the Governor once again similar to what was established with the General Motors Plant in the late 1980's. At the federal level, a Commission was put in place to evaluate 9/11 and the Iraq War. Findings and recommendations are results of these studies and commissions to benefit all parties involved. This Commission needs to begin immediately whether or not the NRC decides to grant a re-licensing or not so that there can be an ongoing dialogue implemented in an orderly and objective manner.

137-r-LR

Submitted by:

Supervisor Linda D. Puglisi
and
Cortlandt Town Board Members

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Drew Stuyvenberg

Project Manager

U.S. Regulatory Commission

andrew.stuyvenberg@nrc.gov

Re: Application for license renewal at Indian Point

I am a student at Ramapo College of New Jersey in the environmental program and I have been evaluating the DEIS for the re-licensing of Indian Point Nuclear Power Plant. When reviewing the Environmental Justice sections in the DEIS I noticed in section **3.1.18. Environmental Justice—Refurbishment** it is stated "Since IP2 and IP3 are located in a high-population area, the small, short duration change in employment associated with the potential replacement activities would likely have no noticeable effect on minority and/or low-income populations in the region. Because of the short duration of the replacement activity for each unit's reactor vessel head and CRDMs, and based on the analysis of impacts for the other resource areas discussed in Section 3.1, there would be no disproportionately high and adverse impacts to minority and low-income populations in the immediate vicinity of IP2 and IP3." According to the United States EPA Office of Environmental Justice defines EJ as follows:

"Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. EPA has this goal for all communities and persons across this Nation. It will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work."

From my understanding the EIS only addresses the issues of impacts on minority and low-income populations in the immediate vicinity of IP2 and IP3. When defined EJ also covers protection from health hazards for the right to live, work and learn in a safe healthy environment. According to a current study in Human Breast milk and goat milk near Indian Point shows elevated levels of Strontium-90 which is a fission product of nuclear testing. Strontium-90 is known to cause bone cancer, leukemia and other diseases of the immune system. This product is associated with nuclear power sources as a decay product and is known to be produced naturally in minute doses and does not occur in large amounts in nature.

I feel further testing needs to be done in the area of IP2 and IP3 to determine the effects of the Strontium-90 on human and animal health. The Strontium can be carried by the river and disbursed further away from the site so all areas that can come in contact should be studied to determine if the area is in fact a safe and healthy place to live, work and learn.

Thank You,
Kira Race

138-a-EJ/HH/LE

United States Department of the Interior
OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
408 Atlantic Avenue – Room 142
Boston, Massachusetts 02210-3334

TAKE PRIDE IN AMERICA

March 17, 2009

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ER 09/81

Chief, Rules Review and Directives Branch
Division of Administrative Services
Office of Administration, MS TWB-05-B01
U.S. Nuclear Regulatory Commission
Washington, DC 20555

RE: COMMENTS
Generic Environmental Impact Statement
Supplement 38, NUREG-1437
Indian Point Nuclear Generating Unit 2 & 3
Westchester County, New York

Dear Chief, Rules Review and Directives Branch:

The U.S. Department of the Interior (Department) has reviewed the December 2008, "Generic Environmental Impact Statement (GEIS) for License Renewal of Nuclear Power Plants, Supplement 38", regarding the relicensing of Indian Point Nuclear Generating Unit Nos. 2 and 3. The Nuclear Regulatory Commission (NRC) has requested comments on the GEIS Supplement 38 which evaluates potential impacts from the relicensing of the Indian Point Nuclear Plants for an additional 20-year period.

This report of the Department is submitted for project planning purposes under the National Environmental Policy Act. Additional comments may be provided in the future pursuant to, and in accordance with, provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), as well as other legislation.

BACKGROUND

Indian Point Nuclear Generating Units 2 and 3 are operated by Entergy Nuclear Operations, Inc., and are located along the Hudson River in the Town of Buchanan, Westchester County, New York. Indian Point Unit 2 has operated since August 1974 and Indian Point Unit 3 has operated since August 1976. The operating licenses will expire in 2013 and 2015, respectively. Both units use Westinghouse pressurized water reactors and nuclear steam supply systems, with cooling provided by a once-through (open) cooling system that uses water from the Hudson River.

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Supplement 38 (or the Supplemental Environmental Impact Statement – SEIS) for Indian Point Nuclear Units 2 and 3 serves as an addendum to the "Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS)" that evaluated the environmental impacts of nuclear power generation. The GEIS identified 92 environmental issues and reached generic conclusions related to environmental impacts for 69 of these issues that apply to all plants or to plants with specific design or site characteristics. The NRC has determined that information provided during the scoping process was not new and significant with respect to conclusions in the GEIS. Therefore, the NRC concluded that the impacts of renewing licenses for Indian Point Units 2 and 3 will not be greater than the impacts identified for these 69 issues in the GEIS. Plant-specific review is required for the remaining 23 issues. Of the remaining 23 issues, those that apply to Indian Point Units 2 and 3 are addressed in the SEIS.

The NRC has established a three-level standard of significance for evaluating the environmental impact of nuclear power plants – SMALL, MODERATE, or LARGE. Essentially, "SMALL" environmental impacts are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource. "LARGE" impacts are clearly noticeable and are sufficient to destabilize important attributes of the resource.

The NRC has determined that the significance of potential environmental impacts related to operating license renewal for Indian Point Units 2 and 3 is "SMALL", with four exceptions:

- Impingement of aquatic organisms
- Entrainment of aquatic organisms
- Heat shock from the facility's heated discharge
- Impacts to aquatic endangered species

SPDES PERMIT HISTORY

Since project licensing, there have been issues relating to significant impacts to aquatic resources as a result of entrainment, impingement, and heat shock from Indian Point operations. In 1975, the U.S. Environmental Protection Agency (EPA), issued permits for Indian Point Units 2 and 3 that required the construction of cooling towers. The utility company contested the permits and requested adjudicatory hearings. As a result of subsequent hearings, the Hudson River Settlement Agreement was reached between the owners of Indian Point Units 2 and 3, Roseton, and Bowline plants, as well as a number of parties, including the EPA, New York State Department of Environmental Conservation (NYSDEC), Scenic Hudson, and the Hudson River Fisherman's Association. This agreement required mitigation to reduce fish mortality. Mitigation included seasonal outages during sensitive aquatic life stages, installation of variable speed pumps, and a biological monitoring program.

The NYSDEC, under authority from EPA, issued State Pollution Discharge Elimination System (SPDES) permits to Indian Point Units 2 and 3 in 1982, requiring the implementation of these mitigative measures. The SPDES permit expired in 1987 and the mitigative measures required under the settlement agreement have continued under consent orders as the NYSDEC and project operator strive to resolve issues.

The NYSDEC prepared an environmental impact statement in 2003 concerning SPDES permit applications from Indian Point Units 2 and 3 (and Roseton and Bowline). The NYSDEC issued a preliminary determination, in their 2003 draft SPDES permit, that closed cycle cooling is the site-specific best technology to reduce impacts on fish and shellfish.

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Aquatic Resources

The Hudson River, in the project vicinity, supports a diverse assemblage of aquatic organisms. The National Marine Fisheries Service has designated the Hudson River as Essential Fish Habitat, due to its value for maintaining 34 commercially important fish species. Piermont Marsh, Iona Island, Tivoli Bays, and Stockport Flats are National Estuarine Research Reserves located within the lower Hudson River. The U.S. Fish and Wildlife Service (Service) has designated 41 sections of the Hudson River as significant habitats, including Iona Marsh and Haverstraw Bay, located in the vicinity of Indian Point (USFWS 1997). The Hudson River, in the project vicinity, supports a diversity of estuarine, freshwater, and diadromous species, including the American shad (*Alosa sapidissima*), American eel (*Anguilla rostrata*), striped bass (*Morone saxatilis*), white catfish (*Ameiurus catus*), Atlantic sturgeon (*Acipenser brevirostrum*), and Atlantic tomcod (*Microgadus tomcod*).

Endangered Species Act Comments

The GEIS (pp 3-8 dated) states that the NRC identified four Federally-listed species; the shortnose sturgeon (*Acipenser brevirostrum*), the bog turtle (*Clemmys [=Glyptemys] muhlenbergii*), the New England Cottontail (*Sylvilagus transitionalis*), and the Indiana bat (*Myotis sodalis*). Terrestrial listed species are under the jurisdiction of the Service. The shortnose sturgeon is under the jurisdiction of the National Oceanic and Atmospheric Administration – Fisheries (NOAA-F). For additional information, the applicant should contact Mr. Stanley Gorski, Habitat and Protected Resources Division, Area Coordinator, NOAA-F, James J. Howard Marine Sciences Laboratory, 74 Magruder Road, Highlands, NJ 07732 (telephone: 908-872-3037).

The NRC has determined that the terrestrial refurbishment activities will be conducted on previously disturbed land within a short period of time, and that the proposed activities are not likely to adversely affect the continued existence of listed species or modify critical habitat.

The NRC determined that Indiana bats may use the project site for summer habitat (roosting and foraging habitat), especially the forested area at the north end of the site. However, the NRC states that the expansion project will not disturb the forested area of the site and, therefore, the project would not adversely affect the Indiana bat.

The Service agrees with the NRC, that if the forested area is not disturbed, that direct take of an Indiana bat is unlikely; however, we are unable to concur with the determination of not likely to adversely affect as the NRC has not provided information on the how the project may indirectly affect Indiana bats and possible foraging areas. Additional information on indirect effects should be included in the Final EIS and provided to Ms. Sandra Doran, U.S. Fish and Wildlife Service, New York Field Office, 3817Luker Road, Cortland, New York 13045 (telephone: 607-753-9334).

139-a-TS

The NRC also determined that the site does not support suitable habitat for the bog turtle or New England cottontail. Therefore, no further consultation/coordination with the Service is required for these species.

On August 8, 2007, the bald eagle (*Haliaeetus leucocephalus*) was removed from the Federal Endangered Species list and is no longer protected under Section 7 of the Federal Endangered Species Act; however, bald eagles remain on the New York State list as a State-listed threatened species. Bald eagles are also protected under the Migratory Bird Treaty Act (16 U.S.C. 703-712;

139-b-TS

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Ch. 128; July 13, 1918; 40 Stat. 755) and the Bald and Golden Eagle Protection Act (16 U.S.C. 668–668d). Bald eagles are known to occur in the project area. Please visit the website of the U.S. Fish and Wildlife Service, New York Field Office, http://www.fws.gov/northeast/nyfo/es/section7.htm and follow the Bald Eagle Management Guidelines prior to commencement of work.

139-b-RS contd.

Evaluation of Project Impacts

Entrainment and Impingement

The SEIS describes the impacts to aquatic organisms caused by entrainment, impingement, and heat shock. These impacts are highly significant. According to NYSDEC (2003), over 1 billion fish are entrained at Indian Point annually (based on data through 1987), including 158 million striped bass, 13.4 million American shad, 243 million white perch (*Morone Americana*), and 467 million river herring [includes blueback herring (*Alosa aestivalis*) and alewife (*A. pseudoharengus*)]. The SEIS, in Figure 4-3, illustrates that 5 trillion fish were entrained at Indian Point in 1987 (the last year for which entrainment data are available). Historical records presented in the SEIS indicate that between 1.5 and 6 million fish are impinged annually at Indian Point.

We disagree with the criteria used by the NRC to evaluate impacts to aquatic resources. These criteria, "small, moderate and large", are subjectively defined and lack metrics. In modeling entrainment and impingement effects from Indian Point, the NRC used these criteria to determine whether population-level impacts were small, moderate, or large for individual species of fish and blue crabs. Data from several studies (1974 – 2005) of the lower Hudson River were evaluated to assess population trends for 18 representative important species (RIS). Based on population trends in River Segment 4 of the lower Hudson River, 13 of the 18 RIS were determined to be experiencing potentially large population declines. These species included American shad, bluefish (*Pomatomus saltatrix*), rainbow smelt (*Osmerus mordax*), Atlantic sturgeon, Atlantic tomcod, and white perch. The SEIS then evaluated Indian Point impingement and entrainment data to determine whether Indian Point was removing the species or its prey at levels that were proportionally higher than levels found in the river studies. The combined analysis of these data was used to estimate whether Indian Point was having a small, medium, or large population-level impact. The NRC concluded that the Indian Point plants were having moderate to large impacts on fish species such as bogchoker (*Trinectes maculates*), rainbow smelt, white perch, and bluefish.

139-c-AE

We find that this analysis is insufficiently protective of fishery resources and underestimates the potential effect of the Indian Point intakes on these fish. Although population-level impacts are an appropriate measure of ecological effects, populations are difficult to sample and population trends may be difficult to measure. We note that no pre-Indian Point data were used to perform this analysis, further clouding data interpretation. If population level impacts are measurable, it is an indication that the species is experiencing significant ecological impacts. The goal of resource agencies should be to minimize all significant stressors contributing to the declining population. It appears that the mortality associated with entrainment and impingement at Indian Point is a significant stressor. For example, we regard the annual entrainment and impingement of 13.4 million American shad at Indian Point as substantial, regardless of whether the proportion of American shad entrained or impinged is less than the proportion of American shad found in Hudson River studies.

139-d-AE

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The NYSDEC (2003) indicated that Indian Point has significant adverse impacts on Hudson River fish and that current losses of various life stages of fish are substantial. Although mortality from other stressors, such as habitat loss, fishing, and predation is also acknowledged by NYSDEC, power plant associated impacts are considered a potentially significant contributor to the decline of a number of fish species. The NYSDEC has further asserted that significant impacts to aquatic resources are not an inevitable result of electric power generation.

139-d-AE contd.

Thermal Impacts

According to the SEIS, the discharge of heated water to the Hudson River can cause lethal or sublethal effects on fish, influence food web characteristics and structure, and create barriers to migratory fish. The NYSDEC (2003) indicated that discharges from Indian Point could raise water temperatures to a level greater than that permitted by water quality criteria, and the NRC, based on that determination, concluded that adverse heat related impacts are possible. The NRC further determined that since they did not find evidence of adverse effects on aquatic life that are "clearly noticeable and sufficient to destabilize important attributes of an aquatic resource", impacts cannot be large, but may be "small to moderate." We disagree with this conclusion, since it is based on an absence of data and is not supported by scientific evidence, such as on-site studies to objectively evaluate plant-related thermal stress to aquatic organisms.

139-e-AE

Certain cold water fish species may be particularly vulnerable to temperature changes caused by thermal discharges from electrical plants like Indian Point. These species include Atlantic tomcod and rainbow smelt. According to the NYSDEC (2003), rainbow smelt may be disappearing from some reaches of the Hudson River, in part because of thermal discharges from electrical generating stations.

Comparison of Alternatives

The NRC compared a range of alternatives, including the proposed action (license renewal), no-action (license denial), new closed-cycle cooling, once through cooling with restoration, and development of a coal-fired power plant at an alternate site. The NRC concluded in the SEIS that, "the adverse environmental impacts of license renewal for Indian Point Units 2 and 3 are not so great that preserving the option of license renewal for energy planning decision-makers would be unreasonable."

We disagree with how the NRC compared the alternatives, in that they used the "low, moderate and large" evaluation criteria discussed elsewhere in this letter and compared dissimilar impacts between alternatives. Because these evaluation criteria are subjectively defined, it is difficult to objectively evaluate impacts for any alternative. It is also difficult to objectively compare dissimilar impact categories (e.g., air quality, terrestrial ecology, aquatic ecology, and land use). Many of the impacts evaluated for other alternatives were described as moderate or large, although they did not pose as significant an ecological impact as the moderate to large impacts described for aquatic resources as a result of entrainment, impingement, and heat shock. For example, land use impacts associated with the development of a coal-fired power plant were assessed as moderate to large, even though the impact of a 3,700 acre facility would not be likely to cause population level impacts, as was determined for a number of fish species as a result of open cycle cooling.

139-f-AL/LR

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Conclusions and Recommendations

The Department recommends that the NRC reconsider its evaluation of alternatives to more objectively compare the environmental impacts of various alternatives. We regard the development of a closed cycle cooling system as the most environmentally protective alternative and we urge the NRC to reconsider selecting this alternative. Closed cycle cooling, according to the SEIS, would result in a 93-95% reduction in water use compared to the existing Indian Point open cycle units. This alternative would be estimated to result in an equivalent reduction in the numbers of aquatic organisms entrained and impinged.

139-f-AL/LR contd.

In the event that Indian Point Units 2 and 3 continue to operate with open cycle cooling, the NRC should strive to avoid, minimize and mitigate for environmental impacts. Significant measures should be taken to minimize entrainment and impingement of aquatic organisms and heat shock-related effects. The NRC should consider issuing a license contingent on Entergy significantly reducing impacts to aquatic organisms (potentially by a combination of barrier/deterrent systems and flow reductions or shutdowns). A comprehensive monitoring plan should be implemented to assess the effects of mitigative measures. In the event that these measures do not significantly reduce impacts to aquatic organisms, the NRC should re-evaluate the option of requiring a closed cooling system. Regardless of the alternative selected, mitigation should be required as compensation for the considerable impacts to aquatic resources.

139-g-LR

Thank you for the opportunity to review and comment on this SEIS. We hope these comments are useful during your project review. Please contact Anne L. Secord at the Service's New York Field Office, at 607-753-9334 if there are any questions regarding this letter. Please contact me at (617) 223-8565 if I can be of assistance.

Sincerely,

Andrew L. Raddant
Regional Environmental Officer

Literature Cited

NYSDEC. 2003. Final Environmental Impact Statement by the NYSDEC Concerning the Applications to Renew New York State Pollutant Discharge Elimination System Permits for the Roseton 1 & 2, Bowline 1 & 2, and Indian Point 2 & 3 Steam Electric Generating Stations, Orange, Rockland, and Westchester Counties.

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RIVERKEEPER

VIA E-MAIL AND FIRST-CLASS MAIL

March 18, 2009

Chief, Rulemaking, Directives and Editing Branch
Division of Administrative Services
Office of Administration
Mailstop T-6D59
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
IndianPoint.EIS@nrc.gov

Re: Riverkeeper, Inc.'s Comments on the U.S. Nuclear Regulatory Commission's Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 38, Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3, Draft Report for Comment, Docket Nos. 50-247 and 50-286

Dear Rulemaking, Directives and Editing Branch Chief:

Riverkeeper, Inc. ("Riverkeeper") hereby respectfully submits the following comments on the U.S. Nuclear Regulatory Commission Staff's ("NRC Staff") Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 38, Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3, Draft Report for Comment (also known as the Draft Supplemental Environmental Impact Statement, and hereinafter referred to as "DSEIS"). Notice of availability of and opportunity to comment on the DSEIS was published in the Federal Register on December 22, 2008.[1]

Introduction

Riverkeeper has been actively involved in the Indian Point relicensing proceeding due to the serious concerns relating to the continued operation of the facility, including the environmental damage caused by its antiquated once-through cooling system and leaking spent fuel pools, the vulnerability of the plant's spent fuel pools to terrorist attacks and serious accidents, and the failure of any long-term solution for permanent nuclear waste disposal. As the NRC Staff is well aware, Riverkeeper filed a successful petition to intervene in Indian Point's relicensing

[1] Nuclear Regulatory Commission, Indian Point Nuclear Generating Unit Nos. 2 and 3; Notice of Availability of the Draft Supplement 38 to the Generic Environmental Impact Statement for License Renewal of Nuclear Plants and Public Meeting for the License Renewal of Indian Point Nuclear Generating Unit Nos. 2 and 3, Docket Nos. 50-247 and 50-286, 73 Fed. Reg. 80,440 (2008).

828 South Broadway, Tarrytown, NY 10591 • 914.478.4557 • f: 914.478.4527 • www.riverkeeper.org

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proceeding, and is currently litigating three contentions which have been admitted for an adjudicatory hearing.[2] On October 17, 2007, Riverkeeper submitted Scoping Comments to inform the NRC Staff's environmental review pursuant to NEPA in the license renewal proceeding.[3] Disappointingly, the NRC Staff has failed to meaningfully address any of the issues raised by Riverkeeper's comments.

An exhaustive review of the DSEIS reveals glaring deficiencies which wholly undermine the NRC Staff's initial conclusion that the environmental impacts of Indian Point's operation are not severe enough to preclude renewing its operating license.[4] Riverkeeper absolutely disagrees with this determination and submits that if the NRC Staff had performed the proper assessments as outlined in the following comments, then they would have reached the opposite conclusion. Riverkeeper urges the NRC Staff to fully consider and address the following comments prior to issuing the Final Supplemental Environmental Impact Statement for License Renewal of Indian Point ("FSEIS"), in order to come to a more accurate recommendation to the Commission.

DSEIS Section 1.0

1. Improper Reliance on Outdated GEIS

In Section 1.0 of the DSEIS, the NRC Staff explains its use of the 1996 License Renewal Generic Environmental Impact Statement, NUREG-1437 ("GEIS").[5] However, as Riverkeeper's Scoping Comments explained at length, such reliance is misplaced. The GEIS is inadequate if evidence exists of material changes affecting the baseline environment since the GEIS was written.[6] It has been 13 years since the GEIS was written. Since that time, various new circumstances have arisen that have materially changed the baseline environment, including heightened risks of terrorism, the failure of a permanent nuclear waste disposal solution, changes in population density, and progress in the viability of renewable energy technologies. Accordingly, the GEIS is no longer adequate to dispose of such issues, and they must be specifically assessed in the environmental review process for Indian Point. Unfortunately, as discussed in further detail where applicable in the comments herein, the NRC Staff has ignored such new information and continues to rely on the outdated GEIS. The NRC's refusal to consider such material changes violates the fundamental requirements of NEPA.

140-a-AE

As explained in Riverkeeper's Scoping Comments, the NRC has failed to update the GEIS in a timely fashion as required by law.[7] The law requires the GEIS to be updated every 10 years.

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[2] Riverkeeper, Inc.'s Request for Hearing and Petition to Intervene in Indian Point License Renewal Proceeding, November 30, 2007 (hereinafter "Riverkeeper Petition for Hearing"); *See Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 and 3), LBP-08-13, 68 NRC __ (slip op. July 31, 2008) ("July 31, 2008 ASLB Order").

[3] Riverkeeper Comments on Environmental Scoping for the Indian Point License Renewal Proceeding, Docket Nos. 50-247, 50-286 (Oct. 12, 2007), *available at* http://www.riverkeeper.org/document.php/642/1012007_Scoping_.pdf (hereinafter "Riverkeeper Scoping Comments).

[4] DSEIS, Main Report § 9.3, at 9-8.

[5] *Id.* § 1.2.1.

[6] Blanco v. Burton, Slip Copy, 2006 WL 2366046 (E.D. La.); League of Wilderness Defenders v. Marquis-Boeing, 259 F.Supp.2d 1115 (U.S. Dist. Ct. Or. Apr. 2003).

[7] *See* Riverkeeper's Scoping Comments at 1-2; 10 C.F.R. Part 51, Subpart A, Appendix B

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The schedule explained in Riverkeeper's Scoping Comments projected a final GEIS by February 2009. That deadline has obviously passed, without any public notice or mention by the NRC of any pending review or update of the GEIS. Internal communications between DEC and NRC Staff indicates that NRC Staff have thus far failed to complete even a draft for public notice and comment by this coming summer. At this time, the required deadline for the GEIS review is three years overdue, and counting. It is ridiculous that the environmental review process for Indian Point's license renewal relies upon a document which has not been updated as legally required. Accordingly, the NRC Staff should not rely on the GEIS until the NRC has completed "10-year review" and determined whether or not the GEIS will be updated.

Moreover, as discussed in Riverkeeper's Scoping Comments, the mandates of the National Environmental Policy Act ("NEPA") require that federal agencies take a "hard look" at the environmental impacts of a proposed action.[8] This includes assessing "significant new circumstances or information relevant to the environmental concerns that bear on the proposed action or its impacts."[9]

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2. Failure to Assess Deficient Emergency Planning Anywhere in the DSEIS

The deficiencies of the DSEIS comes starkly into focus when it comes to the issue of emergency planning. Indeed, the NRC Staff has classified emergency planning issues as outside the realm of license review, and no mention whatsoever of the serious concerns with Indian Point's emergency plan is made in the DSEIS.[10] This flies in the face of logic given the changes in population density and traffic pattern in the area surrounding the facility since the plant started operating. In particular, since Indian Point's initial licensing, the population around the facility has nearly doubled, resulting in significant traffic congestion that would prevent authorities from evacuating the residents living within the ten-mile Emergency Planning Zone ("EPZ") in the event of an accident or terrorist attack. Roads and bridges would not be able to handle the amount of traffic leaving the 10-mile radius and beyond in the event of an accident or attack.[11] Clearly the environmental impacts on public health will be far greater if the population within the 10-mile emergency planning zone cannot be evacuated in a timely manner.

140-b-EP

According to an independent analysis of Indian Point's emergency plans commissioned by former New York Governor George Pataki in 2003 and authored by former FEMA director James Lee Witt found, the radiological emergency plan for Indian Point is badly flawed, unworkable and key components are unfixable. Witt found that ". . . the current radiological response system and capabilities are not adequate to . . . protect the people from an unacceptable dose of radiation in the event of a release from Indian Point . . . ."[12]

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[8] *See generally* 42 U.S.C. § 4332; Riverkeeper Scoping Comments at 2-4.
[9] 40 C.F.R. § 1502.9(c)(1)(ii); Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, 46 Fed. Reg. 18036.
[10] Environmental Impact Statement Scoping Process, Summary Report, Indian Point Nuclear Generating Station Unit Nos. 2 and 3 Village of Buchanan, New York, December 2008 ("NRC Staff Scoping Summary Report"), at 260 (finding that "offsite emergency planning is not within the scope of the NRC's environmental review" since the NRC "monitors emergency planning under requirements of the current operating license.").
[11] *See* Riverkeeper Scoping Comments at 5 n.11.
[12] Review of Emergency Preparedness of Areas Adjacent to Indian Point and Millstone, p. viii, James Lee Witt Associates, 2003.

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In 2003 KLD Associates conducted a traffic study for Entergy and determined that evacuation times for the Emergency Planning Zone around Indian Point doubled since 1994. The original estimate was 2.5 hours for people to proceed with evacuation, with a total of 5.5 hours for complete evacuation. KLD estimates increased mobilization time to four hours, while complete evacuation of the region in good weather conditions could take up to 9.5 hours and in snow conditions up to 12 hours.[13] Shadow evacuation would increase this time.

The NRC itself has recognized the concerns associated with the location of Indian Point and increased population density, even prior to the September 11th terrorist attacks.[14] Were Entergy applying for a license to build a new nuclear power plant where Indian Point is now located, it is unlikely they would be allowed to do so, based on its proximity to such a highly populated area.[15] In fact, in the evaluation factors for stationary power reactor site applications before January 1997 the regulations state that residences within the exclusion area shall normally be prohibited.[16] In exclusion areas with residents, the regulations recommend low population zones - the total number and density of which are such that there is a reasonable probability that appropriate protective measures could be taken in their behalf in the event of a serious accident.[17] The regulations state where very large cities are involved, the regulations find that a greater distance may be necessary because of total integrated population dose consideration.[18]

The regulations for reactors built after 1997 require that every site must have an exclusion area and a low population zone.[19] These regulations define low population zone as "the area immediately surrounding the exclusion area which contains residents, the total number and density of which are such that there is a reasonable probability that appropriate protective measures could be taken in their behalf in the event of a serious accident."[20] There are 300,000 people living within the ten-mile EPZ of Indian point and the only means of evacuation are primarily one and two lane roads. The regulations do not specify a permissible population density or total population within this zone because the situation may vary from case to case.[21] The regulations go on to say whether a specific number of people can, for example, be evacuated from a specific area, or instructed to take shelter, on a timely basis will depend on many factors such as location, number and size of highways, scope and extent of advance planning, and actual distribution of residents within the area.[22] As far as Indian Point is concerned, there is no low population zone, therefore if Entergy were applying to build a new nuclear power plant as opposed to a relicensing it would likely not be permitted.

140-b-EP contd.

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[13] Indian Point Energy Center Evacuation Time Estimate, Tbl. 1-1, p. 1-12, KLD Associates, Inc., 2003.
[14] Report of the Office of the Chief Counsel on Emergency Preparedness to the President's Commission on the Accident at Three Mile Island, October 31, 1979, p. 5 (Robert Ryan, the NRC's Director of the Office of State programs, stating "I think it is insane to have a three-unit reactor on the Hudson River in Westchester County, 30 miles from Times Square, 20 miles from the Bronx . . . [Indian Point is] one of the most inappropriate sites in existence.")
[15] *See* 10 C.F.R. Pts. 100.3, 100.10(b), 100.11, & 100.21(h).
[16] 10 C.F.R. § 100.3.
[17] 10 C.F.R. § 100.10(a).
[18] *Id.*
[19] 10 C.F.R. § 100.21(h).
[20] 10 C.F.R. § 50.2.
[21] *Id.*
[22] *Id.*

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Based on the foregoing, it is absurd to exclude emergency planning from review during the license renewal process. The NRC Staff must assess the changes to population density and traffic concerns during its environmental review process in the context of assessing the environmental impacts of an accident or attack on Indian Point that results in a radiological release.[23] Failing to do so leaves the DSEIS fundamentally flawed.

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DSEIS Section 4.0

After "objectively" describing how Indian Point interacts with the environment in Section 2.0 of the DSEIS, Section 4.0 presents the NRC Staff's assessment of the environmental impacts of continued operation of the facility. This section of the NRC Staff's review is riddled with deficiencies, as follows: (1) improper analysis of the environmental impacts of Indian Point's once-through-cooling system, (2) improper analysis of the impacts to endangered or threatened species, (3) improper analysis of groundwater contamination caused by spent fuel pool leaks, (4) failure to consider the Rockland County Desalination Project, (5) failure to properly consider impacts to the communities utilizing Hudson River water as a supply source, and (6) improper conclusions regarding the cumulative environmental impacts of continued operation.

1. Improper Analysis of Environmental Impacts of Once-Through Cooling System

NRC regulations implementing NEPA classify the effects of entrainment, impingement, and heat shock on the protection and propagation of fish and shellfish as "Category 2" environmental issues which must be assessed in the site-specific SEIS. 10 C.F.R. Part 51, Appendix B to Subpart A. The DSEIS "must contain an analysis of those issues identified as Category 2" in Appendix B to subpart A. 10 C.F.R. 51.71(d). The DSEIS is NRC Staff's independent evaluation of such Category 2 issues. 10 C.F.R. § 51.70. Despite this mandate, as demonstrated below herein, NRC Staff has failed to adequately analyze the adverse impacts on aquatic resources by impingement, entrainment, and heat shock caused by Indian Point's once-through cooling system. As a result, the DSEIS violates NEPA and NRC implementing regulations at 10 C.F.R. §§ 51.70, 51.71.

Riverkeeper's comments regarding NRC Staff's analysis of Indian Point's once-through cooling system were prepared with the expert assistance of Drs. Peter Henderson and Richard Seaby of Pisces Conservation Ltd. ("Pisces"). Pisces' expert report in support of these comments – "Comments Relating to the Indian Point NRC draft EIS on the Cooling System" (herein the "Pisces Report") – is attached as Exhibit A.[24] In short, Pisces concludes that the NRC Staff's assessment of impingement and entrainment – undertaken on the representative important species ("RIS") of 17 fish species and the blue crab – is based on a scoring system that initially appears objective and quantitative. However, detailed examination of the method shows that it

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[23] For details regarding how the NRC Staff incorrectly excluded terrorism and certain accidents from review, see comments on DSEIS Section 5.0 below.

[24] In 2007, Pisces prepared a report entitled "Entrainment, Impingement and Thermal Impacts at Indian Point Power Station" ("2007 Pisces Report"); a copy of the 2007 Pisces Report was provided to NRC Staff in November of 2007 as an attachment to Riverkeeper's Request for a Hearing and Petition to Intervene with respect to the license renewal proceeding for the Indian Point Nuclear Power Station (Attachment 4 to the Declaration of Peter Henderson).

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makes assumptions about the statistical properties of populations, the impact of cooling water systems on invertebrates prey species, and the relative importance of local and larger-scale changes in population number, which are unjustified and arbitrary.

Although impingement and entrainment effects are considered together by NRC Staff – an approach that has *merit* – the impact of Indian Point's cooling system is assessed using a flawed scoring system that takes into account changes in species abundance (the trend) and strength of connection (connection), and which attempts to measure the relationship between abundance in the environment and Indian Point's direct fish mortality. This approach differs significantly from the New York State Department of Environmental Conservation ("NYSDEC") evaluation and overall conclusion regarding these impacts, which focuses on fish mortality rather than fish populations, and has determined that the cooling system results in significant adverse environmental impacts. The NRC Staff should defer to NYSDEC's evaluation pursuant to NRC precedent.

A particular problem with NRC Staff's assessment is the distinction between '*Large*' and '*Small*' population impacts, which is hard to support from an examination of the overall population trend data. The use of both river-wide and river segment 4 data (where Indian Point is located), and the use of population decline criteria that include a measure of the deviation from the mean of a normal distribution produce results that do not necessarily reflect the actual population trends, and have the potential to understate the importance of recent changes in abundance.

Another concern is the scoring method used to assess the strength of connection line of evidence to determine whether operation of the Indian Point cooling system has the potential to influence RIS populations near the facility or within the lower Hudson River; this is a poor measure of the impact of the power plant on the species. The strength of connection is a flawed measure because it is based on rank abundance. Furthermore, the lack of importance given to impacts on invertebrates makes low to moderate levels of impact for many species almost inevitable.

NRC Staff's comparison of species' proportional rank abundance in the power station kill with that living in the river results in potentially misleading conclusions. For example, the fish that contributes the highest proportion of the number of individuals killed by the power plant, and which is also the commonest in the river, only has a medium strength of connection. In Pisces' opinion, such a situation where a fish is killed in high numbers and is locally common would suggest a high degree of linkage. A number of the RIS species have a prey score for impingement and entrainment of 1, and thus are unlikely to score highly for the strength of connection. This feature of the scoring protocol is thus central to the final outcome. Another key underlying point to note about NRC Staff's analysis of impingement and entrainment is the reliance on data collected between 1981 and 1990. These data are old and may not reflect current conditions. In fact, many populations have shown marked changes since that period. This calls into question the reliability of the conclusions when applied to the future.

NRC staff also concludes that thermal impacts associated with the discharge are small to moderate, principally on the grounds that there is no evidence for the scale of the impact. The assertion that, because no appropriate evidence has been collected, there is therefore only a small to moderate impact, is not logical and contrary to NEPA. In addition, NRC staff state that they

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cannot determine the effects of climate change, particularly in relation to thermal issues. We believe they should have, at the very least, concluded that they needed more data on thermal issues before reaching a conclusion.

140-c-AE contd.

a. NRC Staff's Flawed Assessment of Impingement and Entrainment

As noted above, impingement and entrainment effects are considered together by NRC Staff, which is an approach that has merit because the goal is to measure the well-being of all fish stages. However, the impact of Indian Point's cooling system is assessed using a faulty scoring system which attempts to measure the relationship between abundance in the environment and Indian Point's direct fish mortality.

NRC Staff's methodology has many problems, which are explained in detail in the Pisces Report. With respect to the trend (the so-called "Assessment of Population Trends--The First Line of Evidence"), the Pisces Report demonstrates that the NRC Staff's distinction between '*Large*' and '*Small*' impingement and entrainment impacts is hard to support.[25] Indeed, the weight of evidence ("WOE") scoring system to measure such impacts, which uses both river-wide and river segment 4 data (where Indian Point is located), and uses population decline criteria that include deviation from the mean of a normal distribution, produces results that do not necessarily reflect the actual population trends, and have the potential to understate the importance of recent changes in abundance.[26] For instance, examination of the river-wide abundance trends for white fish and weakfish indicates that both species have, since 1990, appreciably declined in abundance. Yet while the decline in white catfish is classified as 'Large', that in weakfish is 'Small'.[27] Such differences are more a reflection of the arbitrary nature of the statistical and quantitative approach taken, than a real difference in the state and health of the populations.

Turning to the strength of connection (the so-called "Assessment of Strength of Connection--The Second Line of Evidence"), to determine whether operation of the Indian Point cooling system has the potential to influence RIS populations near the facility or within the lower Hudson River, the Pisces Report also unveils serious problems.[28] NRC Staff's describes how strength of connection is measured, as follows:

> Impingement and/or entrainment can also remove and reintroduce RIS prey into the aquatic system in a manner that alters food web dynamics and produces indirect effects that may result in decreased recruitment, changes in predator-prey relationships, changes in population feeding strategies, or movements of populations closer to or farther away from the cooling system intakes or discharges. Staff based the analysis of impingement on the concordance of two ranked proportions. The first proportion was the ratio of the number of YOY and yearling fish of each

140-d-AE

[25] Pisces Report at 2-5.
[26] *Id.* at 4-5.
[27] *Id.* at 2 (citing to DSEIS' Table 4-4).
[28] *Id.* at 5-9.

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> species impinged in relation to the sum of all fish impinged. The second proportion was the ratio of each species abundance in the river near IP2 and IP3 relative to the total abundance of all 18 RIS. A large rank for both proportions would mean that the proportion impinged for the given RIS and the proportion abundance in the river were both large. The ratio of these two ranks would then be close to 1, suggesting that the stationary sampler was sampling proportionately to the abundance in the river (a medium strength of connection).[29]

140-d-AE contd.

The first point to note is that the analysis is undertaken by comparing a species' proportional rank abundance in Indian Point's actual kill with that living in the river. Rather oddly, a fish that contributes the highest proportion to the number of individuals killed by the power plant, and which is also the commonest in the river, only has a medium strength of connection.[30] In Pisces' opinion, such a situation where a fish is killed in high numbers and is locally common would suggest a high linkage.[31] This is a point that needs reconsideration and critical appraisal. The effect is to reduce the assessment of the power plant's impact on abundant, commonly-caught fish.

The second point to note is that a species which is ranked less common in Indian Point's kill than in the river will be scored small to moderate.[32] The key point is that the power plant kill may actually reflect the abundance in the Hudson River, however the rank could decline if other species are killed in unusually high numbers.[33] Thus, each species is not being fairly assessed on its own merits.

To illustrate the weaknesses in NRC Staff's approach, Pisces points to juvenile rainbow smelt, a species that has disappeared from fish surveys since the mid 1990s.[34] This species is assessed in the trends (the population line of evidence) as "*Large*".[35] However, NRC Staff considers the impact of Indian Point on this species to be moderate because the strength of connection is assessed as "*Medium*".[36] The strength of connection is only medium because both the impingement and entrainment prey scores are 1. The example demonstrates that an unsubstantiated and unproven assumption by NRC Staff, that invertebrate prey species are not affected by the cooling water system, leads in turn to the conclusion that the rainbow smelt, a species which has effectively disappeared from the data in recent years and has been assessed as potentially highly impacted by entrainment, is only given a moderate impact. The Atlantic tomcod makes another telling example.[37] The tomcod population shows long-term decline, thus the population line of evidence is large, however, NRC Staff assigns a low-to medium strength of connection and the final conclusion is an impact small to moderate.

140-e-AE

[29] DSEIS, Appendix H, at H-29.
[30] Pisces Report at 6.
[31] *Id.*
[32] *Id.*
[33] *Id.*
[34] *Id.* at 7-8.
[35] *Id.* at 7 (citing to DSEIS' Table 4-4).
[36] *Id.*
[37] *Id.* at 8.

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The Pisces Report observes that before conclusions of this nature can be justified, the assertion that the cooling water system has no impact on invertebrate prey species needs to be demonstrated.[38] There is considerable evidence that large numbers of invertebrates are entrained and potentially killed by the cooling water system. There is therefore no reason to believe that invertebrate prey species are not adversely affected. This impact may extend beyond entrainment effects as the heated discharge water may also adversely affect them.

140-e-AE contd.

Another problem with NRC Staff impingement and entrainment assessment is the age of the data.[39] NRC Staff is relying on data collected between 1981 and 1990. These data are old, and may not reflect current conditions. Further, there are hints that the NRC staff did wonder if the data reflected present conditions. If impinged data were available for 2008 would we find that entrained and impinged fish had changed even more? The risks inherent with the use of old data are not addressed. In addition, it is worth noting that, although the impingement and entrainment data are over 17 years old, the population data that shows the decline in so many of these species is current. The differences in the population of fish between the 1990s and the present are great.

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b. NRC Staff's Improper Analysis of Thermal Impacts

The NRC Staff conclude that thermal impacts associated with the discharge are small to moderate, principally on the grounds that there is no evidence for the scale of the impact:

> In the absence of specific studies, and in the absence of effects sufficient to make a determination of a LARGE impacts, the NRC staff concludes that thermal impacts from IP2 and IP# [sic] could thus range from SMALL to MODERATE depending on the extent and magnitude of the thermal plume, the sensitivity of various aquatic species and lifestages likely to encounter the thermal plume, and the probability of an encounter occurring that could result in lethal or sublethal effects.[40]

The assertion that, because no appropriate evidence has been collected, therefore there is only a small to moderate impact is not logical and contrary to NEPA.[41]

Linked to thermal impacts must be a consideration of climate change impacts. The following conclusion is reached in the DSEIS:

> Thus, the NRC staff has concluded that the cumulative effects of climate change cannot be determined.[42]

Therefore, NRC Staff is willing to conclude that thermal effects are small to moderate and can therefore be dismissed, but Staff cannot determine the effects of climate change. We believe that

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[38] *Id.*
[39] *Id.* at 9.
[40] DEIS, Main Report at 4-27.
[41] Pisces Report at 11.
[42] DSEIS, Appendix B, at B-60

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NRC Staff should have, at the very least, acknowledged that they needed more data on thermal issues before reaching a conclusion.[43]

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c. *NRC Staff has Failed to Defer to the New York Department of Environmental Conservation*

The NRC Staff has failed to defer to, and coordinate with the responsible state agency in charge of protecting aquatic impacts under federal delegation and state law – the New York State Department of Environmental Conservation ("NYSDEC") – as required by NRC regulations and precedent. NRC regulations implementing NEPA require that the NRC cooperate "to the fullest extent possible" with State and local agencies to reduce duplication and inconsistencies.[44] Despite this mandate, however, NRC Staff has largely ignored NYSDEC's environmental review and permitting of Indian Point's cooling system under the federal Clean Water Act ("CWA"). NYSDEC's review and re-permitting of Indian Point's cooling system has been ongoing since 1992, and is currently in the final adjudicatory phase. Following the NRC's instructions in the *Seabrook* case, the NRC Staff must defer to NYSDEC's assessment of entrainment and impingement, and its permitting determinations.[45]

Indian Point is operating a once-through cooling system under an administratively extended State Pollutant Discharge Elimination System ("SPDES") permit issued by the NYSDEC for the period 1987-1992.[46] In July 31, 2008, the Atomic Safety and Licensing Board ("ASLB") ruled that Entergy can rely on this permit for purposes of satisfying 10 C.F.R. § 51.53(c)(3)(ii)(B); thus, it need not assess the impacts of impingement, entrainment, and heat shock in the Environmental Report.[47] Indian Point's 1987 SPDES permit has been administratively continued, however, pending issuance of a final SPDES permit currently subject to adjudication by the NYSDEC.

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Beginning in 1992, the NYSDEC has required a specific environmental impact statement ("EIS") under the State's Environmental Quality Review Act[48] ("SEQRA") to consider Indian Point's entrainment, impingement, and thermal impacts, as well as mitigation alternatives. As a result, the prior owners of Indian Point and other Hudson River power plant generators prepared the 1999 Draft Environmental Impact Statement for permit renewal.[49] The final environmental impact statement ("SPDES FEIS") was prepared and released by the NYSDEC in 2003, after Hudson River advocates filed an action against the NYSDEC in New York State Supreme Court.[50]

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[43] Pisces Report at 11.
[44] 10 C.F.R. § 51.70 (c); 40 C.F.R. § 1506.2 (b) and (c).
[45] *See Public Service Co. of N.H.* (Seabrook Station, Units 1 and 2), *Seabrook*, CLI-78-1, 7 NRC at 26 (1978); *Entergy Nuclear Vt. Yankee* (Vermont Yankee Nuclear Power Station), CLI-07-16, 65 NRC 371, 389 (2007).
[46] NYSDEC, 1987. State Pollutant Discharge Elimination System ("SPDES") Discharge Permit NY-0004472, Indian Point Generating Stations (NYSDEC, 1987 SPDES Permit.
[47] July 31, 2008 ASLB Order, *supra*.
[48] New York State Environmental Conservation Law, Article 17.
[49] 1999 Draft Environmental Impact Statement Concerning the Applications to Renew SPDES Permits for the Roseton 1 and 2, Bowline 1 and 2 and Indian Point 2 and 3 Electric Generating Stations (1999 DEIS).
[50] *See Matter of Brodsky v. Cronje*, Sup. Ct., Albany County, Keegan, J., Index No. 3136-02.

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In the SPDES FEIS, the NYSDEC determined that Indian Point's dramatic intake and use of Hudson River water has significant adverse environmental impacts and must be mitigated.[51] Consequently, NYSDEC prepared a draft SPDES permit requiring closed cycle cooling at Indian Point.[52] In 2008, the NYSDEC advanced the SPDES proceeding to the evidentiary phase, at the time when it resolved various appeals by the parties to the proceeding. Notably, NYSDEC determined that there is no need to adjudicate whether Indian Point's cooling system results in adverse environmental impacts because this issue has already been established as a matter of law and fact, and required that a supplemental EIS be prepared during the adjudication.[53]

The DSEIS not only contradicts the key findings and conclusions on entrainment and impingement at Indian Point contained in the SPDES FEIS but completely ignores the 2008 NYSDEC Ruling.[54] Tellingly, the 2008 NYSDEC Ruling relied on the United Stated Court of Appeals for the Second Circuit, in its decisions referred to as *Riverkeeper I* (2004) and *Riverkeeper II* (2007).[55] As the 2008 NYSDEC Ruling stated, the Second Circuit "specifically rejected the view that the EPA should only have sought to regulate impingement and entrainment where they have deleterious effects on the overall fish and shellfish populations in the ecosystem and emphasized that the EPA's focus on the number of organisms killed or injured by cooling water intake structures is eminently reasonable."[56] Thus, the NRC Staff's marked reliance on population trends is inconsistent with NYSDEC's and EPA's focus on the number of organisms killed or injured by the cooling system.

140-h-AE contd.

The DSEIS also includes, in its alternatives analysis (in Section 8.1.2), a Restoration Alternative that is unlawful based on the Second Circuit rulings in its *Riverkeeper I* and *Riverkeeper II* decisions. Pursuant to *Riverkeeper I* and *Riverkeeper II* "restoration" alternatives both at existing and new facilities are contrary to the CWA. Therefore, Section 8.1.2 should be stricken in its entirety. These failures and inconsistencies runs contrary to NRC's own precedent set forth in *Seabrook*, CLI-78-1, 7 NRC at 26, and *Entergy Nuclear Vt. Yankee*, 65 NRC at 387, indicating that NRC Staff must defer to the responsible permitting authority, here the NYSDEC.

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NYSDEC's 2008 Ruling also requires that a supplemental EIS be prepared to examine the environmental impacts that were not already addressed in the SPDES FEIS for closed cycle cooling, the proposed interim measures, and any alternative technologies that Entergy may propose in order to minimize adverse environmental impact at Indian Point.[57] There is no

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[51] NYSDEC, 2003, Final Environmental Impact Statement Concerning the Applications to Renew SPDES Permits for the Roseton 1 and 2, Bowline 1 and 2 and Indian Point 2 and 3 Electric Generating Stations (hereinafter NYSDEC, 2003 FEIS).
[52] NYSDEC, 2003, Draft SPDES Permit for Entergy Nuclear Indian Point Units 2 & 3 (NYSDEC, 2003 Draft SPDES Permit).
[53] *See Matter of Entergy Nuclear Indian Point 2 and Entergy Nuclear Indian Point 3*, Interim Decision of the Assistant Commissioner (August 13, 2008), *at* http://www.dec.ny.gov/hearings/45956.html ("NYSDEC, 2008 Ruling"), at 14-15 & 36-41.
[54] NYSDEC, 2003 FEIS, at 58.
[55] NYSDEC, 2008 Ruling, at 17 (*citing to* Riverkeeper I, [358 F.3d 174] at 196; Riverkeeper II, [475 F.3d 83] at 125.
[56] *Id.* fn 12 (*citing to* "Riverkeeper II, at 125 (quoting Riverkeeper I, at 196).").
[57] *Id.* at 39.

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indication whatsoever that NRC Staff will defer to, and/or coordinate with, the NYSDEC's supplemental EIS, as required by NRC regulations and precedent.[58]

140-j-AE contd.

Finally, NRC Staff has not recognized NYSDEC's statements and concerns with respects to Indian Point's thermal impacts. The DSEIS' lack of a thermal analysis (discussed in the previous section) is plainly at odds with the available data on Indian Point's thermal plume, which shows that the facility does not comply with New York water quality standards for thermal discharges. As noted in the scoping comments filed by the State of New York – later incorporated in New York State's Petition to Intervene with respect to aquatic impacts:

> The available data -- generated from the applicant and the other Hudson River power plant generators as part of the HRSA -- regarding the thermal discharge at Indian Point demonstrates that state water quality criteria are *not* being met.[59]

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In addition, the 2007 Pisces Report on Entrainment, Impingement and Thermal Impacts, submitted to NRC Staff in November of 2007, clearly shows that temperature increases in the Hudson River caused by Indian Point's operation have had significant effects on aquatic life.

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2. Improper Analysis of Impacts to Endangered or Threatened Species

a. Listed Species – Shortnose Sturgeon

The license renewal of the Indian Point nuclear facility is a federal action which "may affect a listed species or critical habitat."[60] In the DSEIS, the NRC Staff admits that the license renewal will require consultation under Section 7 of the Endangered Species Act of 1973 ("ESA").[61] Because the operation of the Indian Point nuclear facility has resulted in the taking of the endangered shortnose sturgeon without a permit,[62] and the continued operation will continue to affect the fish if the license is renewed and Indian Point operates without a closed-cycle cooling system, such renewal is a federal action which may affect a listed species.

The shortnose sturgeon was listed under the Endangered Species Preservation Act on March 11, 1967 and remained on the Endangered Species List when the ESA became law in 1973. Females live significantly longer than males; while females have reportedly reached 67 years, males usually will not live past 30.[63] This being the case, the sexes are nearly equal in number when young, but when the shortnose reaches 90 cm, females outnumber males by approximately four to one.[64] Also, because they are long living fish, in the mid-Atlantic region, the males will reach

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[58] 10 C.F.R. § 51.70 (a); 40 C.F.R. § 1506.2 (b) and (c); *Seabrook*, CLI-78-1, 7 NRC at 26 (1978); *Entergy Nuclear Vt. Yankee*, CLI-07-16, 65 NRC 371, 389 (2007).

[59] NYS, Scoping Comments, at 8 (emphasis in original text).

[60] 50 C.F.R. § 402.14(a) (2008).

[61] *See* 16 U.S.C. § 1536 (2006); *See also* DSEIS, Main Report § 4.6, at 4-49.

[62] *See id.* § 4.6, at 4-51 (reporting that 714 endangered shortnose sturgeon were impinged at Indian Point from 1975 to 1990).

[63] NOAA Fisheries Office of Protected Resources, Shortnose Sturgeon, http://www.nmfs.noaa.gov/pr/species/fish/shortnosesturgeon.htm (last visited March 13, 2009).

[64] *Id.*

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reproductive maturity between four and seven years and the females at approximately eleven years.[65] Even still, while males may spawn every year, females will often go three years between spawning.[66] Because of this slow maturation process, *any* impacts on the shortnose sturgeon will have noticeable effects. It is, thus, critical that impacts on the shortnose species are kept to a minimum.

Riverkeeper recognizes that Section 7 consultation is based on astute principles designed to further the basic purpose of the ESA, which is to conserve endangered and threatened species and the ecosystems on which they depend.[67] Of particular relevance here are section 7 "philosophies" which encourage reliance on biology first, emphasize the ecosystem approach to species conservation, and stress the importance of the "best available scientific and commercial data."[68] These are commendable standards of practice, and NRC Staff should adhere to them during the relicensing process.

140-m-TS contd.

Although the NRC Staff admits that the continued operation of the Indian Point nuclear facility will impinge the shortnose sturgeon, the data relied upon in the DSEIS and the NRC Staff's Biological Assessment ("BA") appended thereto for assessing those impacts is incomplete at best.[69] The data provided by Entergy accounts only for shortnose sturgeon impinged at Indian Point Units 2 and 3 from 1975 through 1990.[70] Furthermore, there are several years during this period that have no reported data at all[71] and the data can be questioned due to the fact that over 90% of the recorded impingements occurred in only two years.[72] In a letter from Mary A. Colligan (National Marine Fisheries Service ("NMFS")) to David J. Wrona (NRC), NMFS echoed Riverkeeper's concerns about the lack of reporting data and the inconsistencies in those reports.[73] In Colligan's letter, NMFS instructed the NRC that there was insufficient information provided in the DSEIS and BA to start formal consultation.[74] Specifically, NMFS was concerned with the gaps in the reported impingements at the Indian Point nuclear facility.[75] More importantly, the impingement data provided in the DSEIS was from a period when the Indian Point nuclear facility did not use Ristroph screens to minimize fish impingement, which were installed in 1991.[76]

140-n-TS

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[65] *Id.*
[66] *Id.*
[67] 16 U.S.C. § 1531(b).
[68] U.S. Fish and Wildlife Service and National Marine Fisheries Service, ESA § 7 Consultation Handbook, § 1.1, at 1-2, *available at* http://www.fws.gov/endangered/pdf/Sec7handbook/CH1-3.PDF.
[69] *See generally* DSEIS § 4.6; *see also id.* Appendix E, Biological Assessment of the Potential Effects on Federally Listed Endangered or Threatened Species from the Proposed Renewal of Indian Point Nuclear Generating Plant, Unit Nos. 2 and 3 ("BA"), at E-88 – E-100.
[70] *Id.*
[71] *Id.* (no reported impingements in 1980-1983, 1985, 1986, 1988-1990).
[72] *Id.* (out of 317 total impinged shortnose sturgeon, 176 were recorded in 1984 and 116 were recorded in 1987).
[73] Colligan (NMFS) to Wrona (NRC), RE: Biological Assessment for License Renewal of the Indian Point Nuclear Generating Unit Nos. 2 and 3 (Feb. 24, 2009), attached to Riverkeeper's Comments as Exhibit B.
[74] *Id.*
[75] *Id.*
[76] DSEIS, Appendix E, BA § 4.3.2, at E-96.

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Moreover, the impingement data cited in the BA, which the NRC Staff included in order to comply with Section 7 of the ESA,[77] is self-conflicting and does not create a complete, accurate or current illustration of the status of impinged shortnose sturgeon at the Indian Point nuclear facility. Included in the BA are two impingement reports, one each from NMFS and Entergy.[78] The NRC Staff concluded that because Entergy's reports of impinged sturgeon were larger than those of NMFS, they would disregard the NMFS reports.[79] Although it is important for the BA to be a conservative analysis of the impacts to the sturgeon, the NRC Staff's only reasoning disregarding the NMFS reports was that they were significantly lower than the data supplied by Entergy.[80]

140-o-TS

Entergy and the NRC Staff state that the implementation of the Ristroph screens, installed in 1991, may have resulted in reduced the impacts to shortnose sturgeon.[81] Despite these assurances from Entergy and the NRC Staff that these screens are mitigating the impingement of shortnose sturgeon, there is no data to support this conclusion. Because the NRC Staff fails to rely on any impingement monitoring after the screens were installed,[82] it cannot be assumed or concluded that these screens have had any mitigating effects. In order to properly assess the impacts of the Ristroph screens, the NRC Staff must rely on actual impingement data. The NRC Staff even admits that they cannot assess the extent to which the installation of the screens might reduce impacts to the sturgeon.[83]

140-p-TS

The lack of complete and recent impingement data significantly limits the NRC Staff's ability to form a conclusion about the actual affects on the shortnose sturgeon. Indeed, the NRC Staff readily admits that it is unable to come to a definitive conclusion based on this incomplete data. Based on its review of the impingement data supplied by Entergy, the NRC Staff finds in the DSEIS that due to "the uncertainty of the current impingement losses of . . . sturgeon and because insufficient data exist to use the [weight of evidence] approach," the effects on endangered shortnose sturgeon due to license renewal could range from "SMALL to LARGE."[84] In fact, the NRC Staff explicitly admits that the supplied data was insufficient and current monitoring is needed to form a conclusion about the effects of impingement on the shortnose sturgeon.[85] However, instead of gathering data to support a rational and reasonable assessment of the affects to the shortnose sturgeon, the NRC Staff was content to leave their analysis as incomplete and uncertain. NMFS has also shown concern with this lack of recording data.[86] Riverkeeper agrees with NMFS that unless the NRC Staff gathers impingement data or studies

140-q-TS

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[77] 50 C.F.R. § 402.14 (2008).
[78] DSEIS, Appendix E, BA § 4.3.2, at E-96, E-97.
[79] *Id.* at E-97.
[80] *Id.*
[81] *See id.* at E-98.
[82] *See* DSEIS, Main Report Table 4-11 Impingement Data for Shortnose and Atlantic Sturgeon at IP2 and IP3, 1975-1990 (data from Entergy 2007b), at 4-52.
[83] DSEIS, Appendix E, at E-99.
[84] DSEIS, Main Report § 4.6.1, at 4-52.
[85] DSEIS, Appendix E, BA § 4.3.2, at E-98 – E-99 (concluding that the license renewal would likely affect the species, but without current monitoring data, it is impossible to gauge the extent of the impact).
[86] Colligan (NMFS) to Wrona (NRC), RE: Biological Assessment for License Renewal of the Indian Point Nuclear Generating Unit Nos. 2 and 3 (Feb. 24, 2009).

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reflecting accurate estimates of impinged shortnose sturgeon, the impact assessment in the DSEIS is inadequate.[87]

The NRC Staff's inconclusive determination also rests in part on the lack of data regarding entrainment and heat shock. While the NRC Staff says that there is likely no entrainment of shortnose sturgeon occurring, this determination is based on a review of data dating back to the 1980s.[88] The NRC Staff admits that entrainment cannot be ruled out and that there is currently no monitoring program at Indian Point.[89] Similarly, in regards to potential heat shock, the NRC Staff admits that increased temperatures can have a "significant effect on the shortnose sturgeon," however, could not determine the extent to which the population would be affected because additional studies are required.[90]

The NRC Staff's ultimate "conclusion" that the range of impacts to shortnose sturgeon is "SMALL to LARGE"[91] lacks any definitiveness and is essentially meaningless, improperly flouting the requirements of NEPA.[92] While the lack of monitoring data and studies inhibits the ability to form specific conclusions, this does not excuse the NRC Staff from their obligation to accurately assess the impacts on endangered species affected by Indian Point. It is clear that the NRC Staff did not effectively or sufficiently analyze the impacts that license renewal would have on the shortnose sturgeon, and the NRC Staff cannot justify its inadequate conclusion simply by pointing to the unavailability of relevant data.

140-q-TS contd.

Pisces' expert report corroborates the deficiency of the NRC Staff's review.[93] Pisces points out that the data used by the NRC Staff to assess the number of shortnose and Atlantic sturgeon impinged at Indian Point is old, and that the lack of monitoring of impingement means that they do not know if current impingement rates are similar to those between the 1970s and 1990s. In addition, Pisces points out that the NRC Staff admit that they cannot assess the thermal impact on these species. The Pisces expert report concludes that, given these large uncertainties, the NRC Staff came to no conclusion on the impact of Indian Point on sturgeon, giving a range of small to large for the future impacts.[94]

The NRC Staff's analysis of the impacts to shortnose sturgeon is also wanting since it does not consider the impacts caused by IP1. If the license for Indian Point Units 2 and 3 is renewed, Entergy will use some of the systems from Indian Point Unit 1 in the continued operations of the facility.[95] Specifically, the intake structure for Unit 1 will be used to "[p]rovide support, shelter and protection for equipment credited for regulations associated with fire protection."[96] The

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[87] *Id.*
[88] DSEIS, Main Report § 4.6.1, at 4-51; DSEIS, Appendix E at E-96
[89] DSEIS, Appendix E at E-96.
[90] DSEIS, Main Report § 4.6.1, at 4-51; DSEIS, Appendix E at E-99-100.
[91] DSEIS, Main Report § 4.6.1, at 4-52.
[92] *See* 42 U.S.C. § 4332; *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 374 (1989).
[93] Pisces Report at 10.
[94] *See* Pisces Report at 10.
[95] *See generally*, NRC: Indian Point Nuclear Generating Unit Nos. 2 and 3 -- License Renewal Application (Apr. 30, 2007), *available at* http://www.nrc.gov/reactors/operating/licensing/renewal/applications/indian-point.html#application ("Entergy LRA").
[96] Entergy LRA § 2.4.2, at 2.4-3.

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License Renewal Application states that travelling screens have been installed at the Unit 1 intake structure[97], but neither the DSEIS nor the application analyze the impingement impacts on the shortnose sturgeon. Moreover, neither of these documents cites to any reports of past shortnose impingements at the Unit 1 intake structure. By failing to analyze the effects of the continued use of the Unit 1 Intake Structure, the NRC has ignored another point of impact on the shortnose sturgeon. If Entergy is going to use the intake structure from Unit 1 in the continued operation of Indian Point, the NRC staff must take into account past and future impingement from Unit 1 in order to accurately analyze the total impacts on the species.

140-q-TS contd.

The NRC Staff also fails to recognize that the Indian Point nuclear facility will require an incidental take permit in order to comply with the ESA.[98] The NRC admits that future operation of the facility will likely impinge shortnose sturgeon, and this future impingement is considered a "take" under the ESA.[99] Any reliance on the fact that shortnose sturgeon appear to be rebounding in the River, is unfounded, since the fact remains that impingement is still occurring.[100] *Every* impingement of shortnose sturgeon that occurs without an incidental take permit is a violation of the ESA. Because the taking of shortnose sturgeon would be incidental to the operation of the plant, the ESA requires that the facility obtains a permit to regulate and minimize the impact on the species. Riverkeeper's concerns about future takings were echoed in a letter from Mary Colligan, Assistant Regional Administrator for Protected Resources for NMFS Northeast Region, to James Thomas at Enercon Services, a company assisting Entergy in its preparation of its Environmental Report (ER).[101] In this letter, Colligan stated that NMFS is aware that Indian Point has impinged shortnose sturgeon and that such impingement is a take under the ESA.[102] Colligan also wrote that since Indian Point has operated without a permit, such takes were violations of the ESA.[103] The DSEIS failed to note that any future impingements of shortnose sturgeon at the Indian Point nuclear facility without a permit will also be violations of the ESA. In the absence of recent data showing that impingement is not occurring, the NRC Staff and NMFS must assume that the shortnose sturgeon are continuing to be impacted by impingement, and comply with the law accordingly.

140-r-TS

Moreover, the DSEIS is inadequate due to a complete lack of assessment of the potential effects on federally listed species caused by groundwater contamination at Indian Point. As discussed in more detail below, the IP1 and IP2 spent fuel pools are have leaked extensive amounts of highly toxic radionuclides, including strontium-90 and tritium, into the groundwater around the plant. The NRC Staff at no point in the DSEIS assesses the effects of this toxic contamination on the Hudson River's federally listed shortnose sturgeon. Riverkeeper is highly concerned about the

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[97] *Id.* § 2.3.3.19, at 2.3-157.
[98] *See* 16 U.S.C. § 1539(a)(1)(B) (2006); *see also* 50 C.F.R. § 402.14(i) (2008) (NMFS may also include an incidental take statement in a biological opinion after formal consultation, but there is no reference to this option either).
[99] *See* 16 U.S.C. § 1532(19) (2006).
[100] *See* DSEIS, Main Report § 2.2.5.5, at 2-77 to 2-78; DSEIS, Appendix E, at E-93. In fact, the NRC Staff admits that increased population of shortnose sturgeon will likely result in increased impingement. *Id.* at E-97.
[101] *See* Entergy, Inc., License Renewal Application, Appendix E, Applicant's Environmental Report, Operating License Renewal Stage, Indian Point Energy Center (ER), Attachment A, Colligan (NMFS) to Thomas (Enercon) (Mar. 19, 2007), *available at* http://www.nrc.gov/reactors/operating/licensing/renewal/applications/indian-point/ger-attachment-a2.pdf.
[102] *See id.*
[103] *See id.*

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lack of analysis here, particularly because of the known dangers of exposure to radioactive substances such as strontium-90 and tritium. Strontium-90 imitates calcium by concentrating in fish bones and shells of clams and blue crab. Clams are a major part of the diet of sturgeon found in the Hudson River. Riverkeeper is therefore concerned that Hudson sturgeon are being exposed to elevated levels of this dangerous substance. Without reference to additional studies done to scrutinize the effects of such contamination on listed species and humans, the NRC Staff's DSEIS is woefully incomplete.

140-s-TS contd.

b. Candidate Species – Atlantic Sturgeon

The Atlantic sturgeon is currently a candidate species under the ESA, and is thus being considered for listing as threatened or endangered. As such, it does not currently receive any substantive federal protections. However, if the decision is made to list the Atlantic sturgeon the NRC may have to reinitiate Section 7 consultation with NMFS to assess the effects of relicensing on this species. The chances of re-initiation are particular strong because the listing decision will likely be released well before a final decision is made regarding the relicensing of Indian Point.

Riverkeeper is concerned with the NRC Staff's assessment of impacts on the Atlantic sturgeon. Similar to the data on shortnose sturgeon impingement, entrainment, and heat shock, the DSEIS relies on insufficient records to assess the impacts on the Atlantic sturgeon. Although the data for the impingement of Atlantic sturgeon is more complete than that for the shortnose sturgeon, there is no record of impinged fish after 1987.[368] The NRC Staff does not give a reason for why the monitoring of impingement was halted over 20 years ago and also fails to make its current impact assessments on best estimates or currently available data. Riverkeeper is also concerned that the reporting of impinged Atlantic sturgeon reflects the impingement of over 4,000 fish from 1976 to 1987.[369] If the Atlantic sturgeon is indeed listed under the Endangered Species Act, the NRC will be required to engage in the ESA Section 7 consultation process, in order to address the "taking" of Atlantic sturgeon by Indian Point's operation, and to consider mitigation measures necessary to minimize impingement and entrainment losses. The DSEIS lacks the current data that is necessary to assess potential impacts to the species and recommend mitigation strategies that could lessen the harm of those impacts. As a result, the NRC Staff has failed to provide sufficient factual support for its conclusion regarding the impacts of relicensing Indian Point to the Atlantic sturgeon.

140-t-TS

3. Improper Analysis of Groundwater Contamination Caused by Spent Fuel Pool Leaking

Sections 4.3, 4.5, and 4.7 of the DSEIS contain the NRC Staff's evaluation of the environmental impacts of spent fuel pool leaking at Indian Point.[369] The NRC Staff discusses the status of the leaking and its investigation findings earlier in the DSEIS, in section 2.2.7, but reserves

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[368] DSEIS, Main Report § 4.6.3, at 4-52.
[369] *Id.*
[370] *Id.* §§ 4.3, 4.5, 4.7.

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judgment on the environmental impacts of the leaking until section 4.0.[107] These brief portions of the DSEIS, taken together totaling a paltry 4 pages at best, constitutes the NRC Staff's entire evaluation of the extensive spent fuel pool leaking that has been ongoing at the Indian Point facility for years. A review of the NRC Staff's collective assessment in the DSEIS of the spent fuel pool leaks reveals an utter failure to address any of the concerns raised in Riverkeeper's Scoping Comments or by the contention filed by Riverkeeper on this issue.

Riverkeeper's Scoping Comments urged the NRC Staff to comprehensively assess the environmental impacts of the IP1 and IP2 spent fuel pool leaks.[108] Riverkeeper explained the gross inadequacy of Entergy's Environmental Report ("ER") and, thus, urged the NRC Staff not to rely upon it to prepare its draft supplemental environmental impact statement.[109] Riverkeeper highlighted the importance of fully evaluating the ever-accumulating contamination caused by the leaks on the Hudson River ecosystem, including on fish, shellfish, and river sediments.[110] Riverkeeper's Scoping Comments also suggested assessing the feasibility of requiring Entergy to move more fuel to dry casks as a reasonable mitigation measure.[111] Riverkeeper's subsequently filed contention on spent fuel pool leaks further elaborated on the deficiencies of Entergy's analysis and the need for a thorough review of the environmental impacts resulting from the leaks.[112]

Yet, despite the reasoned and entirely valid requests articulated in Riverkeeper's Scoping Comments, the NRC Staff essentially grafted Entergy's assessment of the leaks into the DSEIS as their own.[113] This deficient analysis completely fails to comply with NEPA.

Firstly, the NRC Staff ignores the fact that Entergy has failed to definitively demonstrate that the leaking has even ceased. In fact, there is no discussion at all of whether the leaking is still active, and instead, the NRC Staff apparently accepts Entergy's current monitoring and other "remedial" activities, such as the draining of the IP1 pool, as enough.[114] Despite these actions, there is still no indication that Entergy will ever be able to definitively determine whether the IP2 pool continues to leak. Even though IP1 is no longer a possible source of leakage, IP2 still is. While Entergy identified and addressed some sources of the leakage from IP2, no one disputes that Entergy has been unable to inspect 40% of the IP2 pool liner due to the high density of the spent fuel storage racks and the minimal clearance between the bottom of the racks and the floor of the pool.[115] Indeed, Entergy has explicitly acknowledged that active leaks cannot be ruled out.[116] Moreover, as Riverkeeper has pointed out to the NRC Staff several times already, sample results

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[107] *Id.* § 2.2.7, at 2-107 to 2-108. The NRC Staff references its findings relating to the significance of the spent fuel pool leaking sporadically throughout the DSEIS, but these four sections seem to represent the NRC Staff's primary analysis of this issue.
[108] Riverkeeper Scoping Comments at 12-13.
[109] *Id.*
[110] *Id.*
[111] *Id.*
[112] Riverkeeper Petition for Hearing at 74-86.
[113] DSEIS, Main report §§ 2.2.7, 4.3, 4.5, 4.7.
[114] *Id.* § 2.2.7, at 2-107 to 2-108, § 4.3, § 4.5, § 4.7.
[115] *See* Riverkeeper Scoping Comments at 13; Riverkeeper Petition for Hearing at 74, 80-81.
[116] *See* Groundwater Investigation Executive Summary (Indian Point Energy Center, Buchanan, N.Y., Jan. 2008), at 3, *available at* http://ps.nnss.state.ny.us/Resources/ExecutiveSummary%20GW%20final.pdf.

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clearly demonstrate that the contamination is the result of recent leaking, and not "historical" releases.[117]

Yet, Entergy has not provided any information on the feasibility of examining the remainder of the pool liner, or explained any other steps it will take to find any and all sources of leaks from IP2. In fact, Entergy has made no commitment whatsoever for augmented inspection of the spent fuel pool liners during the period of extended operation, and instead is relying on the one-time inspection of the accessible portion of the liner and groundwater testing.[118] The NRC Staff has expressed concern in its recent Safety Evaluation Report about the lack of a system at IP2 to monitor, detect and quantify potential leakage through the spent fuel pool liner, and stated that it is uncertain that the leakage problems have been permanently corrected.[119] Yet, despite these concerns, the DSEIS is devoid of discussion on the questionable status of the leaking.[120] Riverkeeper does not understand how the NRC Staff can accurately assess the environmental impacts of ongoing leaking during the 20-year extended licensing term without addressing the root of the problem.

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Secondly, the NRC Staff's analysis is deficient since it relies solely on the finding that radiological doses to humans from consumption of aquatic foods, the only current exposure pathway, is within regulatory limits.[121] The NRC Staff maintains that the spent fuel pool leaks, "while new information, are within the NRC's radiation safety standards . . . and are not considered to have a significant impact on plant workers, the public, or the environment."[122] However, the NRC Staff is continuing to improperly hide behind section 4.6 of GEIS, which analyzes radiological impacts based only on dosage limits.[123] However, the GEIS only addresses radiological impacts to man from *routine operations and releases*, and does not contemplate unplanned, unmonitored releases from leaking plant systems into the environment. As such, mere calculation of dose limits is not sufficient for assessing the "significance" of the impacts of the spent fuel pool leaks.[124]

Rather, NEPA requires a broader evaluation of environmental impacts beyond mere public health concerns.[125] The CEQ regulation defining "significantly," requires consideration of the context of the action and intensity or severity of the impacts.[126] Accordingly, in order to accurately evaluate the significance of the spent fuel pool leaking, the NRC Staff's must fully assess the impacts to the natural environment of the Hudson River. However, by relying on

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[117] *See* Riverkeeper Scoping Comments at 13-14; Riverkeeper Petition for Hearing at 74, 81-82.
[118] U.S. Nuclear Regulatory Commission, Safety Evaluation Report With Open Items Related to the License Renewal of Indian Point Nuclear Generating Unit Nos. 2 and 3, Docket Nos. 50-247 and 50-286 (January 2009), at 3-123 ("SER").
[119] SER at 3-123.
[120] DSEIS, Main Report § 2.2.7, at 2-107 to 2-108, § 4.3, § 4.5, § 4.7.
[121] DSEIS, Main Report § 2.2.7, at 2-107 to 2-108; § 4.3, § 4.5, § 4.7. In addition to incorrectly relying on dose limits as a sole measurement of the impacts from the leaks, the NRC Staff's assessment of dose limits itself is fundamentally flawed since it does not take into consideration a proposed desalination plant right that is likely to result in a direct drinking water pathway. *See infra* for in-depth discussion.
[122] DSEIS, Main Report §§ 4.3, 4.5, 4.7.
[123] *Id.* §§ 2.2.7, 4.3, 4.5, 4.7.
[124] 10 C.F.R. § 51.53(c)(3)(iv); *See* 40 C.F.R. § 1508.27.
[125] *See Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 374 (1989).
[126] *See* 40 C.F.R. § 1508.27 (requiring analysis of ten different factors).

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human dose standards, the NRC Staff completely foregoes *any* analysis of the impacts of the contamination to the Hudson River ecosystem.[127] In particular, the DSEIS fails to determine if toxic radionuclides such as strontium-90 or cesium-137 are bioaccumulating in the environment; there is no analysis of the contamination to Hudson River fish or shellfish despite sampling showing elevated levels of such radionuclides in fish;[128] there is no assessment of the effects of the contamination to the nearby ecologically critical area of Haverstraw Bay;[129] and there is no assessment of the potential effects of the leaking on the Hudson River's federally listed endangered species, such as the short-nosed sturgeon.[130]

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There is also no evaluation of the cumulative long-term effects of the contaminated groundwater plumes. The NRC Staff cites Entergy's removal of spent fuel from the IP1 pool as evidence that impacts from the contamination would be minimized.[131] However, the extensive leaking from the Unit 1 pool, which contained strontium-90, one of the most toxic radionuclides, is still in the groundwater and will continue to slowly leach into the Hudson River.[132] Simply because this source of the leaking has now stopped does not change the fact that there has been no assessment of the environmental impacts of this contamination. Moreover, current and future accidental radioactive releases from the plant will only add to the existing plumes. For example, a recent underground pipe leak at the facility resulted in over 100,000 gallons of tritiated water being released directly into the plant's discharge canal, and the Hudson River.[133] The NRC Staff must sufficiently evaluate the cumulative environmental impacts of the contamination that has occurred. Likewise, any claims that the leaking has ceased from the pools altogether, which is dubious as explained above, similarly does not change the fact that there has been no analysis of the environmental impacts of the contamination to date.

Section 4.5 of the DSEIS ostensibly analyzes the environmental impacts of operation on "Groundwater Use and *Quality*."[134] It is ludicrous to think that the NRC Staff could come to a conclusion on the *quality* of groundwater by only looking at public health impacts. And yet, the end conclusion in the DSEIS explicitly states that leaks do not have a significant impact on "plant workers, the public, *or the environment*,"[135] despite absolutely no inquiry into how the leaks are affecting the natural ecosystems surrounding Indian Point.

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Furthermore, by only looking at whether public health doses were within regulatory standards, the NRC Staff has failed to accurately assess the degree of the contamination caused by the spent fuel pool leaks. There is no dispute that there are at least two extensive groundwater plumes

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[127] *See* Riverkeeper Scoping Comments at 12, 14-15; Riverkeeper Petition for Hearing at 75, 84-86.
[128] *See* Riverkeeper Scoping Comments at 14; Riverkeeper Petition for Hearing at 75, 84-86.
[129] *See* Riverkeeper Scoping Comments at 14-15; Riverkeeper Petition for Hearing at 75, 84-86.
[130] *See also discussion infra*.
[131] DSEIS, Main Report § 4.3, at 4-36.
[132] In the months leading up to the completion of draining of the IP1 pool, Entergy reported it was leaking around 20 gallons per day, contributing thousands and thousands of additional gallons of polluted water into the groundwater and eventually the Hudson River. It is not clear that this additional leakage was factored into Entergy's conclusions in its Environmental Report or subsequent Investigation Report, and accordingly, it is not clear that the NRC Staff considered this either. It is, thus, apparent, that the NRC Staff has utterly failed to analyze the leaks that have occurred from IP1.
[133] *See* Annie Correal, *Indian Pt. Broken Pipe Spurs Safety Worries*, THE NEW YORK TIMES (Feb. 27, 2009).
[134] DSEIS, Main Report § 4.5 (emphasis added).
[135] *Id.* §§ 4.3, 4.5, 4.7 (emphasis added).

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underlying the Indian Point site.[136] GZA GeoEnvironmental, the hydrogeological engineering firm hired by Entergy to examine the Indian Point site, had identified radionuclide contaminated plumes at depths ranging from 80 feet (below Indian Point 2) to 160 feet (near the Hudson River bank) for tritium, and from 120 feet (below Indian Point 1) to 150 feet (near the Hudson River bank) for strontium-90.[137] The geology under the Indian Point site is characterized by fractured bedrock, in particular Inwood Marble.[138] Strontium is chemically similar to calcium and prone to substitution for calcium in carbonate minerals such as marble.

A review of recent sampling results shows that the level of contamination is well in excess of EPA drinking water levels.[139] The DSEIS emphasizes the NRC Staff's investigation finding that there is currently no drinking water exposure pathway to humans.[140] As discussed at length below, this is flawed since a proposed desalination plant right across the river from Indian Point is likely to result in drinking water pathway. In any event, EPA maximum contaminant levels are a recognized, highly-conservative benchmark for comparison purposes, to assess the degree of contamination.[141] As Riverkeeper consistently points out, the NRC Staff routinely uses this method of measurement to analyze spent fuel pool leaks. Using drinking water standards is a perfect way to assess the "significance" of the leaking under NEPA, and the fact that the water at Indian Point is not used for drinking water right now is of no moment.[142] Instead, by relying solely on radiation dose calculations, the NRC Staff has failed to acknowledge the severity of the contamination.

With such glaring gaps in the NRC Staff's analysis, how can the NRC Staff possibly come to an accurate conclusion as to the "significance" of the spent fuel pool leaking? If they had taken into account that which NEPA requires, the NRC Staff should have found that the leaking is indeed "significant." The NRC Staff's opposite conclusion is entirely unwarranted, unfounded, and wrong.[143] Likewise, the NRC Staff's conclusion that "additional plant-specific mitigation measures are not likely to be sufficiently beneficial to be warranted" is based on a wholly incomplete analysis.[144] Thus, the NRC Staff should consider appropriate mitigation measures in light of the concerns raised herein, including, but not limited to, requiring Entergy to move more spent fuel to dry casks.[145]

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[136] *See* Riverkeeper Petition for Hearing at 82 (referencing E-mail from James Noggle, NRC, to Timothy Rice and Larry Rosenmann of the NYS DEC (Nov. 6, 2006), Groundwater Investigation Executive Summary (Indian Point Energy Center, Buchanan, N.Y., Jan. 2008), at 2-4, *available at* http://ic.semo.state.ny.us/Resource/ExecutiveSummary%20GW%20final.pdf.

[137] *See* January 7, 2008 GZA GeoEnvironmental Inc., *Hydrogeologic Site Investigation Report*, Figure 9.1 - Unit 2 Tritium Plume, Cross Section A - A', *available at* NRC ADAMS Accession No. ML080032055, *id.* at Figure 9.2 - Unit 1 Strontium Plume, Cross Section B - B', *available at* NRC ADAMS Accession No. ML080032056.

[138] January 7, 2008 GZA GeoEnvironmental Inc., *Hydrogeologic Site Investigation Report* at 50. The GZA report is available at NRC ADAMS Accession No. ML080320540.

[139] *See* Riverkeeper Petition for Hearing at *82-84*.

[140] DSEIS, Main Report § 2.2.7, at 1-108.

[141] *See* Riverkeeper Petition for Hearing at 82-84.

[142] 40 C.F.R. § 1508.27; 10 C.F.R. § 51.53(c)(3)(iv).

[143] DSEIS, Main Report § 4.3, 4.5, 4.7.

[144] *Id.* § 4.3, at 4-35.

[145] Riverkeeper Scoping Comments at 15.

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The NRC Staff has the ultimate responsibility for performing the required NEPA evaluation in relicensing proceedings.[146] Since Entergy's ER was wholly deficient in regards to analyzing the impacts of the spent fuel pool leaking, it is incumbent upon the NRC Staff to pick up the slack. As such, the NRC Staff must take into account the foregoing concerns, perform the necessary analyses and assessments as indicated, and incorporate their findings into the FSEIS.[147]

140-w-GW/HH/RI contd.

4. Failure to Consider the Rockland County Desalination Project

The NRC Staff's assessment of the spent fuel pool leaks in Section 4.0 of the DSEIS is premised upon the assumption that "no drinking water exposure pathway exists"[148] and that the "only noteworthy dose pathway resulting from contaminated ground water migration to the river is through the consumption of fish and invertebrates from the Hudson River."[149] However, the facts concerning United Water New York's proposed desalination plant in Rockland County, indicate a highly foreseeable outcome to the contrary, and, as such, must be considered and incorporated into the review process in all relevant contexts and document sections.

This desalination project, which will withdraw Hudson River water, to be sited across the river and slightly downstream from Indian Point,[150] and deliver 7.5 million gallons per day of drinking water, is currently undergoing review by the NYSDEC,[151] as well as other agencies, concerning various permit applications and SEQRA. United Water New York has stated that this project is in development pursuant to the Public Service Commission Order of December 2006 ("PSC Order"), which approved a merger and rate plan, and provided for an increase in the drinking water supply to Rockland County residents.[152] According to United Water New York, as required by the PSC Order, the scheduled in-service, operational completion date for the project is 2015.[153] Plans for a pilot plant, which has been designed to evaluate water treatment methodologies for the permanent plant, are now also in the application and permitting process

140-x-HH

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[146] *See Exelon Generation Co., LLC* (Early Site Permit for Clinton ESP Site), ASLBP No. 04-821-01-ESP, 2005 N.R.C. LEXIS 61, *5-6 (2005); 42 U.S.C. § 4332.

[147] The NRC Staff has consistently refuted the necessity of assessing the environmental impacts of the spent fuel pool leaks in the manner Riverkeeper describes, including the need to consider leaks from IP1, the effects on the Hudson River ecosystem, or the need to use any other standards aside from NRC dose limits. However, Riverkeeper's contention relating to the leaks has been admitted for a hearing, and is currently being litigated. In light of the fact that these issues are in dispute, the NRC Staff should err on the side of caution in the preparation of its FSEIS and address the concerns presented herein.

[148] *See e.g.*, DSEIS, Main Report § 2.2.7 at 2-107.

[149] *Id.*

[150] The Intake Site consists of a one-acre portion of one tax parcel in the Town of Haverstraw, 71.09-2-1, located at 710 Beach Road. As shown in Figure 2-2, annexed hereto as Exhibit C, the Intake Site is on the south side of Beach Road on a point of land that extends into the Hudson River. The Intake Site is bounded to the north by the road and to the east by the Hudson River; *see also* Google Map showing rough proximity of Indian Point to proposed desalination plant, annexed hereto as Exhibit D.

[151] *See, e.g.*, Letter from William C. Janeway (DEC Regional Director) to Rebecca Troutman (Riverkeeper), March 9, 2009, annexed to Riverkeeper's comments as Exhibit E (Confirming DEC's lead agency status for the desalination plant project).

[152] Commission Order in Case No. 06-W-0131, Issued and Effective December 14, 2006 by the New York State Department of Public Service.

[153] Haverstraw Water Supply Project, Draft Environmental Impact Statement, September 26, 2008, at S-1. Please note that this document is currently in revision pursuant to direction from the DEC. Available at http://hudsonriver.com/home.cfm, and last viewed on March 31, 2009.

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with DEC. Moreover, a Draft Environmental Impact Statement ("Desalination DEIS") on the project has already been submitted by United Water New York.[154]

Pursuant to NEPA, the NRC Staff is required to assess the impacts associated with the desalination plant in the DSEIS: An environmental impact statement must include discussion of any indirect effects of the proposed project and their significance.[155] "Indirect effects" are defined as those

> which are caused by the action and are later in time or farther removed in distance, but are still *reasonably foreseeable*. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems. Effects and impacts as used in these regulations are synonymous.[156]

Thus, an EIS must consider impacts which are "reasonably foreseeable."[157] There is no doubt that effects on Rockland County's drinking water supply due to radioactive contamination from Indian Point are "reasonably foreseeable." Due to the fact that the Hudson River flows south from IP towards the planned, closely situated intake site of the desalination plant, it is more than "reasonably foreseeable" that any current water-borne contamination, as well as potential additional contamination due to continued deterioration of plant systems, accident or terrorist event, will impact the water supply provided via the desalination plant, and in turn public health. Similarly, Entergy's own environmental documents admit that the topography of Indian Point is such that "surface drainage is toward the Hudson River."[158]

Neither Entergy nor the NRC Staff dispute that the leaking spent fuel pools have resulted in the leaching into the Hudson River of two extensive plumes of radionuclide-laden contamination.[159] Monitoring well samples at Indian Point show that the levels of contamination in the groundwater are well above EPA drinking water limits.[160] In addition to the ongoing spent fuel pool leaking, other future accidental discharges from the plant will also contribute contamination

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[154] Available at http://hudsondesal.com/home.cfm, and last viewed on March 11, 2009.
[155] 40 C.F.R. § 1502.16.
[156] 40 C.F.R. § 1508.8(b)
[157] *See* C.E.Q., Memorandum, 40 Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, 46 Fed. Reg. 18026, 18031 (March 23, 1982) ("The EIS must identify all the indirect effects that are known, and make a good faith effort to explain the effects that are not known but are 'reasonably foreseeable.' . . . The agency has the responsibility to make an informed judgment, and to estimate future impacts on that basis, especially if trends are ascertainable. . . The agency cannot ignore these uncertain, but probable, effects of its decisions." *See also, Swain v. Brinegar*, 542 F.2d 364, 7th Cir. 1976 ("An EIS need not review all possible environmental effects of a project. It is sufficient if it considers only those which are 'reasonably foreseeable.'"; *Carolina Environmental Study Group v. U.S.*, 510 F.2d 796, 798 DC Cir. 1975 ("Section 102(2)(C)(i) of NEPA requires a 'detailed statement' on 'the environmental impact of the proposed action.' That language requires description of reasonably foreseeable effects. A 'rule of reason' is used to ascertain those effects anticipated.").
[158] Entergy ER at 2-18.
[159] *See Groundwater* Investigation Executive Summary (Indian Point Energy Center, Buchanan, N.Y., Jan. 2008), at 1, *available at* http://ic.semo.state.ny.us/Resources/Executive%20Summary%20GW%20final.pdf.
[160] *See* Riverkeeper Petition for Hearing at 82-83.

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to the Hudson River. For example, a recent underground pipe leak at the facility resulted in over 100,000 gallons of tritiated water being released directly into the waterway.[161]

Moreover, and ominously, the Desalination DEIS *specifically considers* the presence of Indian Point and the impacts of its contaminants to the water quality:

> Due to the presence of the Indian Point nuclear power plant on the eastern shore of the Hudson River in Buchanan, NY, some have expressed concern regarding the possible radiological contamination of groundwater as well as the Hudson River close to the plant. A summary of the radiological results from United Water's sampling program is provided below. Table 2-4 summarizes the analyses performed for radionuclides in water samples collected at several locations in the Hudson River in 2007 and 2008.[162]

The Desalination DEIS states that preliminary testing showed that the water withdrawn in the vicinity of the intended site contains detectable levels of the radionuclides radium, uranium, strontium-90, and tritium.[163]

The proposed desalination plant is not merely speculative at this point given the fact that it is in the planning, environmental review, and permitting stages. It is, thus, "reasonably foreseeable," as contemplated by the regulations implementing NEPA, that impacts to drinking water quality will result due to the radiological contamination from Indian Point. The presence of an environmental impact statement for the Rockland County Desalination Project renders the foreseeability of these impacts irrefutable. Indeed, the NRC Staff does not have to rely on prognostication to consider the impacts of IP on the proposed desalination plant because there is currently ample available information for the agency to rely on. Thus, NRC Staff is required to assess the effects of Indian Point on the Rockland County desalination project.

Yet, despite the foreseeable nature of this project, the DSEIS is completely devoid of assessment of the impacts of the license renewal on drinking water quality as it relates to the use of the Hudson River as a source of drinking water via the proposed desalination plant. The NRC Staff's current analysis of radiological impacts is premised upon a hypothetical "maximally exposed individual" which does not include consumption of drinking water via the desalination plant as an exposure pathway.[164] While the NRC Staff cites to past radiological sampling data to demonstrate no detectable radiological effects on drinking water,[165] there is no mention whatsoever of what kinds of radiological effects on drinking water supply will result from having a facility in close proximity and downstream from Indian Point, withdrawing water for human consumption. Moreover, the NRC Staff's evaluation of the groundwater contamination from

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[161] *See* Annie Correal, *Indian Pt. Broken Pipe Spurs Safety Worries*, The New York Times (Feb. 27, 2009).
[162] Haverstraw Water Supply Project, Draft Environmental Impact Statement, September 26, 2008, at 2—9. Please note that this document is currently in revision pursuant to direction from the DEC.
[163] *Id.*
[164] *See* DSEIS, Main Report §§ 2.2.3, 4.3.
[165] *See id.* § 2.2.3 at 2-104, 2-105.

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spent fuel pool leaks hinges on its finding that the only exposure pathway is through consumption of aquatic organisms.[166]

Thus, the DSEIS is substantially incomplete, and must be corrected prior to the conclusion of the environmental review process. The NRC Staff must comprehensively review and consider the impacts of radiological releases from the Indian Point facility, both through normal operations and from unplanned discharges, on drinking water quality in light of the Rockland County Desalination Project.

140-x-HH contd.

5. Failure to Properly Consider Impacts to the Communities Utilizing Hudson River Water as a Water Supply Source

Additionally, although the DSEIS acknowledges that "the Hudson River was and is used as a source of potable water,"[167] the NRC Staff fails to properly identify and evaluate potential adverse impacts to the communities which draw Hudson River water for their water needs. The DSEIS asserts that it includes "drinking water" in its evaluation of "airborne pathway," but omits this critical issue in the reference to "waterborne pathway."[168] Further, in the subsequent discussion of data from the "2006 REMP Results," the DSEIS simply refers to results of the "monthly drinking water samples" without identifying which sources (presumably those with potential airborne exposure only) were examined.[169]

Communities which use the Hudson River for their water supply needs, and are therefore vulnerable to waterborne exposure to contaminants, include, but are not limited to, the City of Poughkeepsie, the Town and Village of Rhinebeck, and New York City, which operates the emergency Chelsea pump station at New Hamburg. Due to the fact that the Hudson River is a tidal estuary (the water flows up and downstream), and dispersion and diffusion of contaminants occurs with their release into the waterway,[170] radionuclides can be transported upriver as well as downriver. Accordingly, the potential adverse impacts caused by the operation of Indian Point, under normal operation, with leaks, other accident or disaster, pertaining to the current use of the Hudson river as a source of water, must be fully assessed.

140-y-AE/CL

6. Improper Conclusions Regarding Cumulative Environmental Impacts of Operation

a. Cumulative Impacts on Aquatic Resources

In assessing the current and likely future stressors that contribute to cumulative impacts of aquatic resources of the Hudson River, the NRC Staff concedes that the continued operation of IP2 and IP3 has the potential to adversely affect a variety of RIS species due to the once-through

140-z-AE/CI

[166] *See id.* § 2.2.7 at 1-108.
[167] *Id.* § 2.2.5.2, at 2-40.
[168] *Id.* §2.2.7 at 2-104.
[169] *Id.* §2.2.7 at 2-105.
[170] *See e.g.*, Ha, D.T., P. Schlosser, & T. Caplow, Determination of longitudinal dispersion coefficient and net advection in the tidal Hudson River with a large-scale, high resolution SF6 tracer release experiment, Environ. Sci. Technol., 36, 3234-3241, 2002.; Ferdi L. Hellweger, Alan F. Blumberg, Peter Schlosser, David T. Ho, Theodore Caplow, Upmanu Lall, & Hongbai Li, *Transport in the Hudson Estuary: A Modeling Study of Estuarine Circulation and Tidal Trapping*, Estuaries Vol. 27, No.3 pp.527-538 (June 2004).

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cooling system.[171] (Interestingly, the staff's examination of cumulative impacts to water and sediment quality of the Hudson River does not even mention the radioactive contamination caused by spent fuel pool leaks at Indian Point[172]). When all the various factors, including the operation of Indian Point, were considered, the NRC Staff found that the overall effects on aquatic resources was "large."[173] In Pisces' expert opinion, "the Indian Point power plant must take its share of the responsibility and undertake to do as little damage a possible to an already stressed system."[174]

140-z-AE/CI contd.

b. Cumulative Radiological Impacts

The NRC Staff concludes in Section 4.8.2 of the *DSEIS* that the cumulative radiological impacts are "SMALL."[175] However, in light of the issues raised above regarding the NRC Staff's flawed assessment of spent fuel pool leaks, and the failure to consider the Rockland County Desalination Project or other drinking water supplies, this conclusion is dubious. A more thorough analysis that fully addresses the above-referenced concerns must be completed before the NRC Staff can come to an accurate conclusion as to cumulative radiological impacts of continued operation of IP2 and IP3.

140-aa-SM

DSEIS Section 5.0

Improper Analysis of Severe Accident Mitigation Alternatives

The assessment of Severe Accident Mitigation Alternatives ("SAMAs") in Section 5.2 of the DSEIS is wholly deficient because the NRC Staff incorrectly relied upon the assessment of SAMAs in Entergy's ER.[176] Specifically, the NRC Staff found that Entergy's methodology and analyses were completely sound.[177] Unfortunately, the NRC Staff has ignored several fundamental flaws in the methods employed by Entergy, which, if considered, would greatly change the outcome of the SAMA analysis.

1. Failure to Consider the Risk of Intentional Acts of Sabotage

The NRC Staff's SAMA assessment is utterly flawed because it fails to consider the risks posed by terrorist attacks on Indian Point. Riverkeeper recognizes that the NRC refuses to consider the environmental impacts of intentional attacks in a licensing proceeding. In the instant proceeding, the NRC Staff has explicitly said that the "issue of security and risk from malevolent acts at nuclear power plants is beyond the scope of license renewal . . . the Commission's long-standing position is that NEPA does not require inquiry into the consequences of a hypothetical terrorist attack."[178] It is Riverkeeper's unwavering position that this refusal is simply unreasonable.

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[171] DSEIS, Main Report § 4.8.1, at 4-56.
[172] *Id.* § 4.8.1, at 4-57.
[173] *Id.* § 4.8.1, at 4-58; Pisces Report at 10.
[174] Pisces Report at 10.
[175] DSEIS, Main Report § 4.8.3, at 4-60.
[176] *Id.* § 5.2.
[177] *Id.* § 5.2, at 5-6 to 5-10.
[178] NRC Staff Scoping Summary Report at 279-80.

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Numerous reports indicate that nuclear power plants remain likely targets of terrorist attacks. The 9/11 Commission Report revealed that the mastermind of the 9/11 attacks had originally planned to hijack additional aircrafts to crash into targets, including nuclear power plants, but wrongly believed the plants were heavily defended.[179] This report indicates that the terrorists were considering attacking a specific nuclear facility in New York which one of the pilots had seen during a familiarization flight near New York.[180] This was likely Indian Point, especially given the fact that more than 17 million people live within 50 miles of the facility.[181] In the years since the 9/11 attacks, the federal government, including the NRC, has repeatedly recognized that there is a credible threat of intentional attacks on nuclear power plants.[182] Notably, existing nuclear power plants in the United States were built between the 1950s and the 1980s and were not intended to be able to withstand the impact of aircraft crashes or explosive forces.[183] Thus, given the current landscape, it is, essential that the risks of intentional attacks be considered during the relicensing process.

The U.S. Court of Appeals for the Ninth Circuit has specifically found that the NRC's consistent refusal to consider the risks of terrorism is unreasonable,[184] although, misguidedly, the NRC has explicitly chosen to limit the applicability of that judicial opinion.[185] The U.S. Environmental Protection Agency also specifically requested the NRC Staff to address the impacts of intentional attacks in the Indian Point license renewal EIS, to no avail.[186]

The Commission's rationale for precluding this important issue from review during the relicensing process is very weak. For example, the Commission has concluded that the benefits of considering the environmental impacts of attacks during a license renewal term would be marginal because those impacts are addressed in the current license term.[187] This reasoning is not supportable since the level of defense required under NRC's Atomic Energy Act-based

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[179] Nat'l Comm'n on Terrorist Attacks Upon the U.S., *The 9/11 Commission Report* (2004), at 154 ("9/11 Commission Report").
[180] *Id.* at 245.
[181] *See* Edwin Lyman, *Chernobyl on the Hudson? The Health & Economic Impacts of a Terrorist Attack at the Indian Point Nuclear Power Plant*, at 23 (2004), *available at*, http://www.riverkeeper.org/document.php/651/11302002_EL_Lym.pdf
[182] *See, e.g.*, *Wide-Ranging New Terror Alerts*, CBS News.com (May 20, 2002), *available at*, http://cbsnews.com/stories/2002/05/24/attack/main510054.shtml (discussing heightened alert of the U.S.'s nuclear power plants as a result of information gained by the intelligence community); *FBI Warns of Nuke Plant Danger*, CBS News.com (May 1, 2003), *available at*, http://www.cbsnews.com/stories/2003/09/04/attack/main571556.shtml (discussing FBI warning to nuclear plant operators to remain vigilant about suspicious activity that could signal a potential terrorist attack); General Accounting Office, *Nuclear Regulatory Commission: Oversight of Security at Commercial Nuclear Power Plants Needs to be Strengthened*, GAO-03-752 (2003) (noting that U.S. nuclear power plants are possible terrorist target, and criticizing the NRC's oversight of plant security); *FBI's 4th Warning*, CBS News.com (July 2, 2004) (discussing FBI warning of recent intelligence showing Al Qaeda interest in attacking nuclear plants).
[183] *In re All Nuclear Power Reactor Licensees*, DD-02-04 (Nov. 1, 2002), *available at* http://www.nrc.gov/reading-rm/doc-collections/petitions-2-206/directors-decision/2002/dd0204031.pdf; *NRC: Nuclear Power Plants Not Protected Against Air Crashes*, Associated Press (Mar. 28, 2002).
[184] *San Luis Obispo Mothers for Peace v. NRC*, 449 F.3d 1016 (9th Cir 2006).
[185] *Amergen Energy Co., L.L.C.* (Oyster Creek Nuclear Generating Station), CLI-07-08, 65 N.R.C. 124 (2007).
[186] Letter from Grace Musumeci, U.S. EPA, to Chief, NRC Rules and Directives Branch (Oct. 10, 2007) (ADAMS Accession No. ML072903600).
[187] *See Duke Energy Corp.* (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-02-26, 56 N.R.C. 358, 363 (2002).

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security regulations is lighter than the fundamental design changes that may warrant consideration under NEPA if they are cost-effective.[188] Moreover, this reasoning is inconsistent with NEPA, which imposes mandatory obligations on the NRC in considering proposals for re-licensing of nuclear plants.[189]

The Commission also rationalizes its decision to preclude risk assessment of terrorist attacks by arguing that it had already assessed the impacts of intentional attacks in the 1996 GEIS.[190] The GEIS contains the conclusion that:

> Although the threat of sabotage events cannot be accurately quantified, the commission believes that acts of sabotage are not reasonably expected. Nonetheless, if such events were to occur, the commission would expect that resultant core damage and radiological releases would be no worse than those expected from internally initiated events.[191]

In the DSEIS, the NRC Staff relies upon the conclusions in the GEIS to rationalize its exclusion of risks associated with terrorism.[192] Unfortunately, the conclusions in the GEIS been outdated by the significant change in the Commission's analysis of the potential for intentional attacks

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[188] Gordon Thompson, Risk-Related Impacts from Continued Operation of the Indian Point Nuclear Power Plants (Nov. 28, 2007), at §§ 1, 9, *available at*, http://www.riverkeeper.org/document.php/652/1130280/7_GT_Thu.pdf ("Thompson Report").

[189] The NRC recognized as much in a 2001 decision denying a petition for rulemaking by the Nuclear Energy Institute ("NEI") that would have eliminated the requirement to consider SAMAs. *Nuclear Energy Institute; Denial of Petition for Rulemaking*, 66 Fed. Reg. 10,834 (February 20, 2001). In response to a comment that "the costs of performing the SAMA reviews required by Part 51 are not justified when compared to the small potential safety benefits that result from the reviews," the Commission stated: "The NRC believes that it should continue to consider SAMAs for individual license renewal applications to continue to meet its responsibilities under NEPA. *That statute requires NRC to analyze the environmental impacts of its actions and consider those impacts in its decisionmaking.* In doing so, Section 102(2)(C) of NEPA implicitly requires agencies to consider measures to mitigate those impacts when preparing an impact statement. *See Robertson v. Methow Valley Citizens Council*, 490 U.S. 332 (1989). *NRC's obligation to consider mitigation exists whether mitigation is ultimately found to be cost-beneficial and whether or not mitigation ultimately will be implemented by the licensee.*" 66 Fed. Reg. at 10,836 (emphasis added). The Commission also provided a detailed rebuttal to NEI's argument that license renewal was a mere "continuation" of the current operating term and therefore should not trigger NEPA obligations. ". . . [T]o the extent that license renewal involves a continuation of impacts already experienced at the site under the current operating license, the arguments made by the petitioner would appear to call for the elimination of almost the entire environmental review of impacts from operation during the license renewal term, a position clearly at odds with the Commission's approach to the matter and also, as discussed below, inconsistent with the case law related to relicensing." 66 Fed. Reg. at 10,836-37. The Commission found that that none of the cases under NEPA excusing agencies from considering certain environmental impacts supported petitioner's argument that the NRC can ignore the impacts of its actions in the context of a license renewal. *Id.* The Commission cited to a case which squarely addressed the issue and concluded that there is a need to consider environmental impacts in the context of a relicensing. *Id.* (citing *Confederated Tribes and Bands of the Yakima Indian Nation v. Federal Energy Regulatory Commission*, 746 F.2d 466 (9th Cir. 1984). Thus, the Commission's position in *Duke Energy* is inconsistent with both NEPA and the Commission's previous interpretation of NEPA.

[190] *See Duke Energy Corp.* (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-02-26, 56 N.R.C. 358, 363 n.24 (2002).

[191] GEIS at 5-18.

[192] DSEIS, Main Report § 5.1.2, at 5-3.

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that has occurred since September 11, 2001.[193] It also totally overlooks the fact that mitigation measures to avoid conventional accidents may be different than those designed to avoid effects of intentional attack. The findings in the GEIS also do not take into account the fact that radiological consequences of a spent fuel pool fire are significantly different from the consequences of a core damage accident,[194] and that mitigation measures for a spent fuel pool fire would be quite different from mitigation measures for a severe core-damage accident.[195]

Moreover, in a recent denial of a petition for rulemaking, which sought reconsideration and revocation of the Category 1 designation of spent fuel pool fires, the Commission explained that it considered the probability of a successful terrorist attack to be low because licensees have implemented mitigative measures believed to lower the likelihood that fuel will ignite if the pool is attacked:

> As previously described, the NRC has required, and nuclear power plant licensees have implemented, various security and mitigation measures that, along with the robust nature of SFPs, make the probability of a successful terrorist attack (i.e., one that causes an SFP zirconium fire, which results in the release of a large amount of radioactive material into the environment) very low. As such, a successful terrorist attack is within the category of remote and speculative matters for NEPA considerations; it is not 'reasonably foreseeable.' Thus, on this basis, the NRC finds that the environmental impacts of renewing a nuclear power plant license, in regard to a terrorist attack on a SFP, are not significant.[196]

140-bb-SM contd.

In fact, in July 2007, the NRC amended IP3's operating license to require the licensee to address large fires and explosions including those caused by planes.[197]

However, such mitigation measures contemplated by the NRC to acceptably reduce the likelihood of a successful attack on a spent fuel pool were never considered in the GEIS or in any other subsequent NEPA document.[198] This starkly demonstrates that the GEIS does not validly deal with impacts related to terrorism, and the need to assess such impacts comprehensively under NEPA as part of the license renewal process is apparent.

Despite the foregoing, the NRC Staff refused to consider the risk of intentional attacks in its SAMA assessment in the DSEIS. Accordingly, the NRC Staff's SAMA analysis is patently deficient. The Indian Point reactors and spent fuel pools are vulnerable to a range of attack scenarios for which conventional probabilistic risk assessment ("PRA") techniques can be

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[193] *See San Luis Obispo Mothers for Peace v. NRC*, 449 F.3d 1016 (9th Cir. 2006) ("We find it difficult to reconcile the Commission's conclusion that, as a matter of law, the possibility of a terrorist attack is 'remote and speculative,' with its stated efforts to undertake a 'top to bottom' security review against this same threat.")

[194] Thompson Report at 9 n.9

[195] *Id.* at 32.

[196] Denial of Petition for Rulemaking, 73 Fed. Reg. at 46,211 (2008).

[197] Indian Point Unit 3 Operating License, DPR-64, Condition 2.C, Mitigation Strategy License Condition (July 11, 2007), ML052770273, at 8.

[198] Denial of Petition for Rulemaking, 73 Fed. Reg. at 46,211 (2008).

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adapted by postulating an initiating event (malicious act) and then examining the outcomes of that event.[199] This has not been done.

Moreover, in the first step of Entergy's analysis (which the NRC accepts as sound), i.e., establishing the baseline of severe accidents, Entergy, and the NRC Staff in turn, did not consider the contribution to severe accident costs made by such intentional attacks at Indian Point.[200] The present value of cost risks for an attack at an Indian Point Reactor and its pool exceeds half a billion dollars, warranting significant expenditures on SAMAs.[201] The present value of cost risks for an attack on a reactor alone are also significant -- $62 million to $73 million.[202] Relevant SAMAs with a value of this magnitude have not been considered. Additionally, Entergy's original assessment, which the NRC Staff claims is sound, fails to address National Infrastructure Protection Plan principles for increasing the inherent robustness of infrastructure facilities against attack, which could significantly reduce the radiological and regulatory risk-related impacts of continued operation of the IP2 and IP3 plants.[203]

Based on the foregoing it is clear safety risks due to intentional attacks and accident mitigation alternatives have not been adequately addressed in the DSEIS.[204] The NRC Staff must factor such risks into its SAMA analysis prior to the end of the environmental review process.

140-bb-SM contd.

2. Failure to Consider the Risk of Spent Fuel Pool Fires

The SAMA analysis in the DSEIS does not adequately take into account the risk of spent fuel pool fires. Riverkeeper is aware that the NRC classifies the environmental impacts of pool accidents and related SAMAs as "Category 1" issues that are not subject to consideration in individual license renewal proceedings absent a waiver or change in the regulations.[205] However "new and significant" information about the risk of spent fuel pool fires warrants comprehensive review in the instant relicensing proceeding.

While initially, it was assumed that stored spent fuel generally did not pose significant risks, with the introduction of high-density, closed-form storage racks into spent fuel pools beginning in the 1970s, this understanding is no longer valid.[206] The closed-form configuration of the high density racks can create a major problem if water is lost from a spent fuel pool, including disastrous pool fires.[207] In fact, studies conducted after the issuance of the 1996 License Renewal GEIS contradict previous studies that had asserted that complete drainage of spent fuel pools was the most severe case and that aged fuel would not burn.[208] These later studies establish that if the water level in a fuel storage pool dropped to the point where the tops of the

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[199] Thompson Report at 42-45.
[200] DSEIS, Main Report § 5.2; Entergy's ER at § 4.21.
[201] *See* Thompson Report at 45-46, Table 7-7, Section 9.
[202] *Id.* at 49.
[203] *See id.* at 58-59.
[204] *See generally id.* §§ 7, 9.
[205] *Florida Power and Light*, 54 N.R.C. at 12.
[206] Thompson Report at 18-27.
[207] *Id.*
[208] *See* Waste Confidence Rule, 55 Fed. Reg. 38,474, 38,481 (Sept. 18, 1990).

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fuel assemblies are uncovered, the fuel would burn regardless of its age, and resulting fires can be catastrophic.[209]

In light of this "new information," the States of Massachusetts and California recently petitioned the NRC for a rulemaking seeking reconsideration and revocation of the Category 1 designation of spent fuel pool fires.[210] The Commission issued a decision in early 2008, finding that the petitioning states had not presented "new and significant" information so as to warrant supplementation of the GEIS.[211] However, in its decision, the Commission made no attempt to defend the continuing technical validity of the studies cited in the GEIS, and in fact confirmed the conclusions of NUREG-1738 that partial drainage of a spent fuel pool is a more serious condition than complete drainage, that aged fuel can burn, and that spent fuel fires will propagate.[212]

Further the Commission discussed various mitigation measures that have been implemented by nuclear power plant licensees, asserting that such measures rendered the environmental impacts of high-density pool storage of spent fuel insignificant.[213] For example, in response to the evidence that partial draindown is a more severe situation than total draindown, the Commission discussed the fact that

> all nuclear plant SFPs have been assessed to identify additional existing cooling capability and to provide new supplemental cooling capability which could be used during such rare events. This supplemental cooling capability specifically addresses the cooling needs during partial draindown events, and would reduce the probability of a zirconium fire during those extreme events.[214]

The Commission also described other mitigation measures that have been imposed on all nuclear power plant licensees, including an "internal strategy" which implements a spent fuel pool "makeup system that can supply the required amount of makeup water and SFP spray to remove decay heat," and an "external strategy" in which an independently powered, portable SFP coolant makeup would be used to mitigate a range of scenarios that could reduce pool water levels.[215] The Commission further described "leakage control strategies" that would be considered in cases where SFP water levels can not be maintained, as well as development of timelines for dispersed and non-dispersed spent fuel storage.[216] The Commission cited to license amendments incorporating such strategies into plant licensing bases of all operating nuclear power plants in the United States.[217] Indeed, Indian Point's operating license has specifically

140-cc-SM contd.

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[209] NUREG-1738, *Final Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants* (January 2001); 2006 NAS Study at 53-54.
[210] *See Massachusetts Attorney General; Receipt of Petition for Rulemaking*, 71 Fed. Reg. 64,169 (Nov. 1, 2006); *State of California; Receipt of Petition for Rulemaking*, 72 Fed. Reg. 27,068 (May 14, 2007).
[211] Denial of Petition for Rulemaking, 73 Fed. Reg 46,204 (2008).
[212] *Id.* at 46,208-10.
[213] *Id.* at 46,209-10.
[214] *Id.*
[215] *Id.* at 46,209.
[216] *Id.*
[217] *Id.*

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been amended to incorporate such mitigation measures.[218] As discussed above, the Commission further emphasized that mitigative measures have reduced the risk of spent fuel pool fire from intentional attacks.

The Commission's discussion of spent fuel pool fires and mitigative measures is wholly contrary to their end conclusion that such fires are still a Category 1 issue. The NRC's three criteria for inclusion of an environmental impact in Category 1 are (a) the environmental impacts associated with the issue apply to all plants/plants having a specific site characteristic; (b) a single significance level has been assigned to the impacts, *and* (c) mitigation of adverse impacts associated with the issue has been considered in the analysis and it has been determined that additional plant-specific mitigation measures are not likely to be sufficiently beneficial to warrant implementation.[219]

With the Denial of Petition for Rulemaking, the Commission rendered it *impossible* for the issue of spent fuel storage to fit into the last criterion of Table B-1. As is clear from the above discussion, the Commission relied heavily on mitigative measures, which notably have been imposed at Indian Point, for its conclusion that the environmental impacts of spent fuel storage are insignificant.[220] Contrary to the criterion (c) above, not a single one of those mitigation measures was considered in the GEIS. In fact, the Denial of Petition for Rulemaking is apparently the first NEPA document in which they have been identified.[221] There are no previous NEPA documents evaluating the effectiveness of any license amendments imposed to reduce the risk of pool fires, nor any NEPA documents assessing cooling capability that were allegedly assessed for all operating spent fuel pools.[222]

Accordingly, the NRC has effectively removed spent fuel pool impacts from the realm of Category 1, and, accordingly, such impacts must be considered in the instant proceeding.

Moreover, any reliance upon 10 C.F.R. §§ 51.95(c) and 10 C.F.R. § 51.23 is misplaced based on the foregoing. Section 51.95(c) provides that at the license renewal stage, the supplemental EIS for an individual plant "need not discuss . . . any aspect of the storage of spent fuel for the facility within the scope of the generic determination in § 51.23(a) and in accordance with § 51.23(b).[223] Section 51.23(a) explains that the Commission's generic determination that spent fuel can be safely stored for at least 30 years beyond the licensed life for operation,[224] and section 51.23(b) explains that because of this generic finding of no significant impact, then "within the scope of the generic determination in paragraph (a) of this section, no discussion of

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[218] Letter from John P. Boska, NRC, to Michael A. Balduzzi, Entergy (July 11, 2007), ML071920023; *see also* Indian Point Unit 3 Operating License, DPR-64, Condition 2C, Mitigation Strategy License Condition (July 11, 2007), ML052720273.

[219] 10 C.F.R. Part 51, Subpart A, Appendix B, Table B-1, note 2; *see also* Denial of Petition for Rulemaking, 73 Fed. Reg. at 46,206.

[220] *See* Denial of Petition for Rulemaking, 73 Fed. Reg. 46,204.

[221] *Id.* at 46,209-10.

[222] *Id.* at 46,209-10.

[223] 10 C.F.R. § 51.95(c).

[224] *See* further discussion below about why this generic determination is no longer supportable, necessitating comprehensive review of spent fuel storage impacts generally during the instant relicensing proceeding.

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any environmental impact of spent fuel storage" is required in a license renewal proceeding.[226] However, the mitigative measures the Commission now relies upon to determine that spent fuel storage poses no significant impacts, are clearly not "*within the scope of the generic determination in paragraph (a)*" of section 51.23, and therefore neither 10 C.F.R. § 51.95(c) or 10 C.F.R. § 51.23(a) applies.

Accordingly, the NRC Staff has no lawful basis to refuse to consider the environmental impacts of high-density pool storage of spent fuel in the Indian Point relicensing proceeding. However, despite all of the foregoing, the NRC Staff did not consider the risk of spent fuel pool fire in its SAMA assessment in the DSEIS. As such, the NRC Staff's SAMA is patently deficient.

Specifically, in the first step of Entergy's analysis (which the NRC accepts as sound), i.e., establishing the baseline of severe accidents, Entergy, and the NRC Staff in turn, did not consider the contribution to severe accident costs by a fire in either of the spent fuel pools at IP2 or IP3.[228] No SAMAs that would avoid or mitigate such costs have been identified.[229] If the costs of pool fires were considered, the value of SAMAs would be significant. Even using unrealistically low probability estimates in NUREG-1353, *Regulatory Analysis for the Resolution of Generic Issue 82, Beyond Design Basis Accidents in Spent Fuel Pools* (1982), the offsite cost risk of a pool fire is substantially higher than the offsite cost risk of an Early High release from a core-damage accident.[230] The present value of cost risk for a conventional pool accident at Indian Point (i.e., an accident not caused by intentional attack), using the unrealistically low probability assumptions in NUREG-1353, is $27.7 million, a significant sum.[231] If more realistic assumptions about the likelihood of a pool fire were used, the cost would be considerably higher.[232] Moreover, the present value of costs risks ("PVCR") for a spent fuel pool fire would increase substantially (i.e., from $27.7 million to $38.7 million) if the discount rate were changed from 7% to 3%, a more appropriate rate for an analysis of the benefits of measures to prevent or mitigate radiological accidents that Entergy used to test the sensitivity of its SAMA analysis.[233] If the discount rate were dropped to zero, a rate that is justified in light of the catastrophic nature of the consequences involved, the PVCR for a spent fuel pool fire would be even higher -- $51.5 million.[234]

Based on the foregoing it is clear safety risks due to spent fuel fires and accident mitigation alternatives have not been adequately addressed in the DSEIS. The NRC Staff must factor such risks into its SAMA analysis prior to the end of the environmental review process.

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[226] *See* 10 C.F.R. § 51.23.
[227] DSEIS, Main Report § 5.2; Entergy's ER at § 4.21.
[228] DSEIS, Main Report § 5.2.
[229] Thompson Report at 28.
[230] *Id.* at 49 and Table 7-7.
[231] *Id.* at 51.
[232] *Id.* at 51-52.
[233] *Id.* at 52.

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3. Failure to Consider the Risk of Reactor Containment Bypass

The SAMA analysis in the DSEIS does not adequately take into account the risk of reactor containment bypass.[233] The SAMA analysis in the DSEIS seriously underestimates the potential for containment bypass during a core-damage accident. In light of current knowledge about severe reactor accidents, it is prudent to assume that (1) any high/dry accident sequence, (i.e., those in which the secondary side dries out due to unavailability of feedwater and the reactor coolant system ("RCS") pressure remains high while primary coolant (i.e., water) is lost and the core is uncovered), would involve induced failure of steam generator tubes, and (2) that one or more of the secondary side safety valves downstream of the affected steam generator(s) would remain open after tube failure.[234] Taking these prudent assumptions into account, the conditional probabilities of atmospheric release categories in the event of core damage increase significantly: the conditional probability of an Early High release rises from 3.6% to 51.8% for the IP2 reactor, and from 8.2% to 54.1% for IP3.[235] Correspondingly, the present value of cost risk associated with atmospheric releases increases by a factor of 5.42 for IP2 and a factor of 3.18 for IP3.[236]

However, in the first step of Entergy's analysis (which the NRC accepts as sound), i.e., establishing the baseline of severe accidents, Entergy, and the NRC Staff in turn, did not properly consider the contribution to severe accident costs made by severe accidents involving such reactor containment bypass via induced failure of steam generator tubes.[237] Because it does not account for the above-mentioned assumptions, Entergy's estimates of conditional probabilities of atmospheric release categories are incorrectly low.[238] Correspondingly, the value Entergy assigned to the cost risk associated with atmospheric releases is mistakenly low.[239] As a result, Entergy underestimated the potential value of relevant SAMAs by approximately $47.3 million for IP2 and $23.4 million for IP3.[240] If the economic benefit of averted containment bypass accidents were appropriately considered, a number of SAMAs rejected by Entergy as too costly would be cost-effective.[241]

Since induced accidents involving reactor containment bypass via induced failure of steam generator tubes have not been accounted for, the SAMA analysis in the DSEIS is flawed. The NRC Staff must factor the foregoing into its SAMA analysis prior to the end of the environmental review process.

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[233] DSEIS, Main Report § 5.2.
[234] *See* Thompson Report at 14-18, 50.
[235] *See id.*
[236] *See id.*
[237] DSEIS, Main Report § 5.2; Entergy's ER at § 4.21; *See* Thompson Report at 14-18, 50.
[238] *See* Thompson Report at 14-18, 50.
[239] *See id.*
[240] *See id.*
[241] *See id.*

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4. Inadequate Consequence Analysis

Lastly, the SAMA analysis is flawed because the NRC Staff accepts Entergy's inadequate consequences analysis.[242] Entergy grossly miscalculated radiological consequences of severe accidents in performing its SAMA analyses for three reasons,[243] none of which the NRC Staff has taken into consideration in the DSEIS.

First, Entergy significantly underestimated off-site costs resulting from a severe accident at Indian Point by using a source term that resulted in unusually low mean off-site accident consequences in comparison to results obtained with source terms vetted by independent experts and recommended for use by the NRC.[244] The source term Entergy used to estimate consequences of the most severe accidents with early containment failure was based on radionuclide release fractions generated by the MAAP code, which are smaller for key radionuclides than the release fractions specified in NRC guidance such as NUREG-1465, *Accident Source Terms for Light-Water Nuclear Power Plants* (1995) and the NRC's recent reevaluation for high-burnup fuel, ERI/NRC 02-202, *Accident Source Terms for Light-Water Nuclear Power Plants: High Burnup and MOX Fuels* (2002).[245] The source term used by Entergy results in lower consequences than would be obtained from NUREG-1465 release fractions and release durations.[246] It has been previously observed that MAAP generates lower release fractions than those derived and used by NRC studies, such as NUREG-1150.[247] Since Entergy's use of the MAAP code yielded lower consequences than use of the NRC's source term, Entergy should be required to repeat its SAMA analysis using source terms that are based on publicly available analysis. However, a review of the NRC Staff's assessment of Entergy's SAMA analysis reveals that they have no qualms with Entergy's source term based on the MAAP code.[248] 140-ee-SM

Second, Entergy significantly underestimated off-site costs resulting from a severe accident at Indian Point because it failed to adequately consider the uncertainties in its consequence calculations resulting from meteorological variations by only using mean values for population dose and offsite economic cost estimates.[249] Entergy's uncertainty analysis for its estimate of the internal events core damage frequency ("CDF") uses an inconsistent approach and omits 140-ff-SM

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[242] Riverkeeper's Contention EC-2, filed in the relicensing proceeding, but rejected by the Atomic Safety and Licensing Board raised this issue, which was supported by two expert reports: Edwin S. Lyman Expert Report, *A Critique of the Radiological Consequence Assessment Conducted in Support of the Indian Point Severe Accident Mitigation Alternative Analysis* (Nov. 2007) ("Lyman, IP SAMA Analysis Report"); Edwin S. Lyman Expert Report, *Chernobyl on the Hudson? The Health and Economic Consequences of a Terrorist Attack at the Indian Point Nuclear Plant* (Sept. 2004), *available at* http://www.riverkeeper.org/document.php/611/11302007_EL_Lym.pdf ("Lyman, Chernobyl on the Hudson"). *See* Riverkeeper Petition for Hearing at 68-74.

[243] *See* Entergy's ER § 4.21.

[244] *See* Riverkeeper Petition for Hearing at 68-70.

[245] *See* Riverkeeper Petition for Hearing at 68-70; Lyman, IP SAMA Analysis Report.

[246] *See* Riverkeeper Petition for Hearing at 68-70; Lyman, IP SAMA Analysis Report.

[247] *See* Riverkeeper Petition for Hearing at 69; J. Lehner et al., *Benefit Cost Analysis of Enhancing Combustible Gas Control Availability at Ice Condenser and Mark III Containment Plants*, at 17 (Final Letter Report, Brookhaven National Laboratory, Dec. 23, 2002) (ADAMS Accession Number ML031700011).

[248] *See* DSEIS, Exhibit G.

[249] *See* Riverkeeper Petition for Hearing at 70-71; Lyman, IP SAMA Analysis Report.

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consideration of the uncertainties associated with other aspects of its risk calculation, including uncertainties associated with meteorological variations, which are found to be greater than the CDF uncertainties.[250] It is unreasonable to ignore such variations in the SAMA analysis.[251] However, the NRC Staff once again did not identify this as a deficiency with Entergy's SAMA analysis. In fact, the NRC Staff specifically found that the "approach taken for collecting and applying meteorological data in the SAMA analysis is reasonable."[252] Moreover, the NRC Staff stated that it "based its assessment of offsite risk on the CDF's and offsite doses reported by Entergy."[253] Accordingly, the NRC Staff has not addressed this defect in the SAMA analysis.

Third, Entergy significantly underestimated off-site costs resulting from a severe accident at Indian Point by inappropriately using $2,000/person-rem dose conversion factor.[254] The $2,000/person-rem conversion factor is intended to represent the cost associated with the harm caused by radiation exposure with respect to the causation of "stochastic health effects, i.e., fatal cancers, nonfatal cancers, and hereditary effects."[255] The use of this conversion factor in Entergy's SAMA analysis leads to a serious underestimation of the population-dose/health-related costs of a severe accident at Indian Point.[256] This is because it (i) does not take into account the significant loss of life associated with early fatalities from acute radiation exposure that could result from some of the severe accident scenarios included in Entergy's risk analysis, i.e. deterministic effects and (ii) it underestimates the total cost of latent cancer fatalities that would result from a given population dose because it fails to take into account the fact that some members of the public exposed to radiation after a severe accident will receive doses above the threshold level for application of a dose- and dose-rate reduction effectiveness factor ("DDREF").[257] Thus, the single cost conversion factor used is not appropriate when some members of an exposed population receive doses for which a DDREF would not be applied.[258] Yet, the NRC Staff had no problem with Entergy's dose conversion factor. The NRC Staff explicitly accepts Entergy's use of the $2000/person-rem factor.[259] As such, the NRC Staff has failed to address this defect in the SAMA analysis.

The above-discussed deficiencies in the SAMA consequence analysis significantly undervalues the off-site costs of severe accidents.[260] Entergy's erroneously low cost estimate has, therefore, led it to underestimate the benefits of SAMAs that would mitigate or avoid the environmental impacts of severe accidents.[261] The NRC Staff's adoption of Entergy's methodology and

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[250] *See* Riverkeeper Petition for Hearing at 70-71; Lyman, IP SAMA Analysis Report at 4.
[251] *See* Riverkeeper Petition for Hearing at 70-71; Lyman, IP SAMA Analysis Report.
[252] DSEIS, Exhibit G, at G-18.
[253] DSEIS, Main Report § 5.2.2, at 5-6.
[254] *See* Riverkeeper Petition for Hearing at 68-74; Lyman, IP SAMA Analysis Report.
[255] *See* Riverkeeper Petition for Hearing at 71-74; Lyman, IP SAMA Analysis Report at 5, NUREG-1530, *Reassessment of NRC's Dollar Per Person-Rem Conversion Factor Policy* (1995).
[256] *See* Riverkeeper Petition for Hearing at 73; Lyman, IP SAMA Analysis Report at 6, 10.
[257] *See* Riverkeeper Petition for Hearing at 71-74; Lyman, IP SAMA Analysis Report at 5. The DDREF is a factor that reflects the reduced potency of radiation to cause cancer at low doses or low dose rates. *See* Riverkeeper Petition for Hearing at 72, n.110.
[258] *See* Riverkeeper Petition for Hearing at 71-74; Lyman, IP SAMA Analysis Report at 5.
[259] DSEIS, Exhibit G, at G-28, G-29.
[260] *See* Riverkeeper Petition for Hearing at 68-74; Lyman, IP SAMA Analysis; Lyman, Chernobyl on the Hudson.
[261] *See* Riverkeeper Petition for Hearing at 68-74; Lyman, IP SAMA Analysis; Lyman, Chernobyl on the Hudson.

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analysis fails to address these concerns. Based on the foregoing concerns, the NRC Staff must address these flaws in the SAMA analysis prior to the conclusion of the NEPA review process.

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DSEIS Section 6.0

Inadequate Analysis of Impacts of On-Site Storage of Spent Fuel

Riverkeeper's Scoping Comments explained the need for the NRC Staff to consider "new and significant" information regarding the environmental impacts of spent fuel storage, rather than relying on the outdated GEIS. Riverkeeper cited to increased security concerns due to terrorism and the failure of a long-term disposal solution as material changes affecting the baseline environment since the GEIS was written.[262] Riverkeeper, thus, urged the NRC Staff to assess the future environmental impacts of spent fuel storage in light of these material changes in the Indian Point License Renewal NEPA review process.

However, despite the serious environmental concerns associated with long-term onsite storage of spent nuclear fuel at Indian Point, the NRC Staff has chosen to avoid its responsibilities under NEPA and hide behind the wholly inadequate assessment in the GEIS which has not been updated since 1996, over 13 years ago. Specifically, the NRC Staff states in the DSEIS that it has not identified any new and significant information relating to the finding in the GEIS that "the increase in the volume of spent fuel from an additional 20 years of operation can be safely accommodated on site with small environmental effects through dry or pool storage at all plants" if a permanent disposal solution is not available.[263] This finding is completely unjustified.

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The finding of small environmental effects from spent fuel storage in the GEIS, upon which the NRC Staff relies, stems from the NRC's generic "waste confidence" determination that spent fuel can be safely stored onsite for at least 30 years beyond a plant's operating life, including license renewal.[264] The NRC Staff explicitly cites to this rule, which was codified at 10 C.F.R. § 51.23(a), to evade any meaningful site-specific environmental analysis of decades of spent fuel storage at Indian Point in the DSEIS.[265]

However, given "new and significant" circumstances described herein, the NRC's generic finding of no significant impact can not be relied upon. The NRC's reasonable assurance of safe interim storage, first instituted over a quarter of a century ago and never supported by an environmental assessment or environmental impact statement under NEPA,[266] simply does not hold up given current knowledge and circumstances. Moreover, the NRC recently published a proposed update to its "Waste Confidence Decision" which, if finalized would extend the finding

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[262] *See* Riverkeeper Scoping Comments at 1, 7-12.
[263] DSEIS, Main Report § 6.1 at 6-6 to 6-7.
[264] *Id.* § 6.1 at 6-2, 6-6 to 6-7; GEIS § 6.4.6.3; NRC Staff Scoping Summary Report at 222.
[265] NRC Staff Scoping Summary Report at 222; *see* 10 C.F.R. § 51.23(b) (precluding review of spent fuel storage environmental impacts in any NRC proceeding due to the generic finding of no significant impact).
[266] Final Waste Confidence Decision, 49 Fed. Reg. 34658 ("[T]he Commission finds that NEPA does not require an EIS to support the [temporary storage] finding"); *see also* 40 C.F.R. § 1508.9 (explaining that environmental assessments under NEPA should provide sufficient evidence and analysis for determining whether to prepare an EIS or a FONSI).

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of no significant impact an additional 30 years.[267] A concomitant proposed rule change would omit any reference to how long spent fuel can safely be stored in "temporary" on- or off-site facilities, and simply state that such waste can be so temporarily stored without significant impact "until a disposal facility can reasonably be expected to be available."[268] If these changes are implemented, the NRC's generic finding of no significant impact will essentially be extended to some indefinable point in the future. In any event, foregoing any analysis of impacts of decades of spent nuclear waste storage because of the NRC's "waste confidence" is improper.

The NRC's "confidence" in extended safe temporary storage at reactor sites is largely the result of the NRC's expectation that a long-term repository will become available eventually.[269] However, the viability of Yucca Mountain as a long-term disposal site is becoming more tenuous by the day[270] and there is no other foreseeable long-term repository on the horizon. The NRC essentially admits this in rationalizing its proposed update to the Waste Confidence Decision.[271] Moreover, if Yucca ever does become available, it will take decades to transfer the spent fuel from Indian Point, and it will not accommodate any of the waste generated by Indian Point during the extended licensing term.[272] As such, spent fuel will continue to be stored on-site at Indian Point for the foreseeable distant future.

Yet, the NRC Staff refuses to consider the impacts of this "temporary" storage at Indian Point, pointing to the generic finding of no significant impact, despite the fact that it is completely dated and fails to consider current circumstances. Most blatantly, the NRC's generic assurance of benign spent fuel pool storage is completely undermined by the evidence of leaks at Indian Point.[273] The IP1 pool began leaking as early as the 1990s, and the leaks from IP2 were discovered in 2005.[274] With spent fuel pool degradation already an issue at Indian Point, it is patently absurd to rely on the generic no impact finding to project the long-term integrity of the pools for decades into the future. Given the site-specific situation at Indian Point, a comprehensive environmental impact review of the storage in the pools is necessary during the

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[267] Waste Confidence Decision Update, 73 Fed. Reg. 59,551, 59551, 59563-59569 (Oct. 9, 2008) ("WCD Update").
[268] Proposed Rule on the Consideration of Environmental Impacts of Temporary Storage of Spent Fuel After Cessation of Reactor Operation, 73 Fed. Reg. 59,547, 59551 (Oct. 9, 2008) ("Proposed Rule Change").
[269] Proposed Rule Change, 73 Fed. Reg. at 59549 (referring the WCD Update rationale) (explaining that the original 30 year timeframe for safe interim spent fuel storage was related to the NRC's expectation of when sufficient repository capacity would be available).
[270] *See* Riverkeeper Scoping Comments at 7-9; *see, e.g.*, Remarks of Chairman Klein, Feb. 25, 2008, Waste Management Symposium (explicitly stating that NRC and DOE have "inadequate funds to meet their statutory obligations" relating to Yucca); Lisa Mascaro, *Yucca Funding: Another $100 Million Cut*, Las Vegas Sun (Feb. 27, 2009), *available at*, http://www.lasvegassun.com/news/2009/feb/23/yucca-funding-another-100-million-cut/ (Obama vowing that Yucca will never open as a nuclear waste repository).
[271] Proposed Rule Change, 73 Fed. Reg. at 59549 (explaining how the Commission no longer finds the 30-year timeframe useful since an unknown amount of time will be needed to bring about the necessary societal and political acceptance for a repository site).
[272] Riverkeeper Scoping Comments at 7-9.
[273] *See Liquid Radioactive Release Lessons Learned Task Force Final Report*, U.S. Nuclear Regulatory Commission, at 5-6 (September 1, 2006), *available at* http://www.riverkeeper.org/document.php/539/NRC_Lessons_Lea.pdf (hereinafter "Radioactive Release Task Force Report").
[274] *See* Entergy's Environmental Report, at 5-4; Groundwater Investigation Executive Summary (Indian Point Energy Center, Buchanan, N.Y., Jan. 2008), *available at* http://lic.semo.state.ny.us/Resources/ExecutiveSummary%20GW%20final.pdf.

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relicensing process. Addressing the leaks as the NRC Staff did in the DSEIS is clearly inadequate.[275]

The NRC's embedded confidence in the safety of dry cask storage is also questionable. As Riverkeeper's Scoping Comments discussed, it is not clear what environmental impacts will result if dry casks remain loaded with spent fuel beyond their design life.[276] In light of the fact that these casks will remain on the banks of the Hudson River indefinitely into the future, the NRC Staff must perform a site specific assessment of impacts of such long-term storage.

140-gg-UF contd.

The NRC's generic finding of no significant impact also flies in the face of new information about the risks of accidents from natural forces at Indian Point. Numerous reports and studies show that fuel storage pools are potentially susceptible to fire and radiological release from natural phenomena.[277] As mentioned above, the environmental impacts of a fire in a spent fuel pool may be severe, extending over a geographic area larger than a state's legal boundaries and continuing for decades.[278] Despite such ominous potential consequences, the NRC Staff completely ignores the vulnerability of stored spent fuel at Indian Point to natural phenomenon, such as earthquakes. This is unwise given recent new information about the likelihood of earthquakes near Indian Point.

140-hh-SM

Seismologists at Columbia University's Lamont-Doherty Earth Observatory published a study in August 2008 on earthquakes in the greater New York City Area.[279] The study indicated that the Indian Point nuclear power plant sits on a previously unidentified intersection of two *active* seismic zones.[280] Indeed, several recent earthquakes in New Jersey right near the Ramapo fault, which runs directly underneath Indian Point, starkly demonstrate the active nature of the seismic areas around the facility.[281] The Columbia study further found that historic activity of earthquakes of a magnitude more than 5 has been higher in southeastern New York than in many other areas of the central and eastern United States, and that the fault lengths and stresses suggest

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[275] See discussion above regarding inadequate discussion of leaks.
[276] *See* Riverkeeper Scoping Comments at 9-10.
[277] *See, e.g.*, NUREG-1738, Final Technical Study of 3 Spent Fuel Pool Accident Risk and Decommissioning Nuclear Power Plants (NRC: January 2001); National Academy of Sciences Committee on the Safety and Security of Commercial Spent Nuclear Fuel Storage, Safety and Security of Commercial Spent Nuclear Fuel Storage (The National Academies Press: 2006); Gordon Thompson, Risks and Risk-Reducing Options Associated with Pool Storage of Spent Nuclear Fuel at the Pilgrim and Vermont Yankee Nuclear Power Plants (May 25, 2006); Jan Beyea, Report to the Massachusetts Attorney General on the Potential Consequences of a Spent-fuel Pool Fire at the Pilgrim or Vermont Yankee Nuclear Plant (May 25, 2006).
[278] *See generally*, Gordon Thompson, Risk-Related Impacts from Continued Operation of the Indian Point Nuclear Power Plants (Nov. 28, 2007), at 18-27, *available at*, http://www.riverkeeper.org/document.php/632/1130807_GT_The.pdf ("Thompson Report").
[279] *See* Lynn R. Sykes, John G. Armbruster, Won-Young Kim, & Leonardo Seeber, *Observations and Tectonic Setting of Historic and Instrumentally Located Earthquakes in the Greater New York City-Philadelphia Area*, Bulletin of the Seismological Society of America, Vol. 98, No. 4, pp. 1696-1719 (August 2008) ("2008 Columbia Earthquake Study").
[280] *Id.*
[281] *See, e.g.*, Lawrence Ragonese, *Morris County Shows Signs of Severe Fault Quakes*, The Star-Ledger (Feb. 18, 2009), *available at*, http://www.nj.com/news/index.ssf/2009/02/morris_county_shows_sign_of_st.html.

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magnitude 6 or 7 quakes (which would be 10 and 100 times bigger than magnitude 5, respectively) are "quite possible."[282]

However, despite the availability of such new seismological information, the NRC has never allowed old information, upon which nuclear plants' original licenses were based, to be contested in considering extensions of licenses.[283] There is no certainty whatsoever that the dry casks or spent fuel pools at Indian Point are designed so as to be able to withstand such natural occurrences in light of the new seismic information. Given the recent revelation about the specific seismology surrounding the Indian Point facility, reliance by the NRC Staff on a generic determination of environmental safety for potentially long-term on-site storage of spent fuel is totally inappropriate. The NRC Staff must assess the reasonably foreseeable impacts of continued storage of spent fuel at Indian Point in light of new information about potential accidents from natural forces.

140-ii-SM/UF contd.

The NRC Staff also relies upon the Commission's generic safety determination to further justify its refusal to consider the risks to spent fuel storage from intentional acts of sabotage.[284] However, the likelihood and seriousness of such risks necessitates a thorough review of the impacts of long-term storage of spent fuel at Indian Point. As discussed at length above, future terrorist attacks at Indian Point remain reasonably foreseeable, and such risks must be fully assessed in the relicensing proceeding.

Spent fuel pools are particularly at risk for intentional attacks and would pose significant environmental consequences should such attacks occur. A 2006 study by the National Academy of Sciences on security risks posed by the storage of spent fuel at nuclear plant sites ("2006 NAS Study") confirmed that attacks by civilian aircrafts remain a plausible threat.[285] The study found that attacks on spent fuel pools are attractive targets since they are less protected structurally than reactor cores and typically contain much greater inventories of medium and long-lived radionuclides than reactor cores.[286] The NAS study concluded that storage pools are susceptible to fire and radiological release from intentional attacks.[287] The environmental impacts of a fire in a spent fuel pool may be severe, extending over a geographic area larger than a state's legal boundaries and continuing for decades.[288] Moreover, as discussed above, new studies demonstrate the severe risks of spent fuel pool fires which were not known at the time the NRC issued its "waste confidence" findings.

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[282] 2008 Columbia Study; *see also* Robert Roy Britt, *Large Earthquakes Could Strike New York City* (Aug. 21, 2008), *available at* http://www.livescience.com/environment/080821-new-york-earthquakes.html.
[283] 2008 Columbia Earthquake Study at 1717.
[284] *See* DSEIS, Main Report § 6.1; WCD Update, 73 Fed. Reg 59,551. The NRC's overall general exclusion of issues relating to terrorism in license renewal proceedings is unwarranted, as discussed above.
[285] Nat'l Acad. of Sciences., *Safety and Security of Commercial Spent Nuclear Fuel Storage: Public Report*, at 30 (2006) ("2006 NAS Study").
[286] 2006 NAS Study at 36.
[287] *Id.* at 40, 57; *see also* German Reactor Safety Org., *Protection of German Nuclear Power Plants Against the Background of the Terrorist Attacks in the U.S. on Sept. 11, 2001* (Nov. 27, 2002) (finding that large jetliners crashing into nuclear facilities under different scenarios could cause uncontrollable situations and the release of radiation). Although the NRC considers impacts of spent fuel pool fires outside the scope of license renewal review, as discussed at length above, this conclusion is no longer valid.
[288] *See generally*, Thompson Report, *supra*.

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Moreover, the 2006 NAS Study also concluded that the "potential vulnerabilities of spent fuel pools to terrorist attacks are plant-design specific. Therefore, specific vulnerabilities can be understood only by examining the characteristics of spent fuel storage at each plant."[289] At Indian Point, numerous factors demonstrate the susceptibility of the spent fuel pools to attack, including the fact that the pools are not within containment, but are housed in non-reinforced cinderblock industrial buildings. The fact that the pools are densely packed adds to the risk of catastrophic fire in the event of an attack.[290] Given the foregoing, it is essential that the NRC Staff perform a site-specific assessment of long-term spent fuel pool storage.

The dry casks storing spent fuel at Indian Point also present security concerns. Importantly, the dry casks were designed to ensure safe storage of spent fuel, and not to resist terrorist attacks.[291] The regulations for such storage systems are designed to ensure passive heat removal and radiation shielding during normal operations, off-normal events, and accidents.[292] The 2006 NAS Study found breach of a dry cask from a terrorist attack could potentially result in releases of radioactive material from the spent fuel environment, with offsite radiological consequences.[293] Moreover, while the regulations require that dry storage facilities be located within a protected area of the plant site, the protection requirements for such installations are lower than for reactors or spent fuel pools.[294] In addition to the foregoing, at Indian Point in particular, the dry casks in the Independent Spent Fuel Storage Installation ("ISFSI") are stored on an outdoor concrete pad, lined up in rows that are easily visible from the air and the Hudson River.

Thus, as currently configured, this ISFSI is potentially vulnerable to sabotage. Given that Entergy intends to continue constructing dry casks in this manner and the fact that the spent fuel generated at Indian Point will remain stored that way for the foreseeable distant future, the NRC Staff must assess the risks associated with intentional attacks on the ISFSI. As Riverkeeper's Scoping Comments called for, the NRC Staff should consider the mitigation measures recommended by the 2006 NAS Study to reduce the risk of impacts from intentional attacks, including: additional surveillance to detect and/or thwart attacks, creating earthen berms to protect casks from aircraft strikes, placing visual barriers around storage pads to prevent targeting of individual casks, re-spacing the casks to reduce likelihood of cask-to-cask interactions in the event of aircraft attack, and implementing design changes to newly manufactured casks to improve cask resistance to attack.[295]

Based on the foregoing, a comprehensive site-specific analysis of indefinite on-site spent fuel storage at Indian Point is necessary prior to the end of the NRC Staff's environmental review process. In light of extensive "new and significant" information, the NRC Staff can not rely upon an outdated, baseless generic finding of no significant impact to avoid its obligations under NEPA.

140-jj-SM contd.

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[289] 2006 NAS Study.
[290] *See* Thompson Report, *supra*, at 18-27.
[291] *See* 2006 NAS Study; 10 C.F.R. Pt. 71.
[292] *See* 2006 NAS Study; 10 C.F.R. Pt. 72.
[293] *See* 2006 NAS Study.
[294] *Id.*
[295] Riverkeeper Scoping Comments at 11-12; 2006 NAS Study.

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DSEIS Section 8.0

1. Irrelevance of the NRC Staff's Assessment of Alternatives to the Existing IP2 and IP3 Cooling-Water System

As indicated above, the NRC Staff must defer to NYSDEC's determinations in the SPDES proceeding. This includes NYSDEC's assessment of alternatives to once-through cooling at Indian Point. As such, the NRC Staff's assessment in the DSEIS of alternatives to the existing IP2 and IP3 cooling-water system is totally meaningless. The NYSDEC's 2008 Ruling requires that a supplemental EIS be prepared to examine the environmental impacts that were not already addressed in the SPDES FEIS for closed cycle cooling, the proposed interim measures, and any alternative technologies that Entergy may propose in order to minimize adverse environmental impact at Indian Point.[206] The NRC Staff must defer to the future determinations of NYSDEC relating to cooling-water system alternatives. Problematically, there is no indication whatsoever in the DSEIS that NRC Staff will defer to, and/or coordinate with, the NYSDEC's supplemental EIS, as required by NRC regulations and precedent.[207]

140-kk-AL

Moreover the DSEIS also includes a Restoration Alternative in Section 8.1.2 that is unlawful, as the Second Circuit ruled, in its *Riverkeeper I* and *Riverkeeper II* decisions. Pursuant to *Riverkeeper I* and *Riverkeeper II* "restoration" alternatives both at existing and new facilities are contrary to the CWA. Therefore, Section 8.1.2 should be stricken in its entirety.

140-ll-AL

2. Deficiencies in Assessment of Alternate Energy Sources

As Riverkeeper's Scoping Comments discussed, the NRC Staff is obligated fully consider the use of alternative energy sources in its analysis of alternatives for Indian Point. NEPA,[208] CEQ regulations,[209] NRC regulations,[210] and Appendix to Part 51 mandate that the full and complete environmental impacts of license renewal of IP2 and/or license renewal of IP3, be compared to the projected impacts of all reasonable alternatives. As delineated in CEQ regulations, the obligations include rigorously exploring and objectively evaluating all reasonable alternatives, devoting substantial treatment to each alternative, and including alternatives not within the jurisdiction of the lead agency.[211] Moreover, the scope of the NRC Staff's review encompasses the requirements to which the license renewal applicant is held in its Environmental Report, which includes the requirement to consider "new and significant information."[212]

A review of Sections 8.2 and 8.3 of the DSEIS reveals that the NRC Staff has utterly failed to meet this requirement.

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[206] NYSDEC, 2008 Ruling at 39.
[207] 10 C.F.R. § 51.70 (c); 40 C.F.R. § 1506.2 (b) and (c); *Seabrook*, CLI-78-1, 7 NRC at 36 (1978); *Entergy Nuclear Vt. Yankee*, CLI-07-16, 65 NRC 371, 389 (2007).
[208] NEPA, 42 U.S.C. § 4321 *et seq.*
[209] 40 C.F.R. § 1502.1.
[210] 10 C.F.R. §§ 51.45, 51.71, 51.95.
[211] 40 C.F.R. 1502.14(a) – (f).
[212] 10 C.F.R. § 51.71(a); 10 C.F.R. § 51.53(c)(3)(iv); 10 C.F.R. Part 51, Subpart A, Appendix B; *see also* 40 C.F.R. § 1502.9(c); D(1) (requiring a supplemental EIS if there are "significant new circumstances or information relevant to environmental concerns and bearing on the proposed actions or its impacts."

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a. Reliance on Outdated Energy Information Administration Reports

The DSEIS fails to address significant new information in reliance on outdated energy production and consumption forecasts. The Energy Information Administration of the Department of Energy ("EIA") issues annual reports and frequent updates on energy production, consumption, and prices, the Annual Energy Outlook and associated supplements and updates. The DSEIS states that "the NRC staff uses the EIA's analysis to help select reasonable alternatives to license renewal."[301] The DSEIS, released and dated December 2008, cites and references "Annual Energy Outlook 2007 with Projections to 2030,"[302] "Assumptions to the Annual Energy Outlook 2006 with Projections to 2030,"[303] and "Assumptions to the Annual Energy Outlook 2007, Electricity Market Module."[304] However, the data and information contained in these annual reports have been superseded by the "Annual Energy Outlook 2009 Early Release Overview" ("2009 EIA Report").[305]

The 2009 EIA Report provides substantially changed data and information from that considered and referenced in the DSEIS concerning all of the alternative energy sources. For instance, the DSEIS relied on data from 2007 projecting coal-fired electric generation to rise to 32% of all generated capacity.[306] By contrast, the 2009 EIA Report adjusts the coal-fired electric generation projection to 24%, no significant increase from 2007, and projects reduced outlook and investment in new coal-fired generating capacity.[307] In line with this projection, the 2009 EIA Report projects much lower coal consumption by 2030 than projected even one year ago. Specifically, the 2009 EIA Report projects: (1) an even greater use of renewable energy than even one year ago, growing at 3.3% annually through 2030; (2) the largest source of growth in the electric power sector to be biomass and wind energy sources; and (3) renewable energy generation growth to 14.1% by 2030, even without a renewal of federal subsidies. Most significantly, the 2009 EIA Report projects that non-hydropower renewable power meets 33% of the total generation growth between 2007 and 2030.[308]

The DSEIS contains many assumptions about alternative energy sources derived directly from outdated data from EIA reports dating from 2006 and 2007. At a minimum, the DSEIS must select and evaluate any alternative energy source or combination of sources in light of the new and substantially different data and projections from the 2009 EIA Report. The failure of the NRC to amend the data relied upon for the analysis of alternative energy sources would violate the requirements of NEPA. Because NEPA requires an EIS in order to inform the agency of the environmental consequences of its actions, it is critical that the NRC Staff revisit their conclusions in light of the most recent data.

140-mm-AL

[301] DSEIS, Main Report § 8.3, at 8-33.
[302] DOE/EIA-0383(2007).
[303] DOE/EIA-0554(2006).
[304] DOE/EIA-0554(2007).
[305] DOE/EIA-0383(2009) (released December 2008, full report available March 13, 2009).
[306] DSEIS, Main Report § 8.3, at 8-32.
[307] 2009 EIA Report, Table 1.
[308] AEO2009 Early Release Summary Presentation.

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b. *Coal-Fired Generation Alternative*

The DSEIS devotes a majority of consideration of alternative energy sources to a single alternative that presents the arguably least feasible and least environmentally sound alternative to relicensing. This analysis sets up a "straw man" scenario that skews objective comparisons to the proposed relicensing.

The DSEIS devotes the bulk of analysis of alternative energy sources to an off-site supercritical coal-fired generation source[311] despite the fact that no New York-based utility has pending application for new coal generation in Zones H, I, J, and K.[312] In contrast, the DSEIS gives short shrift to analysis of other alternatives, in particular, renewable energy sources and conservation. This analysis and seeming preference to prove the unsuitability of a single coal-fired source comes at the expense of considering a more effective portfolio of alternative energy sources. Moreover, the analysis of the supercritical coal-fired generation source in the DSEIS fails to satisfy the requirements of NEPA.

The NRC Staff opened its analysis of this alternative by assuming that a new source would have to generate 2200 MW(e) to replace the power produced by Indian Point Units 2 and 3.[313] At the outset, this analysis ignores the fact that energy alternatives must also be considered separately.[314] The NRC Staff failed to consider the effects of this alternative in place of only one of the units at the Indian point facility. It also failed to include evidence of other, non-coal sources of power generation and conservation when completing its analysis.[315] In order to remedy these flaws, the NRC Staff must consider all of the energy alternatives in light of the fact that the license renewal is for two power generating units and with respect to other existing sources and conservation efforts. An analysis of the alternatives must occur for both units together and for each unit separately in order to comply with NEPA.[316]

140-nn-AL

c. *Natural Gas-Fired Generation Alternative*

In its analysis of natural gas-fired combined-cycle generation as an alternative to the license renewal for Indian Point Units 2 and 3, the DSEIS notes that this alternative source operates at "markedly higher thermal efficiencies" and requires less water for condensing cooling, thus requiring smaller cooling towers than the existing facility.[317] However, in its conclusion about the effects of alternative sources, the NRC Staff concludes that the license renewal would have similar impacts to alternatives.[318] Even though the analysis of the natural gas-fired alternative

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[311] DSEIS, Main Report § 8.3.1, at 8-33 to 8-46.
[312] *See* State of New York Contentions Concerning NRC Staff's Draft Supplemental Environmental Impact Statement, Docket Nos. 50-247-LR and 50-286-LR (filed February 27, 2008) at 31.
[313] DSEIS, Main Report § 8.3.1, at 8-34.
[314] Riverkeeper's Scoping Comments discussed at length the need to assess reasonable alternatives to IP2 and IP3 separately. Riverkeeper Scoping Comments at 15-17 (citing NUREG-1437 vol. 1 §§ 1.2, 1.4, 1.8 (requiring a plant, not plants, specific review and a full analysis of alternatives at *individual* license renewal reviews.)).
[315] *See* State of New York Contentions Concerning NRC Staff's Draft Supplemental Environmental Impact Statement, Docket Nos. 50-247-LR and 50-286-LR (filed February 27, 2008) at 31.
[316] *See* Riverkeeper Scoping Comments at 15-17.
[317] DSEIS, Main Report § 8.3.2, at 8-46.
[318] *Id.* § 8.4, at 8-78.

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acknowledged significant environmental benefits, the NRC Staff ignored these factors when making a conclusion based on all of the energy alternatives. The NRC Staff cannot ignore their analysis of a natural gas-fired generation alternative when making a general conclusion on the impacts of alternatives subject to the decision not to renew the licenses for Indian Point Units 2 and 3.

Although the DSEIS addresses the fact that Indian Point Units 2 and 3 could be replaced by natural gas-fired combined-cycle generation at the Indian Point site or other locations, the analysis does not go far enough to show the development of natural gas generation in New York. The DSEIS ignores current construction of natural gas-fired facilities and other new sources that have been planned or permitted.[319] Because of this lack of consideration of the existence of and increased reliance on natural gas-fired power generation, the DSEIS is inadequate. In order to fulfill the requirements of NEPA, the NRC Staff should readdress the natural gas-fired generation alternative in order to reflect current information and trends. Currently, without this analysis, the DSEIS is incomplete.

140-oo-AL contd.

d. Combination of Alternatives

The DSEIS suggests two options in which combinations of energy sources are used.[320] Unfortunately, these two combination alternatives are artificially narrow and arbitrary and fail to take into account additional combinations of alternatives in violation of NEPA. The NRC Staff's shoddy combination assessment in the DSEIS stems from the assumption in the GEIS that the only way to replace a large generating unit like a nuclear power plant is with another similarly large generating unit.[321] This assumption is not valid today, as utilities are meeting demand requirements with a broad combination of conservation, innovative modifications to existing plants, and renewable energy, without considering the construction of new fossil-fuel burning facilities.[322] As Riverkeeper's Scoping Comments explained, a recent study clearly demonstrates that the approximately 2000 MWe generated by Indian Point is replaceable and that if Indian Point were to close, a replacement strategy focusing on conservation, energy efficiency, renewable energy sources, and improving transmission infrastructure, would be technically feasible and achievable with no major disruptions.[323] Another study by the Nuclear Research Institute and the Institute for Energy and Environmental Research found that a reliable U.S. electricity sector is achievable without nuclear power through a combination of conservation and

140-pp-AL contd.

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[319] *See* State of New York Contentions Concerning NRC Staff's Draft Supplemental Environmental Impact Statement, Docket Nos. 50-247-LR and 50-286-LR (filed February 27, 2008) at 32.

[320] DSEIS, Main Report § 8.3.5

[321] GEIS § 8.1 ("NRC has determined that a reasonable set of alternatives should be limited to analysis of single, discrete electric generation sources"); DSEIS, Main Report § 8.3.5 (relying on NRC's recommendation in the GEIS that consideration of alternatives should "be limited to single, discrete generating options"). Riverkeeper's Scoping Comments further explained that this statement in the GEIS does not comply with NEPA's mandate to assess all reasonable alternatives to the proposed action, nor with NRC regulations mandating that *all* reasonable alternatives be identified and considered. *See* Riverkeeper's Scoping Comments at 19-20.

[322] *See* Michael Grunwald, *America's Untapped Energy Resource: Running Efficiency*, Time (Dec. 31, 2008), *available at* http://www.time.com/time/magazine/article/0,9171,1869224,00.html; EPRI, *Assessment of Achievable Potential from Energy Efficiency and Demand Response Programs in the U.S. (2010 – 2030)* (published Jan. 14, 2009); *see also* Riverkeeper Scoping Comments at 15-21.

[323] *See* Riverkeeper Scoping Comments at 18-19 (citing NAS, *Alternatives to the Indian Point Energy Center for Meeting New York's Electrical Power Needs*, June 2006, Chapters 1-5).

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alternative sustainable energy sources.[324] Thus, given the feasibility of developing and implementing energy portfolios that include renewable energy sources, conservation, and energy efficiency measures, the NRC Staff should have considered a broader range of alternatives in the DSEIS. The NRC Staff's continued reliance on the GEIS ignores the significant progress made on energy issues and, in turn, ignores NEPA's mandate to fully consider "new and significant" information in the supplemental EIS.

In particular, the combination assessment completely ignores the known potential of renewable energy sources. The NRC Staff's combination alternatives reflect the NRC's arbitrary belief that there are too many obstacles to implementing sufficient wind power or other renewable energy sources such that these sources could not provide anything more than 200 to 400 MW to replace either or both IP units.[325] Such beliefs are utterly misguided.[326] The NRC Staff also discounts and eliminates any contribution from hydropower or geothermal energy.[327] By limiting the consideration of energy sources in this manner, the NRC Staff's combination assessment it deficient.

140-pp-AL contd.

The NRC Staff's combination alternatives also largely ignores the benefits of energy conservation and efficiency. The NRC Staff has failed to consider New York State's lofty plans and steps taken for reducing the state's electricity usage and increasing energy efficiency.[328] Recent information demonstrates the increasing financial, technical, and political viability of energy conservation.[329] However, by incorrectly assuming that energy conservation would only result in a savings of 800 MW, the NRC Staff arbitrarily fails to consider energy conservation as a full replacement for one or both of the units.[330]

140-qq-AL

Based on the foregoing, the NRC Staff's consideration of renewable energy sources and energy conservation and efficiency is severely wanting. Since the DSEIS does not adequately analyze the availability and environmental impacts of alternatives, the NRC Staff's assessment of the no-action alternative in section 8.2 of the DSEIS is flawed.[331] Indeed, the no-action alternative assessment does not consider and analyze much new information about various measures that would be taken if the no-action alternative were chosen, compared to the detriments that would

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[324] *See* Riverkeeper Scoping Comments at 19 (citing IEER, "Carbon Free and Nuclear Free – A Roadmap for U.S. Energy Policy" (Oct. 2007)).
[325] DSEIS, Main Report § 8.3.5 at 8-65 to 8-66.
[326] *See generally* See State of New York Contentions Concerning NRC Staff's Draft Supplemental Environmental Impact Statement, Docket Nos. 50-247-LR and 50-286-LR (filed February 27, 2008) at 27-28 (citing Report by Synapse Energy Economics, Inc. demonstrating the viability of wind energy and other renewable resources).
[327] *See* DSEIS, Main Report § 8.3.8 at 8-61, 8-62, § 8.3.5, at 8-65, 8-66.
[328] *See* New York State, Public Service Commission, Energy Efficiency Portfolio Standard, http://www.dps.state.ny.us/Phase2_Case_07-M-0548.htm (last visited March 16, 2009); Energy Efficiency Fact Sheet, http://www.ny.gov/governorpress/factsheet_010709b.html; *see generally* State of New York Contentions Concerning NRC Staff's Draft Supplemental Environmental Impact Statement, Docket Nos. 50-247-LR and 50-286-LR (filed February 27, 2008) at 23-29; Riverkeeper Scoping Comments at 20.
[329] *See generally* State of New York Contentions Concerning NRC Staff's Draft Supplemental Environmental Impact Statement, Docket Nos. 50-247-LR and 50-286-LR (filed February 27, 2008) at 24-25
[330] DSEIS, Main Report § 8.2, 8.3.5.
[331] 10 C.F.R. § 51.71; 10 C.F.R. Part 51, Subpart A, Appendix A, Section 4; 40 C.F.R. § 1502.14(a).

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be caused by relicensing of IP2 and IP3.[332] In contrast, the State of New York, with expert support, has laid out examples of combination alternatives using more realistic estimations, which demonstrate that the no-action alternative, i.e., not relicensing IP2 or IP3, is preferable.[333] Such combinations would use mostly renewable energy sources coupled with energy efficiency measures and are readily achievable under existing and identified New York State programs.[334]

Lastly, Riverkeeper's Scoping Comments explained the necessity under NEPA to compare Indian Point's cumulative detrimental contribution to climate change and environmental degradation to safe and clean renewable energy sources.[335] The NRC Staff has not performed such an analysis in the DSEIS.

Overall, the NRC Staff's assessment of energy alternatives to Indian Point in the DSEIS is deficient, and must be fixed prior to the conclusion of the environmental review process under NEPA.

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DSEIS Section 9.0

Based on the foregoing, the NRC Staff has demonstrably not performed sufficient analysis to support its preliminary recommendation "that the adverse environmental impacts of license renewal for IP2 and IP3 are not so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable."[336] In order to comply with the mandates of NEPA, the NRC Staff must consider and address the foregoing comments before issuing the FSEIS.

140-ss-LR

Thank you for your consideration.

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[332] *See generally* State of New York Contentions Concerning NRC Staff's Draft Supplemental Environmental Impact Statement, Docket Nos. 50-247-LR and 50-286-LR (filed February 27, 2008) at 22-29.
[333] *See id.* at 33-34.
[334] *See id.*
[335] *See* Riverkeeper Scoping Comments at 20-21.
[336] DSEIS, Main Report § 9.3, at 9-8.

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Sincerely,

s/

Phillip Musegaas, Esq.
Hudson River Program Director
Riverkeeper, Inc.
828 South Broadway
Tarrytown, NY 10591
914-478-4501 (ext. 224)
phillip@riverkeeper.org

s/

Victor M. Tafur
Senior Attorney
Riverkeeper, Inc.
828 South Broadway
Tarrytown, NY 10591
914-478-4501 (ext. 222)
vtafur@riverkeeper.org

s/

Deborah Brancato
Staff Attorney
Riverkeeper, Inc.
828 South Broadway
Tarrytown, NY 10591
914-478-4501 (ext. 230)
dbrancato@riverkeeper.org

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Comments relating to the Indian Point NRC draft EIS on the Cooling System

P. A. Henderson & R. M. H. Seaby

March 2009

Pisces Conservation Ltd
IRC House
The Square
Pennington
Lymington
Hampshire
SO41 8GN
UK

pisces@pisces-conservation.com

www.ircbouse.demon.co.uk
www.pisces-conservation.com

Phone: 44 (0) 1590 674000
Fax 44 (0) 1590 675599

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Index of figures

1 Summary

This report comments on the US NRC *'Generic Environmental Impact Statement for License Renewal of Nuclear Plants Supplement 38: Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3: Draft Report for Comment'* issued December 2008 (NUREG – 1437), Environmental Impacts of Cooling System. We are only concerned here with aquatic issues, and the impact of the plant's cooling system on fish and crustaceans in particular. The main impacts we look at in this document are entrainment, impingement and the effect of the thermal plume.

The assessment of impact undertaken on the representative important species (RIS) of (17 common fish species and the blue crab) is based on a scoring system that appears completely objective and quantitative. However, detailed examination of the method shows that it makes assumptions about the statistical properties of populations, the impact of cooling water systems on invertebrates prey species, and the relative importance of local and larger-scale changes in population number, that have not been justified and may be arbitrary.

A particular problem concerns the scoring method used to assess the strength of connection; this is a poor measure of the impact of the power plant on the species. The strength of connection is a flawed measure because it is based on rank abundance, furthermore, the lack of importance given to impacts on invertebrates makes low to moderate levels of impact for many species almost inevitable.

Another concern is that the distinction between *'Large'* and *'Small'* population impacts is hard to support from an examination of the overall population trend data.

The use of both river-wide and river segment 4 data (where Indian Point is located), and the use of population decline criteria that include a measure of the deviation from the mean of a normal distribution produce results that do not necessarily reflect the actual population trends, and have the potential to understate the importance of recent changes in abundance.

The comparison of species' proportional rank abundance in the power station kill with that living in the river results in potentially misleading conclusions. For example, the fish that contributes the highest proportion of the number of individuals killed by the power plant, and which is also the commonest in the river, only has a medium strength of connection. In our opinion, such a situation where a fish is killed in high numbers and is locally common would suggest a high degree of linkage.

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A number of the RIS species have a prey score for impingement and entrainment of 1, and thus are unlikely to score highly for the strength of connection. This feature of the scoring protocol is thus central to the final outcome.

A key underlying point to note about the analysis of impingement and entrainment is the reliance on data collected between 1981 and 1990. These data are old and may not reflect current conditions.

NRC staff concludes that thermal impacts associated with the discharge are small to moderate, principally on the grounds that there is no evidence for the scale of the impact. The assertion that, because no appropriate evidence has been collected, there is therefore only a small to moderate impact, is not logical.

NRC staff state that they cannot determine the effects of climate change, particularly in relation to thermal issues. We believe they should have, at the very least, concluded that they needed more data on thermal issues before reaching a conclusion.

Although the NRC does not come to a definite conclusion about the effect of Indian Point on the sturgeon, they are concerned that they continuing operation will have adverse effects.

The cumulative effects of all the impacts on the River Hudson are assessed as large. The power plant, along with other users, must take their share of the responsibility and undertake to do as little damage a possible to an already stressed system.

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2 Introduction

This report comments upon the US NRC *'Generic Environmental Impact Statement for License Renewal of Nuclear Plants Supplement 38: Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3: Draft Report for Comment'* issued December 2008. We will refer to this document below as NUREG-1437. We are only concerned here with aquatic issues, and the impact of the plant's cooling system on fish and crustaceans in particular.[1]

Fish and other species can be impacted in several ways by the operation of the power plant. They can be impinged (caught on the power station screens) as the power station withdraws water from the Hudson, entrained (smaller organisms pass thought the power station undergoing several stressors), or can be effected by the thermal plume produced by the cooling water.

The NRC method of assessing the above impact had several steps.

- Identifying the species to be examined,
- Examining what evidence there was of changes in populations and how useful it was.
- Assigning species to *Small*, *Moderate* or *Large* depending on their potential to be effected.
- Assigning a connection of *Low*, *Medium* or *High*, depending on whether the species was impinged or entrained in different numbers than they were present in the river.
- Combined the potential to be effected with the connection score to assess the impact of Indian Point.

3 Impingement and Entrainment: The scoring system

Impingement and entrainment effects are considered together by the NRC. This is an approach that has merit because the goal is the well-being of the populations as a whole, and not particular age classes.

The possible impact of the power plant is assessed using a scoring system that takes into account changes in species abundance (the trend) and strength of connection (connection), and which attempts to measure the relationship between abundance in the environment and in the power station catch. The analysis is restricted to the 18 RIS species (common fish species and the blue crab). The choice of these species is historic and was designed to represent the overall aquatic resource. They have all been studied over many years. The NRC staff note, as have many others before, that there have been notable declining

140-tt-AE

[1] NUREG-1437, Vol. 1, sections 2.2.8 Aquatic Resources, 4.1 Cooling System, 4.6 Threatened or Endangered Species, 4.8 Cumulative Impacts, 4.9 Summary of Impacts of Operations during the Renewal Term; 8.1 Alternatives to the Existing IP2 and IP3 Cooling-Water System.

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trends in many RIS fish (see Population Line of Evidence column in Table shown in Figure 1). In this respect NRC staff agree with our previous analyses.[2] 140-tt-AE contd.

Table 4-4. Impingement and Entrainment Impact Summary for Hudson River RIS

Species	Population Line of Evidence	Strength of Connection Line of Evidence	Impacts of IP2 and IP3 Cooling System on Aquatic Resources
Alewife	Large	Low to Medium	Small to Moderate
Bay Anchovy	Moderate	Low to Medium	Small to Moderate
American Shad	Large	Low to Medium	Small to Moderate
Bluefish	Large	High	Large
Hogchoker	Large	Medium to High	Moderate to Large
Atlantic Menhaden	Moderate to Large	Unknown(a)	Unknown(b)
Blueback Herring	Large	Low to Medium	Small to Moderate
Rainbow Smelt	Large	Medium	Moderate
Shortnose Sturgeon	Unknown	Unknown(a)	Unknown(b)
Spottail Shiner	Large	Low to Medium	Small to Moderate
Atlantic Sturgeon	Large	Unknown(a)	Unknown(b)
Striped Bass	Small	High	Small
Atlantic Tomcod	Large	Low to Medium	Small to Moderate
White Catfish	Large	Low to Medium	Small to Moderate
White Perch	Large	Medium to High	Moderate to Large
Weakfish	Small	Medium to High	Small
Gizzard Shad	Unknown	Unknown(a)	Unknown(b)
Blue Crab	Small	Unknown(a)	Unknown(b)

(a) [illegible]

(b) [illegible]

Figure 1: A copy of Table 4-4 from NUREG-1437, Vol. 1.

The serious decline in abundance of many species is reflected in the number of '*Large*' classifications in column 2 of the table in Figure 1. We choose two species from Table 4-4, white catfish and weakfish, to illustrate the nature of these declines. These two species also serve to demonstrate that the distinction made in Table 4-4 between '*Large*' and '*Small*' impacts is hard to support from an examination of the overall population trend data.

3.1 White Catfish

The Year Class Reports for the Hudson River Estuary Monitoring Program shows that, river-wide, juvenile white catfish have been in a steep decline in abundance since 1990 (Figure 2).

[2] See "Status of Fish Populations and the Ecology of the Hudson River" and "Entrainment, Impingement and Thermal Impacts at Indian Point Power Station." Copies of these reports were are provided as Attachments 3 and 4, respectively, to the declaration of Dr. Peter Henderson, in support of Riverkeeper's request for a hearing and petition to intervene with respect to the license renewal proceeding for the Indian Point Nuclear Power Station (November 2007).

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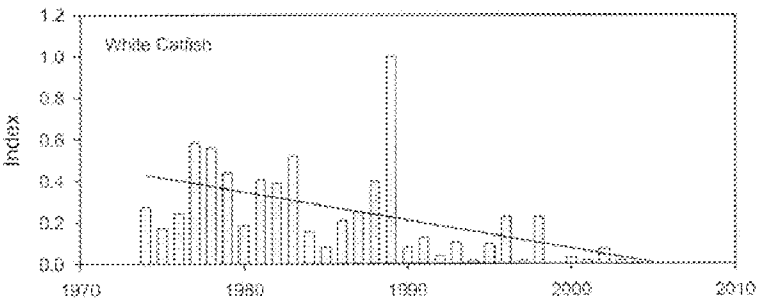

Figure 2: The standardised juvenile index for white catfish in the Hudson, showing a decreasing trend though time.
The trend is significant (a = -0.0136, b = 27.216, F = 14.0414, p = 0.0008) (Seaby and Henderson, 2007)

It is therefore unsurprising that in Table 4-4 (see Figure 1) the population line of evidence is for a 'Large' potential adverse impact. The trend shown in Figure 2, which is statistically significant, certainly seems to correspond with the definition of Large given on page H-33, NUREG-1437, Vol 2:

> *"A LARGE potential for an adverse impact to an RIS population was determined if population trends had slopes that were significantly different from zero (i.e., detectable slope) and had greater than 40 percent of annual abundance outside the defined level of noise (i.e., support for potential impact). This response was considered clearly noticeable, and an adverse environmental impact was likely."*

The fact that 40% of the observations lie outside the standardised mean abundance level observed over the first 5 years of the long-term study is also significant. To quote from page H-36, NUREG-1437, Vol. 2:

> *"Thus, observations outside the boundaries of ±1 standard deviation from the mean of the first 5 years were considered outside of the natural variability (noise). If greater than 40 percent of the standardised observations were outside this defined level of noise, then a potential for adverse impact was considered supported."*

There are two important points to note about this definition. First, it is based on the normal distribution. The abundance of natural populations is never normally distributed. This brings into question the validity of the method.

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140-tt-AE contd.

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Second, the approach is based on events in the first 5 years of the time series. If during this period the population showed unusually great variability, it would make it much harder, if not impossible, to score for a Large potential impact.

3.2 Weakfish

Like white catfish, weakfish have also shown river-wide a steep decline in abundance since 1990 (Figure 3). However, unlike white catfish, for this species Table 4-4 classifies the population line of evidence as 'Small'.

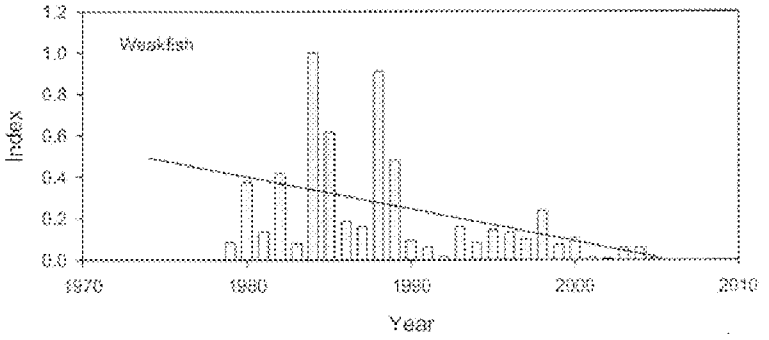

Figure 3: The standardised juvenile index for weakfish in the Hudson showing a decreasing trend though time.
The trend is significant (a = -0.0155, b = 31.0218, F = 7.0811, p = 0.0134) (Seaby and Henderson, 2007)

A 'Small' potential for adverse impact is defined on page H-32 vol 2 as:

> *"A SMALL potential for an adverse impact to an RIS population was determined if population trends had slopes that were not significantly different from zero (i.e., no detectable slope) and had ≤40 percent annual abundances falling outside a predetermined level of noise (defined here as +/-1 standard deviation from the mean of the first 5 years of data). This suggested that the RIS population had not changed detectably over time, and adverse environmental impacts were unlikely."*

The classification of the weakfish population line of evidence as Small in Table 4-4 if difficult to understand as there are clear signs that the population has shown a significant decline. If this is so, the population line of evidence should not be small, irrespective of the noise in the data set. The classification as small seems to arise because the weight of evidence (WOE) score (Table H-15, NUREG-1437, Vol. 2) assesses river-wide, river segment 4 and coastal scores

140-tt-AE contd.

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for potential adverse impact. River-wide there is a moderate adverse impact assessment; see p H-42:

> *"Analysis of abundance index data suggested a large potential for adverse population impacts for three RIS (American shad, white catfish, white perch) and a* ***moderate*** *potential for adverse impacts for bay anchovy, blueback herring, Atlantic tomcod, and* ***weakfish*** *)."*

However, within river segment 4 the impact is only assessed as 'Small'. The final result is an overall 'Small' level of impact.

Weakfish are mobile, migratory predators that never complete their life cycle within river segment 4. We therefore can see no justification for including the river segment 4 analyses in an assessment of adverse population trends.

We conclude therefore that the WOE scoring system, which uses both river-wide and river segment 4 data, and uses population decline criteria that include deviation from the mean of a normal distribution, produces results that do not necessarily reflect the actual population trends, and have the potential to understate the importance of recent changes in abundance. Examination of the river-wide abundance trends for white fish and weakfish indicates that both species have, since 1990, appreciably declined in abundance. Yet while the decline in white catfish is classified as 'Large', that in weakfish is 'Small'. Such differences are more a reflection of the arbitrary nature of the statistical and quantitative approach taken, than a real difference in the state and health of the populations.

140-tt-AE contd.

3.3 *Problems with the assessment of the strength of connection line of evidence*

In comparison with the evidence from the trends resulting in the population line of evidence shown in column 2 of Table 4-4 (Figure 1), the final impact assessment in the right hand column only shows a large effect for one fish, the hogchoker. There is also a moderate to large effect for a single species, white perch. The reason why so few of the large trends are translated into a large impact relates to the strength of connection measure in the third column of the table. A consideration of this measure and how it is computed is therefore of key importance.

From NUREG-1437 Vol. 2 (page H-29) we have this description of how strength of connection is measured.

> *"Impingement and/or entrainment can also remove and reintroduce RIS prey into the aquatic system in a manner that alters food web dynamics and produces indirect effects that may result in decreased recruitment, changes in predator-prey*

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relationships, changes in population feeding strategies, or movements of populations closer to or farther away from the cooling system intakes or discharges. Staff based the analysis of impingement on the concordance of two ranked proportions. The first proportion was the ratio of the number of YOY and yearling fish of each species impinged in relation to the sum of all fish impinged. The second proportion was the ratio of each species abundance in the river near IP2 and IP3 relative to the total abundance of all 18 RIS. A large rank for both proportions would mean that the proportion impinged for the given RIS and the proportion abundance in the river were both large. The ratio of these two ranks would then be close to 1, suggesting that the stationary sampler was sampling proportionately to the abundance in the river (a medium strength of connection)."

The first point to note is that the analysis is undertaken by comparing a species' **proportional rank abundance** in the power station kill with that living in the river. Rather oddly, a fish that contributes the highest proportion to the number of individuals killed by the power plant, and which is also the commonest in the river, only has a medium strength of connection. In our opinion, such a situation where a fish is killed in high numbers and is locally common would suggest a high linkage. This is a point that needs consideration and critical appraisal. The effect is to reduce the assessment of the power plant's impact on abundant, commonly-caught fish.

The second point to note is that a species which is ranked less common in the power plant kill than in the river will be scored small to moderate. The key point is that the power plant kill may actually reflect the abundance in the river, however the rank could decline if other species are killed in unusually high numbers. Thus, each species is not being fairly assessed on its own merits.

We will now examine the generation of these assessments of the strength of connection line of evidence in more detail. Figure 4 shows the Weight of Evidence for the Strength of Connection table.

140-tt-AE contd.

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Table I-32 Weight of Evidence for the Strength-of-Connection Line of Evidence Based on the Result Scores of Low = 1, Medium = 2, and High = 3

Measurement	Impingement Result Score		Entrainment Result Score		WOE Score[b]	Strength of Connection
	RIS	Prey	RIS	Prey		
Use and Utility[a]	1.5	2.0	1.0	2.1		
Alewife	2	1	2	1	1.5	Low to Medium
Blue Backerel	2	1	2	1	1.5	Low to Medium
American Shad	2	1	2	1	1.5	Low to Medium
Bluefish	1	2	1	2	2.0	High
Hogchoker	1	2	1	2	2.0	High
Atlantic Menhaden	Unknown	1	Unknown	1	Unknown	Unknown
Rainbow Smelt	2	1	2	1	1.5	Low to Medium
Rainbow Smelt	2	1	3	1	1.5	Medium
Shortnose Sturgeon	Unknown	1	Unknown	1	Unknown	Unknown
Striped Bass	1	2	1	2	2.0	Low to Medium
Atlantic Sturgeon	Unknown	1	Unknown	1	Unknown	Unknown
Striped Bass	3	4	2	3	2.5	High
Atlantic Tomcod	2	1	2	1	1.5	Low to Medium
White Catfish	2	1	2	1	1.5	Low to Medium
White Perch	2	2	2	2	2.0	Medium to High
Yellow Perch	2	2	2	2	2.0	Medium to High
Gizzard Shad	Unknown	1	Unknown	1	Unknown	Unknown
Blue Crab	Unknown	1	Unknown	1	Unknown	Unknown

[a] Use and Utility: Low = 1.5, Medium = 1.5 but < 2.0, High = 2.0
[b] WOE Score: Small = 1.0, Small-Medium = 1.5, Medium = 1.5 but < 2.0, Medium-Large = 2.0, Large = >2.0

Figure 4: A copy of Table I-32 from NUREG-1437, Vol 2, page I-47.

We will illustrate weaknesses with the approach taken using, as above, a specific example from the list of RIS species.

3.4 *Rainbow smelt*

Juvenile rainbow smelt have disappeared from the survey since the mid 1990s (Figure 5), and it is therefore unsurprising that Table 4-4 assesses the population line of evidence as *'Large'*. However, the impact of Indian Point 2 and 3 is assessed as moderate because the strength of connection is assessed as *'Medium'*.

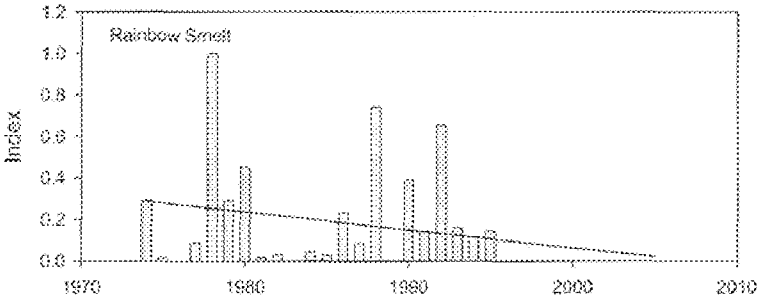

Figure 5: The standardised juvenile index for rainbow smelt in the Hudson.

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140-tt-AE contd.

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Examination of Table I-32 (Figure 4) shows why the overall impact is only 'Moderate'. This table shows that both the impingement and entrainment of rainbow smelt has been appreciable, and entrainment has been given the highest score possible of 4. However, the strength of connection is only medium because both the impingement and entrainment prey scores are 1. The reason for this is stated in NUREG-1437, Vol. 2 page I-41.

> *"All remaining YOY RIS eat plankton, zooplankton, benthic invertebrates, and amphipods. These prey were assumed to be unaffected by the cooling systems, and a low strength of connection was concluded."*

This example demonstrates that an unsubstantiated and unproven assumption, that invertebrate prey species are not affected by the cooling water system, leads in turn to the conclusion that the rainbow smelt, a species which has effectively disappeared from the data in recent years and has been assessed as potentially highly impacted by entrainment, is only given a moderate impact in Table 4-4.

Before a conclusion of this nature could be justified, the assertion that the cooling water system has no impact on invertebrate prey species needs to be demonstrated. There is considerable evidence that large numbers of invertebrates are entrained and potentially killed by the cooling water system. There is therefore no reason to believe that invertebrate prey species such as amphipods are not adversely affected. This impact may extend beyond entrainment effects as the heated discharge water may also adversely affect them.

140-tt-AE contd.

3.5 Other species

Examination of Table I-32 (Figure 4) shows that a number of the RIS species have a prey score for impingement and entrainment of 1, and thus are unlikely to score highly for the strength of connection. This feature of the scoring protocol is thus central to the final outcome. The Atlantic tomcod makes a telling further example. The tomcod population shows considerable year-to-year variation, but appears to be in long-term decline (Figure 6). The average standardised index from 1975 until 1995 is 0.158; in comparison the index for the last ten years of sampling (1996-2005) is only 0.0617. In the last 10 years, only 2001 produced a good recruitment, although there are signs of a recent slight improvement in tomcod numbers.

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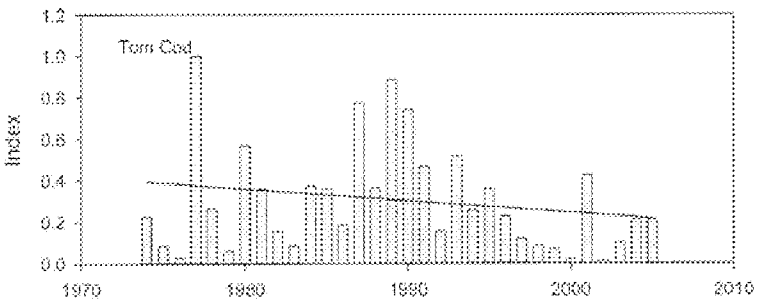

Figure 6: The standardised juvenile index for tomcod in the Hudson showing a decreasing trend though time. (Seaby and Henderson, 2007)

While the population line of evidence for a decline is large, the invertebrate prey of this species is primarily responsible for the low-to medium strength of connection and the final conclusion that the impact is small to moderate.

4 The age of the data

A key underlying point to note about the analysis of impingement and entrainment is the reliance on data collected between 1981 and 1990. These data are old, and may not reflect current conditions. Further, there are hints that the NRC staff did wonder if the data reflected present conditions. For example they noted that the data showed a declining dominance of RIS species:

> *"Until 1984, the RIS fish made up greater than or equal to 95 percent of all impinged taxa. This percentage has significantly decreased at a rate of 0.8 percent per year (linear regression; n = 16; p = 0.002) from 1985 to 1990."*

If impinged data were available for 2008 would we find that the impinged fish had changed even more? The risks inherent with the use of old data are not addressed.

It is worth noting that, although the impingement and entrainment data are over 17 years old, the population data that shows the decline in so many of these species is current. The differences in the population of fish between the 1990s and the present are great.

140-tt-AE contd.

5 Threatened and Endangered Species

The NRC staff review the number of shortnose and Atlantic sturgeon that are impinged at Indian Point. The data used to assess the impact are old, and the lack of monitoring of impingement means that they do not know if current impingement rates are similar to those between the 1970s and 1990s. In addition, they admit that they cannot assess the thermal impact on these species (page 4-51). Given these large uncertainties the NRC staff come to no conclusion on the impact of Indian Point on theses species, giving a range of small to large for the future impacts.

140-uu-TS

6 Potential Mitigation Options and Cumulative Impacts

In section 4.1.5 the NRC staff state that they believe that the continued operation of Indian Point will have an adverse effect on the aquatic system of the lower Hudson River; we agree with this statement. However, they then go on to review some of the potential mitigation methods including many that are not viable method for this facility; we believe this review of mitigation options is meaningless. .

140-vv-AE

Finally, the cumulative adverse impacts of the many factors that affect the Hudson River are considered in section 4.8.1. The NRC staff conclude that the continued operation of Indian Point will have a large impact on some of the species examined, and could be detrimental to the shortnose sturgeon. They also consider that the effects of climate change could be substantial and are an important component of the likely adverse impact.

When all the various factors, including the operation of Indian Point, were considered (p4-58) the overall effects were considered large. Clearly, the Indian Point power plant must take its share of the responsibility and undertake to do as little damage a possible to an already stressed system.

140-ww-AE/CI

7 Thermal impacts

In NUREG-1437, Vol. 1, page 4-27 NRC staff conclude that thermal impacts associated with the discharge are small to moderate, principally on the grounds that there is no evidence for the scale of the impact:

> *"In the absence of specific studies, and in the absence of effects sufficient to make a determination of a LARGE impacts, the NRC staff concludes that thermal impacts from IP2 and IP# could thus range from SMALL to MODERATE depending on the extent and magnitude of the thermal plume, the sensitivity of various aquatic species and lifestages likely to encounter the thermal plume, and*

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the probability of an encounter occurring that could result in lethal or sublethal effects."

The assertion that, because no appropriate evidence has been collected, therefore there is only a small to moderate impact is not logical.

Linked to thermal impacts must be a consideration of climate change impacts. The following conclusion is reached in FI-60:

"Thus, the NRC staff has concluded that the cumulative effects of climate change cannot be determined."

We therefore have the odd situation where they are willing to conclude that thermal effects are small to moderate and can therefore be dismissed, yet they cannot determine the effects of climate change. We believe they should have, at the very least, concluded that they needed more data on thermal issues before reaching a conclusion.

140-xx-AE contd.

8 Conclusion

The assessment of impact on the RIS species is based on a scoring system that initially appears objective and quantitative. However, detailed examination of the method shows that it makes assumptions about the statistical properties of populations, the impact of cooling water systems on invertebrates and the relative importance of local and larger scale changes in population number, that have not been justified.

A particular problem concerns the scoring method used to assess the strength of connection; this is a poor measure of the impact of the power plant on the species. The strength of connection is a flawed measure because it is based on rank abundance, furthermore the lack of importance given to impacts on invertebrates makes low to moderate levels of impact for many species almost inevitable.

The data relied on to measure impingement and entrainment is old, and many populations have shown marked changes since that period. This brings into question the reliability of the conclusions when applied to the future.

Although the NRC does not come to a definite conclusion about the effect of Indian Point on the sturgeon, they are concerned that they continuing operation will have adverse effects.

The cumulative effects of all the impacts on the River Hudson are assed as large. The power plant, along with other users, must take their share of the responsibility and undertake to do as little damage a possible to an already stressed system.

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140-yy-AE

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9 References

Seaby, R M H and Henderson, P A, 2007. The status of fish populations and the ecology of the Hudson. Prepared for Riverkeeper, New York.

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

FEB 24 2009

David J. Wrona, Branch Chief
Projects Branch 2
Division of License Renewal
Office of Nuclear Reactor Program
US Nuclear Regulatory Commission
Washington, DC 20555-0001

RE: Biological Assessment for License Renewal of the Indian Point Nuclear Generating Unit Nos. 2 and 3

Dear Mr. Wrona:

This correspondence responds to a letter dated December 22, 2008 (received January 2, 2009) regarding the initiation of formal consultation for the proposed renewal by the US Nuclear Regulatory Commission (NRC) of the Indian Point Nuclear Generating Unit Nos. 2 and 3 (IP2 and IP3) operating licenses for a period of an additional 20 years pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended. The current operating licenses for these units expire on September 28, 2013 (IP2) and December 12, 2015 (IP3). Consultation with NOAA's National Marine Fisheries Service (NMFS) regarding the proposed license renewal is appropriate as the action may adversely affect the federally endangered shortnose sturgeon (*Acipenser brevirostrum*). Accompanying your letter was a Biological Assessment (BA) evaluating the impact of the proposed renewal on federally endangered shortnose sturgeon (*Acipenser brevirostrum*), as well as a copy of the *Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 39 Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3 Draft Report*. NMFS has completed an initial review of the BA and draft EIS and has determined that we have not received all of the information necessary to initiate consultation. To complete the initiation package, we will require the information outlined below.

Section 4 of the BA contains life history and status information for shortnose sturgeon. Several corrections are necessary in this section. In the Hudson River, shortnose sturgeon spawn when water temperatures are between 8 and 15°C, which typically occurs in April. Recent information suggests that the population estimate calculated by Bain, and included in the BA, likely overestimates the number of shortnose sturgeon in the Hudson River. Dr. Katherine Hattala, a

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biologist with the State of New York, has examined the data used by Bain and determined that a more appropriate estimate is approximately 30,000 adult shortnose sturgeon.

Section 4.3.2 of the BA assesses the impact of impingement on shortnose sturgeon. The BA contains a summary of the available information on impingement of shortnose sturgeon (Table 2). NMFS requests that NRC staff provide the following information in regards to Table 2: (a) for each year, indicate the level of monitoring effort (e.g. weekly for six months, etc.); (b) for each year when there is no number recorded, indicate whether that was due to a lack of monitoring, or due to a lack of capture; (c) indicate the date of impingement; and, (d) indicate the size and condition (i.e., alive, injured or dead) of the impinged fish. It is our understanding that no impingement monitoring has been conducted since traveling Ristroph-type screens were installed at the facility in 1991. As noted in the BA, the lack of information makes it difficult to predict the effects of relicensing and an additional 20 years of operation on shortnose sturgeon. If the NRC is not able to require the applicant to conduct monitoring in support of relicensing, NMFS requests that the NRC provide an estimate, based on the best available scientific information, of the likely number of shortnose sturgeon impinged at the facility with the traveling Ristroph-type screens in use. NMFS expects that the NRC could use the existing impingement data in conjunction with data on the effectiveness of Ristroph-type screens to calculate this estimate. As noted in the BA, another important factor is the mortality rate of impinged sturgeons. NMFS requests that NRC provide an estimate of the mortality rate for impinged shortnose sturgeon. NMFS expects this rate could be calculated based on available mortality rate data for other similar species and/or other facilities where similar screen types have been installed.

Section 4.3.3 of the BA discusses thermal impacts. As noted in the BA, without a model of the thermal plume it is extremely difficult to predict what the level of exposure to elevated water temperatures is for shortnose sturgeon. If NRC is unable to require that the applicant conduct modeling of the thermal plume in support of relicensing, NMFS requests that the NRC use the best available scientific information to estimate the likely temporal and spatial extent to which shortnose sturgeon will be exposed to water temperatures where adverse effects are likely (i.e., greater than 28°C).

It is NMFS understanding that the proposed action is the relicensing of the facility with no modification to the existing intakes. However, in the DEIS, the NRC discusses alternatives including cooling towers. NMFS seeks clarification as to the process by which the NRC will determine whether the installation of cooling towers, or other measures, will be required of the applicant. NMFS also seeks clarification regarding the current requirements of the National Pollutant Discharge Elimination System (NPDES) Permit issued by the State of New York and the potential outcome of the adjudication process currently ongoing regarding this permit, as well as the potential for the State NPDES permit to require cooling towers.

The formal consultation process for the proposed action will not begin until we receive all of the requested information or a statement explaining why that information cannot be made available. We will notify you when we receive this additional information; our notification letter will also outline the dates within which formal consultation should be complete and the biological opinion

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delivered. My staff is available to discuss these information needs with NRC staff. I look forward to continuing to work with you and your staff during the consultation process. If you have any questions or concerns about this letter or about the consultation process in general, please contact Julie Crocker at (978) 282-8480.

Sincerely,

Mary A. Colligan
Assistant Regional Administrator
for Protected Resources

cc: Crocker, F/NER3 (hardcopy)
Damon-Randall, Hartley – F/NER3 (pdf)
Rusanowsky – F/NER4 (pdf)
Logan – NRC (pdf)

File Code: Sec 7 NRC Indian Point Nuclear Plant Relicensing

PCTS: F/NER/2009/00819

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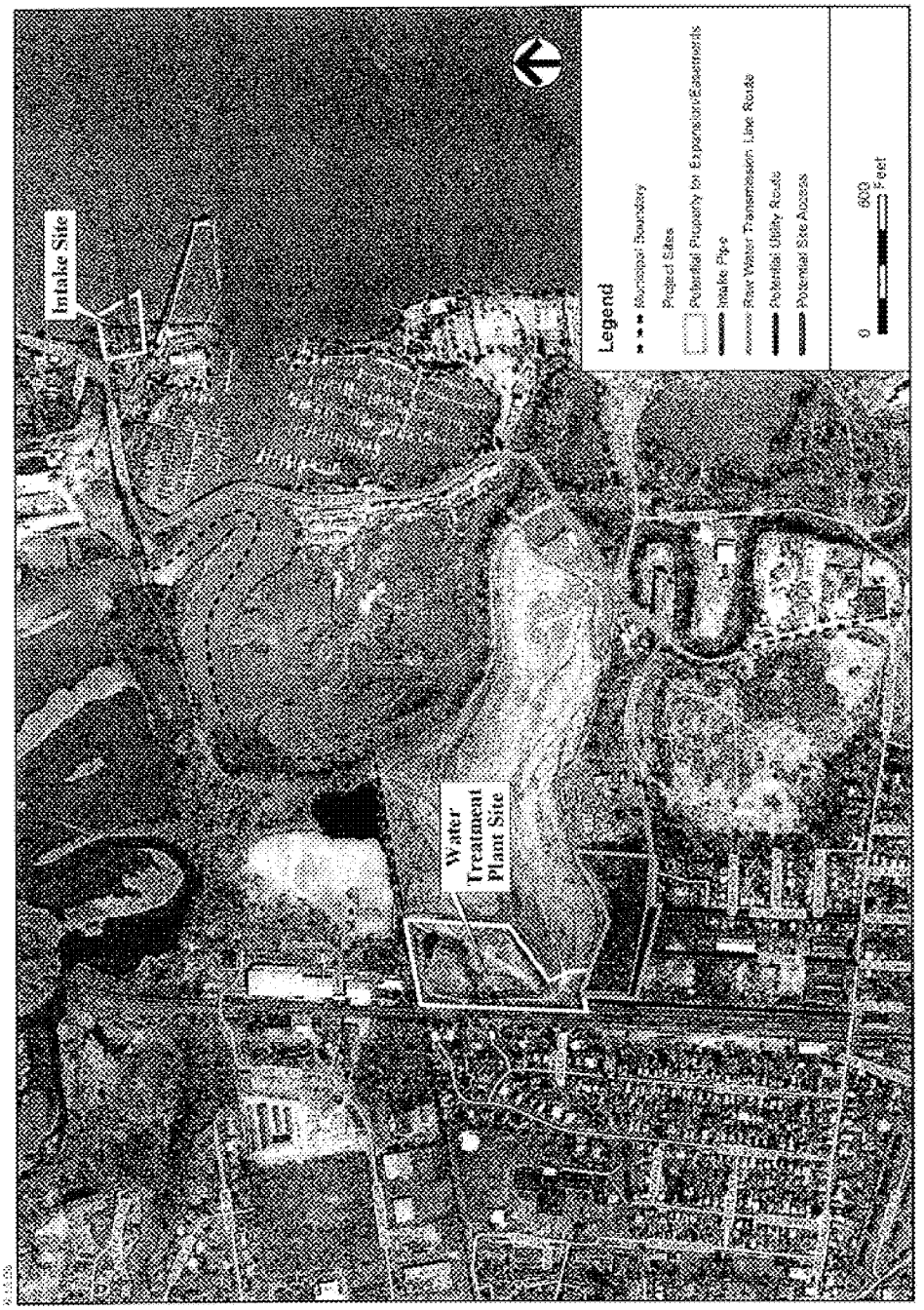

Figure 2-2
Project Site Boundaries
UNITED WATER Haverstraw Water Supply Project

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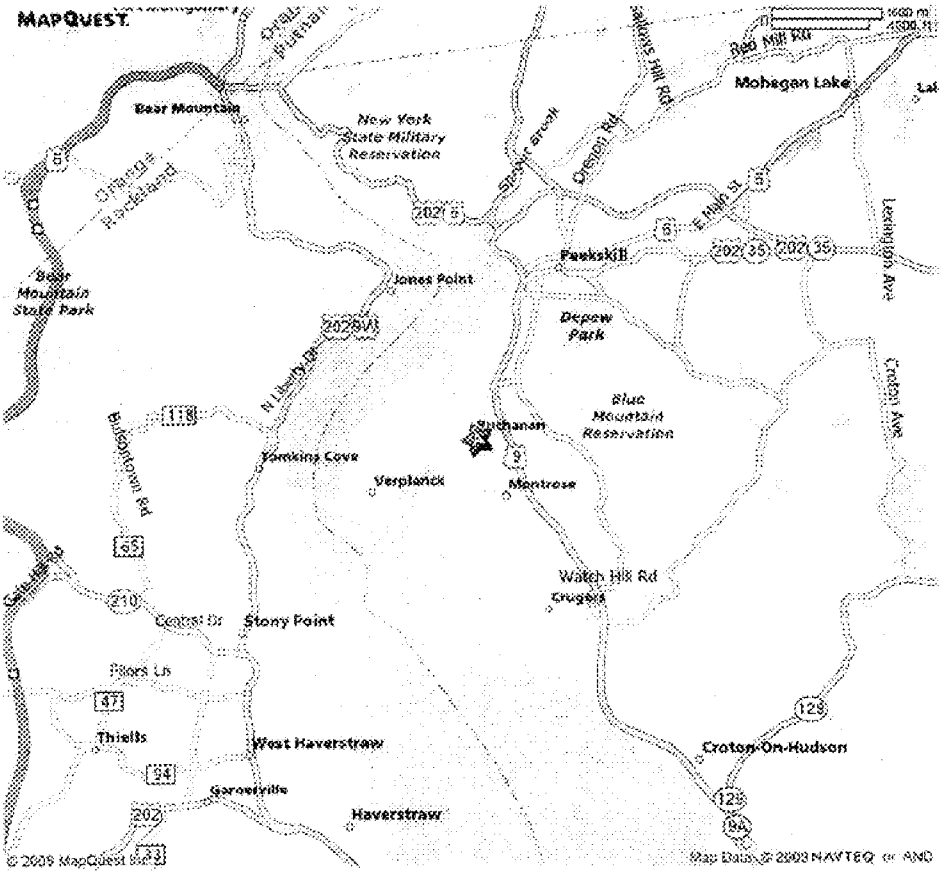

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New York State Department of Environmental Conservation
Director, Hudson Catskill Region, Region 3
21 South Putt Corners Road, New Paltz, NY 12561-1620
Phone: (845) 256-3033 • **FAX:** (845) 255-3042
Website: www.dec.ny.gov

Alexander B. Grannis
Commissioner

March 9, 2009

Ms Rebecca Troutman
Riverkeeper
828 South Broadway
Tarrytown, NY 10591

Dear Ms Troutman:

Thank you for your letter of January 12, 2008 regarding United Water New York, Inc.'s Proposal to Build a Desalination Plant in Rockland County. Your letter expressed the concern that that "every component of this Project warrants the highest scrutiny under applicable federal and state laws, and all relevant policy considerations," and urged the Department to assume Lead Agency status under the State Environmental Quality Review Act for the project.

The Department's regional staff, on February 10, 2009, forwarded to Riverkeeper staff letters addressing the environmental review of this proposal. These letters are attached for your consideration. These letters addressed the Department's intentions regarding the SEQRA review of both the pilot plant and the long-term plant associated with this proposal, and indicated the Department's intent to be the lead agency for such review.

The Department has not received any objections to our lead agency status, and no such objections being submitted as required by law, now assumes the Lead Agency role for the environmental review. In response to your letter, the Department intends to conduct a full and thorough SEQRA review as required by law, and welcomes full and open participation of the public in that process as it moves forward.

Thank you for your interest in the Department's role in the consideration of the proposed project. We look forward to your and others participation.

Sincerely,

William C. Janeway
Regional Director

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ROAR

Religious Organizations Along the River

2009 MAR 20 AM 9:30

RECEIVED

Chief of Rulemaking, Directives and Editing Branch
Division of Administrative Services
Office of Administration, Mailstop T-6D59
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

12/22/08
73 FR 80440
(13)

March 12, 2009

Dear Chief of Rulemaking:

On behalf of and in the name of ROAR, I would like to submit comments on the re-licensing request by Entergy Company for the Indian Point plant.

ROAR, initiated in 1996, is a network of religious Congregations and organizations with property in the Hudson Valley of New York State. We come together to: support one another in using our lands with an attitude of respect for the beauty and integrity of earth; address the interrelated issues of poverty, justice and ecology in this bio-region.

The members of **ROAR** are very concerned and very opposed to the relicensing of the nuclear plant at Indian Point. We are supportive of the **RIVERKEEPER**'s position on the relicensing. } 141-a-OR

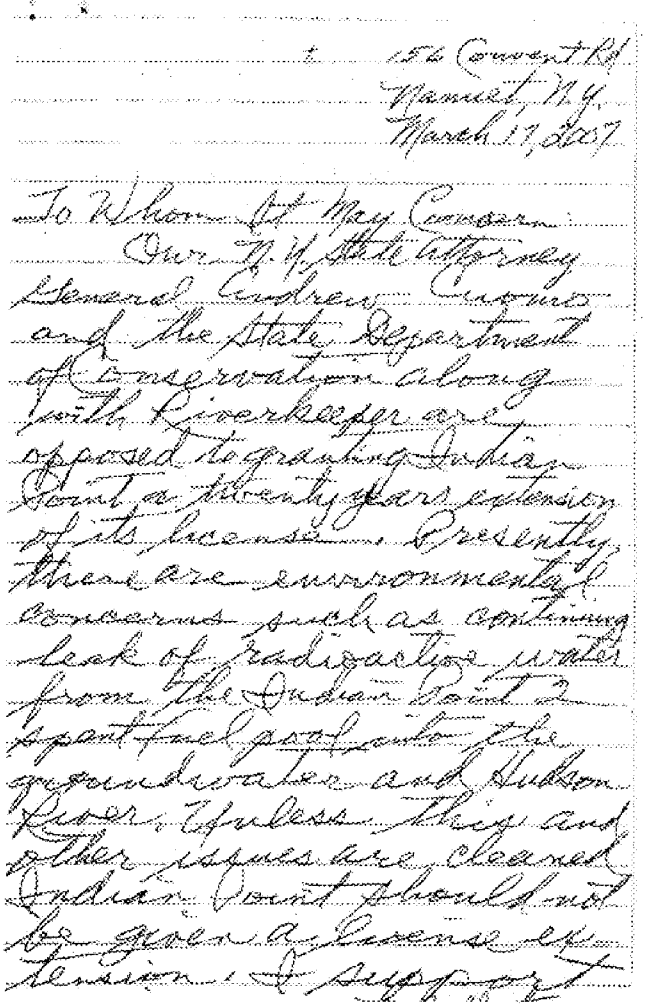
Firstly, the Indian Point plants are located in a densely populated area of our state, only 24 miles from New York City. Safety issues are of prime concern because of the possibility of corrosion with such aging plants. Approximately 20 million people live within a 50 mile radius of the plant. Additionally, the long term storage of thousands of tons of highly toxic nuclear waste in poorly maintained spent fuel pools and "dry casks," are accidents waiting to happen. } 141-b-AM/DE/PA/RW

Secondly, we have grave environmental concerns related to Indian Point plants. The continued leaking of radioactive water from the Indian Point 2 spent fuel pool into groundwater and into the Hudson River is frightening. Residual contamination is caused by the plumes of contaminated water that slowly leach toxic strontium 90 and cesium-137 into the River. Additionally, shortnose sturgeon, an endangered species, are killed when trapped against cooling water intake screens at the plant. } 141-c-AE/LE/RI

We hope that the NRC will refuse the relicensing of the Indian Point power plant. We sympathize with the need for energy and for jobs, but as Section 8 of the DEIS document points out - alternate energy sources are available which will provide both energy and jobs. } 141-d-AL/OR

Thanks you for taking our thoughts into your considerations!

The Members of **ROAR**
(Dorothy Scesny, PBVM; Nancy Erts, OP; Mary Ann Garisto, SC; Dorothy Maxwell, OP; Dorothy Calvani; Carol DeAngelo, SC; Doreen Longres, MM; Ann Braudis, MM; Regina Murphy, SC; Fern Gosselin, MM)



52 Convent Rd
Nanuet, N.Y.
March 17, 2007

To Whom It May Concern:
Our N.Y. State Attorney
General Andrew Cuomo
and the State Department
of Conservation along
with Riverkeeper are
opposed to granting Indian
Point a twenty years extension
of its license. Presently,
there are environmental
concerns such as continuing
leak of radioactive water
from the Indian Point 2
spent fuel pool into the
groundwater and Hudson
River. Unless this and
other issues are cleared
Indian Point should not
be given a license ex-
tension. I support

that the Hudson River
is clean.
I appreciate a response
Thank you

Sincerely
Sister Mary Christine

142-a-LE/OR

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IPRenewalCEmails ML090700174

From: Alice D Rosenfeld [alicedr@juno.com]
Sent: Tuesday, March 10, 2009 5:25 PM
To: IndianPointEIS Resource
Subject: Draft Environmental Impact Statement

Please be informed that as a resident of Westchester County who would be within range of any environmental failure at Indian Point, I strongly oppose renewal of its ability to continue. Their waste pollutes our land and our beautiful Hudson, not to mention damage done to residents in the area.

I truly believe that you cannot in conscience allow this energy facility to continue, and I sincerely hope that you will follow up after any closure requirements to assure that they leave as little damaging "stuff" in our environment as possible.

143-a-GI/OR/RW

Alice D. Rosenfeld
492C Heritage Hills
Somers, NY 10589

MR. RYAN: Good evening neighbors. My name is Tom Ryan. I'm a field construction boilermaker for Local 5, but I assure you I have not been compensated by either them or Entergy to come speak in support of re-licensing. I also say neighbors because I live in the so-called 10-mile kill zone over in Yorktown. My four small children live there with me and go to school there. My wife lives with me and also works there. I've worked in power plants, Long Island, New York City and the lower Hudson Valley. I've been at Indian Point when we unloaded the cask systems for the spent-fuel. I've been actually in the reactors while supporting Entergy and their maintenance department. I don't say this to impress you, but to impress upon you, I speak from experience. Of all the power plants that I have worked in the last nine years, Indian Point is undoubtedly, hands down, the cleanest, safest, most secure and most efficient. Indian Point produces 2000 Mw of clean, low-cost electricity. It's extremely important considering Tomkin's Cove is now closed, hydropower has been closed-down in Sullivan County at the dams and Bowline rumor has it may soon be dormant.

144-a-EC/ SC/SR

Renewable resource research and development is applaudable, but it's not keeping the lights on. Southeast New York will need another 2000 Mw by 2012. That's a conservative estimate by the Independent System Operator. Lack of a Article 10 Power Plant Siting Law is stifling the growth of our power

144-b-EC/ SO

needs in New York State. Especially downstate. As for labor, Indian Point Energy Center is a friend of labor and the middle class. It provides inexpensive power as well as very good paying jobs, benefits and health care to hundreds upon hundreds of qualified employees and contractors. We hear about endangered species. The middle class is the most endangered species economically today and most in need of the economic stimulant called Indian Point. As for environment and security, New York City is the target. I'm not a member of the Central Intelligence Agency, but I don't need to remind you that New York City is the target. Not all the way up here. New York City power plants are shockingly unsecure. The IPEC security is more than adequate in-house. However, you can't have too much. I would definitely urge the NRC, when looking at the re-licensing, to urge Governor Patterson to returning the National Guard to the site as well as increasing the United States Coast Guard patrols both sea and air. And strictly enforcing the no-fly zone.

144-b-EC/SO contd.

144-c-ST

As for foreign oil, most tools in a nuclear power plant because they have the money and such stringent rules and regulations and safety laws, most of the tools are made here in America. You go to other construction sites and they're not. They're made abroad. They're made in China, a communist country. I won't get into politics. The uranium is mined in

144-d-OS

the U.S.. Foreign oil obviously isn't. I'm going to think the NRC for hearing my thoughts and I'll just leave you with this. Talking about the environment. I've got quite a few friends, close friends, and family that served in the front lines, both Afghanistan and the Middle East. There is no reason why American blood should be spilled for foreign oil. Indian Point helps prevent that. Thank you.

144-d-OS contd.

IPRenewalCEmails 1

From: Martyn Ryan [mjr273@gmail.com] 2
Sent: Wednesday, March 18, 2009 3:57 PM
To: IndianPointEIS Resource
Subject: Comments on Indian Point Relicencing

The re licencing of Indian point needs to consider the following environmental impacts which have or could have a devastating effect on our environment:

-Operation of an ageing nuclear power facility beyond its intended life span within a highly populated area. The environmental impact statement needs to include and look at potential dangers from emissions/accident and include modelling to determine the possible outcome. 145-a-AM/PA

-The storage of nuclear waste materials above ground on the banks of the Hudson River- the impact and threat associated with this and the impact in the event of a release/ accident in the storage facility. Direct terrorism or sabotage must be included in the analysis. The cost of this storage and maintenance of this material over its' lifetime needs to be included in the economic analysis. 145-b-RW/ST

-A constant history of leaking of radioactive water from Indian Point into our groundwater and into the Hudson River. The true costs of these emissions to public health with proper studies on children in the surrounding communities must be included. 145-c-HH/LE

-inadequate inspection of underground pipework which is old and beyonds its' useful service life.

-A constant history of leaching toxic strontium 90 and cesium 137 into the River - the potential that the hudson river will be used as a water source for Rockland COunty with this nuclear plant emitted radioactive substances into the river. 145-d-LE/OM/WA

-killing of short nose sturgeon (endangered species) and Atlantic Sturgeon

-the slaughter of billions of fish, eggs, and larvae as a result of Indian Point's outdated cooling water intake system which uses billions of gallons of Hudson River water daily - there is an alternative to this and this must be stopped. 145-e-AE

This re licencing must be denied on the basis that the true cost of operating this plant in its' current location is way beyond any financil benefit. If a new nuclear facility was being planned for this populated are it would not be even entertained as the dangers are too high. We must look at this plant in the same way. 145-f-DE/OR

Tahnks,
Martyn Ryan
153 Hudson terrace
Piermont
NY 10968

MR. RYAN: My name is Martin Ryan. I'm a resident of Rockland County. And I live beside the Hudson River just downstream of Indian point. I'm here tonight representing myself. I'm a chemical engineer by profession. I believe that the impact assessment as presented to this board has many inadequacies. There're too many to really mention all of them here tonight. The process needs to ensure that all of the impacts of Indian Point are catalogued and analyzed. The current assessment fails on the following fronts.

The storage of spent fuel at the Indian Point cite within a densely populated area. The effect of the outdated cooling system on the Hudson River ecosystem and many endangered species. The effect of current groundwater contamination present at the site and the status of underground piping, which has not been addressed at all. The effect of current groundwater contamination and air contamination on our children and families. The effect of accidental and uncontrolled release of materials into our water or air. The NRC has ultimate responsibility to ensure that these issues are adequately addressed. We cannot turn a blind eye to these impacts. Whatever decision is made, it must be made with all the relevant information. The outdated impact assessment that has been presented does not do that and it needs to be updated with accurate and researched information. Thank you.

145-g-OE

MR. SAFIAN: Thank you. My name is Keith Safian. I'm a president and CEO of Phelps Memorial Hospital, right here in Westchester, where I've worked for 19 years. There seems to be a strong Brooklyn contingent, that is my personal homeland, but I really been focused in Westchester, as I said, for almost two decades. I speak tonight as Westchester's 10th largest employer. Phelps Memorial Hospital has over 1500 employees. About 140 more than we had two years ago. We continue to grow. We have over 450 medical staff, 300 volunteers and that adds up to over 2200 people who work at Phelps every week. We serve as a backup hospital for Indian Point and have done that for over 20 years. They train with our staff every year on disaster preparedness. Although we've never received a nuclear related injury from Indian Point since Phelps' been there and since Indian Point has been there.

146-a-EP/ SE

This training, however, really serves a very important purpose of preparing us for chemical and biological disasters. It was very helpful on September 11, 2001 when seven victims from the World Trade Center drove to Phelps Hospital for care for their injuries. It was very helpful when anthrax was discovered in Manhattan and about 200 people reached out to Phelps to ask for help because they were exposed. And thanks to Indian Point, our hospital was prepared for these kinds of disasters, not the things you would think of. Phelps is a very,

very busy and growing hospital. We served over 268,000 patient registrations last year, which was another record as was the year before. But we also spent a million dollars buying heating oil. That cost us 30% more than the year before. All I can say is thank goodness our electricity is not based on foreign oil because otherwise that bill would have gone up. Our hospital expanded in the last two years by physically 100%. We doubled our square footage. We added a new medical office building, a new emergency department, which has all private rooms. We put in a new gigantic outpatient physical therapy and occupational therapy service with an aqua-therapy swimming pool and a parking garage with 750 additional free parking spaces. But despite all of that much increased square footage our electricity bill only went up 12%. 100% more square footage, only a 12% increase in electricity because Entergy and the Indian Point plants were there to give us literally unlimited additional electricity whenever we needed it. There was never a question in our expansion plans that electricity would be a limiting factor.

146-a-EP/SE contd.

146-b-EC

So, as a very large employer and a major health-care provider, Indian Point is critical to our continued growth. But where I wear my health-care provider hat, we're also very concerned about the serious effects of air pollution on our community. We've seen the incidence of lung cancer particularly

146-c-AQ/SR

in women grow dramatically in the last few years. It has really become the most a frequent killer of women, far more than you'd think. So, clean, pollution free nuclear power is the best source of power for the health of our community. Absent adequate electricity, my hospital could not continue to grow. We could not continue to hire more employees. We could not continue to accommodate another 20,000 additional patient visits each year. And given the terrible economic crisis that's facing our state government and Washington, it's unthinkable that we could lose the safe, economically viable and irreplaceable source of critically important electrical power. My last comment is, the last thing you want as our community is for my hospital to divert money from patient care to pay for more higher cost electricity that's fired by imported oil rather than safe and inexpensive nuclear power. Thank you.

146-c-AQ/SR contd.

146-d-EC/SO

ML090700175

IPRenewalCEmails

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From: asambrook466 [asambrook466@aol.com]
Sent: Tuesday, March 10, 2009 5:30 PM
To: IndianPointEIS Resource
Subject: Draft Environmental Impact Statement (EIS) for Indian Point.

I wish to comment on the Draft Environmental Impact Statement (EIS) for Indian Point.

The Draft EIS fails to evaluate the impact of global warming -- including the projected warming of the Hudson River and the projected increase and severity of storms and flooding -- upon Indian Point. Two examples: (1) The warming of the Hudson River will exacerbate the impact of the hot plume of water expelled by Indian Point into the river. (2) Increased storms and flooding will exacerbate the corrosion, rusting, etc. of underground piping and other systems at the plant, thereby increasing the likelihood of more accidental radiation releases such as the one discovered in February 2009. } 147-a-GE/LE

The cost/benefit analysis of the Draft EIS is incomplete and inadequate and constitutes a violation of NEPA. Notably, it relies upon the preposterous conclusion that a major nuclear accident need not be of concern, and even if one occurred, it would not have a significant effect on the environment or public health. This flies in the face of the United States government's (including the NRC's) own former analyses. The NRC must include the postulation of a major radioactive release -- the including the possibility of a meltdown and spent fuel fire -- in its cost/benefit analysis. } 147-b-NE/PA

The Draft EIS is defective in neglecting to evaluate the environmental risks inherent in an aging nuclear facility which has already demonstrably shown signs of **deterioration**. The NRC's disregard of aging as a separate crucial factor, and its reliance upon "aging management" as a failsafe for finding all potentially critical problems, not only flies in the face of standard engineering risk analysis, but is belied by the actual experience at the plant. } 147-c-AM

The failure of the NRC to acknowledge the above represents a deplorable disregard of the NRC mandate to protect human health and the environment and strongly suggests that the Draft EIS is merely a façade for rubberstamping Indian Point's relicensing. } 147-d-OR

Sincerely,

Andrea Sambrook
Mamaroneck, NY

MR. SAMUELS: Good afternoon. My name is Al Samuels. I am President and CEO of the Rockland Business Association. Our organization represents over a thousand businesses in the region. 24% of our members are from outside of Rockland. 7% from Westchester. 7% from Orange County. We represent a very diverse group. We have a very diverse membership base. We speak on their behalf on many issues concerning rebuilding an expansion of infrastructure, affordable health care and of course the reliability and availability of electricity, which is why I come before you today.

Historically, Rockland's residents have rarely viewed Indian Point as being beneficial to the county. While they have participated in the emergency planning process as part of Rocklands officials responsibilities to the E-Plan without either apparent tax or power benefits from the site, some residents and elected officials took the viewpoint there was no viable connection between the site and the county. If recent events have taught us anything, it's that seemingly disconnected pieces of our economy, whether here or thousands of miles away are delicately interconnected and when those pieces break, we all suffer consequences and equally feel the financial impact. The time for Rockland's agnostic feelings towards the future of Indian Point is over.

148-a-AL/SO

Indian Point's power now flows through our lines to

our businesses and our homes. Indian Point employees live in Rockland County. When they spend their hard-earned money, those dollars flow to our shops, to our gas stations, to our restaurants. When they pay their school taxes that money flows to our classrooms and goes towards paying our teacher salaries. We agree with our colleagues in labor. This is not the time to put union workers on the unemployment line.

Now in the face of the mounting budget cuts, the threat of economic collapse, we need Indian Point's, green low-cost electric power more than ever. The lower Hudson Valley receives 18-36% of its electricity from Indian Point. A large amount of power and by any reasonable measure, an amount we cannot easily afford to lose or to replace.

148-a-AL/ SO contd.

Our association is very proud of something we call our green counsel. This group addresses many issues and seeks many green solutions, but business owners cannot rely on empty or fanciful promises of alternative sources of energy. We have businesses to run. Employees to pay. Taxes to make do. We must submit this and pay these things every day. We must have reliable and affordable electricity that runs 24/7 that parallels the demands of our businesses. We need this in order to be competitive in today's economy to survive. The Rockland Business Association fully supports both our counties and our state's energy efficiency reports and there were efforts. We

believe in the investing and the development of new sources of green power. But let's first prove that we can both save enough electricity through new efficiency programs and build enough additional transmission and power producing infrastructure before we casually dismiss 2000 Mw of efficient base-load power right here in the Hudson Valley.

Rockland is no stranger to seeing energy providers close up shop. Plant closures such as the Lovett Plant in Stonypoint have significantly impacted the budgets of our North Rockland communities, of which I am a resident, and our school district. We cannot allow other communities to suffer the same consequences. That is why I am here today to support the continued operation of the Indian Point Energy Center and to urge the Nuclear Regulatory Commission to extend the site license for another 20 years. And I thank you very much for your time.

148-a-AL/SO contd.

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03/10/2009 00:07 NO.285 002

RBA

March 9, 2009

Mr. Samuel J. Collins
Regional Administrator
U.S. Nuclear Regulatory Commission, Region I
475 Allendale Road
King of Prussia, PA 19406-1415

Dear Mr. Collins:

The Rockland Business Association (RBA) represents the concerns of over 1,000 member companies --ranging from major corporations to small business owners. We are proud to stand in strong support of the relicensing of Indian Point.

Indian Point's power flows through our lines, and to our businesses and homes. Indian Point's employees own homes in Rockland County, and when those same employees pay their school taxes, their money flows to Rockland classrooms and goes toward paying teachers' salaries. When Indian Point buys goods and services, Rockland companies fulfill those needs. And when Rockland County's emergency services provide assistance to local residents, it's because investment dollars from Indian Point were given to the county that went beyond just planning and training for the slim possibility of a radiological emergency.

Now, in the face of mounting budget cuts and the threat of economic collapse, we need Indian Point's green, low-cost electric power more than ever. The lower Hudson Valley receives between 18 – 38% of its electricity from Indian Point; a truly large amount of power. This is not an amount that we cannot easily afford to lose or easily replace.

The RBA fully supports both the county's and state's energy efficiency efforts, as well as investing in the development of new sources of green power. However, let's prove we can both save enough electricity through new efficiency programs and build enough additional transmission and power producing infrastructure before we casually dismiss 2,000 megawatts of efficient, clean baseload power right in our backyard.

Rockland is no stranger to watching energy providers close up shop along the Hudson River. Plant closures, such as the Lovett plant in Stony Point have significantly impacted the budgets of local Rockland communities and school districts. We cannot allow more communities to suffer the same fate.

Finally, Entergy has invested the funds necessary to ensure that the plants are maintained and operated in a safe and secure manner. They have also proven themselves as a worthy corporate citizen, and extended a hand of friendship to Rockland County. Entergy has not shied away from meeting with elected officials, the media, business owners and residents, and have proven itself over and over again a responsible operator.

On behalf of the Rockland County Association, we urge you to implement an expedited timeline for final review of Indian Point's application. When the final review commences, I know that you will agree with me that Indian Point has earned a renewed operating license

148-b-AL/SO

Sincerely yours,

Al Samuels
President/CEO
Rockland Business Association

One Blue Hill Plaza / P.O. Box 1567
Pearl River, NY 10965
tel: 845.735.2100 / fax: 845.735.2402
www.rocklandbusiness.org

R O C K L A N D / B U S I N E S S / A S S O C I A T I O N / I N C

TESTIMONY OF AL SAMUELS

PRESIDENT, ROCKLAND BUSINESS ASSOCIATION

MY NAME IS AL SAMUELS. I AM PRESIDENT AND CEO OF THE ROCKLAND BUSINESS ASSOCIATION. THE RBA REPRESENTS OVER 1,000 MEMBER COMPANIES –RANGING FROM MAJOR CORPORATIONS TO SMALL BUSINESS OWNERS.

THIS REFLECTS A DIVERSE MEMBERSHIP BASE AND A WIDE SPECTRUM OF INDIVIDUALS FOR WHOM WE SPEAK WHEN EXPRESSING CONCERNS ABOUT CRITICAL ISSUES FACING THIS REGION SUCH AS REBUILDING AND EXPANDING INFRASTRUCTURE, AFFORDABLE HEALTHCARE, AND THE RELIABILITY AND AVAILABILITY OF ELECTRICITY – WHICH IS WHY I COME BEFORE YOU TODAY.

HISTORICALLY, ROCKLAND'S RESIDENTS HAVE RARELY VIEWED INDIAN POINT AS BEING BENEFICIAL TO THE COUNTY. WHILE THEY HAVE PARTICIPATED IN THE EMERGENCY PLANNING PROCESS AS PART OF ROCKLAND'S OFFICIAL RESPONSIBILITIES TO THE E-PLAN, WITHOUT EITHER APPARENT TAX OR POWER BENEFITS FROM THE SITE, SOME RESIDENTS AND ELECTED OFFICIALS TOOK THE VIEWPOINT THERE WAS NO VIABLE CONNECTION BETWEEN THE SITE AND THE COUNTY.

148-c-AL/SO

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IF RECENT EVENTS HAVE TAUGHT US ANYTHING, IT'S THAT SEEMINGLY DISCONNECTED PIECES OF OUR ECONOMY – WHETHER HERE OR THOUSANDS-OF-MILES AWAY – ARE DELICATELY INTERCONNECTED, AND WHEN THOSE PIECES BREAK, WE ALL SUFFER THE CONSEQUENCES AND EQUALLY FEEL THEIR FINANCIAL IMPACT.

THE TIME FOR ROCKLAND'S AGNOSTIC FEELINGS TOWARD THE FUTURE OF INDIAN POINT IS OVER.

INDIAN POINT'S POWER NOW FLOWS THROUGH OUR LINES AND TO OUR BUSINESSES AND HOMES. INDIAN POINT EMPLOYEES LIVE IN ROCKLAND COUNTY. WHEN THEY SPEND THEIR HARD-EARNED MONEY, THOSE DOLLARS FLOW THROUGH ROCKLAND SHOPS, GAS STATIONS, AND RESTAURANTS. WHEN THOSE SAME EMPLOYEES PAY THEIR SCHOOL TAXES, THEIR MONEY FLOWS TO ROCKLAND CLASSROOMS AND GOES TOWARD PAYING OUR TEACHERS' SALARIES.

WHEN INDIAN POINT BUYS GOODS AND SERVICES, IT'S ROCKLAND COMPANIES FULFILLING THOSE NEEDS ALONGSIDE BUSINESS OWNERS FROM THROUGHOUT THE REGION. WHEN ROCKLAND COUNTY'S EMERGENCY SERVICES ARE PROVIDING ASSISTANCE TO LOCAL RESIDENTS, IT'S BECAUSE INVESTMENT DOLLARS FROM INDIAN POINT

148-c-AL/SO contd.

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WERE GIVEN TO THE COUNTY THAT WENT BEYOND JUST PLANNING AND TRAINING FOR THE SLIM POSSIBILITY OF A RADIOLOGICAL EMERGENCY.

SINCE PURCHASING INDIAN POINT, ENTERGY HAS PROVEN TO BE A WORTHY CORPORATE CITIZEN. ENTERGY HAS EXTENDED IT'S REACH BEYOND THE WALLS OF INDIAN POINT, AND HAS COME ACROSS THE HUDSON TO EXTEND A HAND OF FRIENDSHIP TO ROCKLAND. THE COMPANY HAS NOT SHIED AWAY FROM MEETING WITH ELECTED OFFICIALS, THE MEDIA, BUSINESS OWNERS OR RESIDENTS.

WHEN ROCKLAND OFFICIALS RECENTLY RAISED CONCERNS ABOUT THE COVERAGE AREA FOR THE NEW SIREN SYSTEM, ENTERGY LISTENED AND DID RIGHT BY THE COUNTY AND ITS RESIDENTS.

NOW, IN THE FACE OF MOUNTING BUDGET CUTS AND THE THREAT OF ECONOMIC COLLAPSE, WE NEED INDIAN POINT'S GREEN, LOW-COST ELECTRIC POWER MORE THAN EVER. THE LOWER HUDSON VALLEY RECEIVES 18 – 38% OF ITS ELECTRICITY FROM INDIAN POINT – A LARGE AMOUNT OF POWER, AND BY ANY REASONABLE MEASURE, AN AMOUNT WE CANNOT EASILY AFFORD TO LOSE OR EASILY REPLACE.

BUSINESS OWNERS CANNOT RELY ON EMPTY OR FANCIFUL PROMISES OF "ALTERNATIVE SOURCES OF ENERGY." WE HAVE BUSINESSES TO RUN.

148-c-AL/SO contd.

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EMPLOYEES TO PAY, TAX PAYMENTS TO SUBMIT TODAY AND EVERY DAY. WE MUST HAVE RELIABLE AND AFFORDABLE ELECTRICITY THAT RUNS AROUND THE CLOCK IN PARALLEL TO THE DEMANDS OF OUR BUSINESSES. WE NEED THIS IN ORDER TO REMAIN COMPETITIVE.

THE ROCKLAND BUSINESS ASSOCIATION FULLY SUPPORTS BOTH THE COUNTY'S AND THE STATE'S ENERGY EFFICIENCY EFFORTS, AS WELL AS INVESTING IN THE DEVELOPMENT OF NEW SOURCES OF GREEN POWER, BUT LET'S PROVE WE CAN BOTH SAVE ENOUGH ELECTRICITY THROUGH NEW EFFICIENCY PROGRAMS AND BUILD ENOUGH ADDITIONAL TRANSMISSION AND POWER PRODUCING INFRASTRUCTURE BEFORE WE CASUALLY DISMISS 2,000 MEGAWATTS OF EFFICIENCT, BASELOAD POWER RIGHT HERE IN THE HUDSON VALLEY.

ROCKLAND IS NO STRANGER TO SEEING ENERGY PROVIDERS CLOSE UP SHOP. PLANT CLOSURES, SUCH AS THE LOVETT PLANT IN STONY POINT, HAVE SIGNIFICANTLY IMPACTED THE BUDGETS OF OUR NORTH ROCKLAND COMMUNITIES AND SCHOOL DISTRICT. WE CANNOT ALLOW MORE COMMUNITIES TO SUFFER THE SAME EXPERIENCE.

ENTERGY HAS CONSISTENTLY PROVEN ITSELF A RESPONSIBLE OPERATOR. THEY RUN THE INDIAN POINT ENERGY CENTER WELL BY

148-c-AL/SO contd.

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INVESTING THE FUNDS NECESSARY TO ENSURE THE PLANTS ARE SAFE AND SECURE.

FOR OPPONENTS TO MALIGN ENTERGY'S REPUTATION SIMPLY BECAUSE IT RUNS A FOR-PROFIT BUSINESS IS A BASELESS ARGUMENT, AND GOES AGAINST EVERY PRINCIPAL OF GOOD REASON AND JUDGEMENT. I APPLAUD ENTERGY FOR SURVIVING AND THRIVING IN THIS MISERABLE ECONOMIC CLIMATE. THEY ARE REAPING THE BENEFITS OF THEIR INVESTMENT, AND WE, AS CUSTOMERS, TAXPAYERS AND BUSINESSES ARE CONTINUALLY BENEFITTING FROM THEIR SUCCESS.

THAT IS WHY I AM HERE TODAY TO SUPPORT THE CONTINUED OPERATION OF THE INDIAN POINT ENERGY CENTER AND URGE THE NUCLEAR REGULATORY COMMISSION TO EXTEND THE SITE LICENSE FOR ANOTHER 20 YEARS. THANK YOU.

148-c-AL/SO contd.

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Drew Stuyvenberg
Project Manager
U.S. Nuclear Regulatory Commission

Regarding Supplement 38

While attending Ramapo College of New Jersey I am currently enrolled in an Environmental Assessment class. Our class has had an opportunity to review Entergy's DSEIS Supplement 38 for the license renewal for Indian Point. This has been a worthwhile experience as I have learned a great deal about Indian Point power plant, and the extensive process that must take place for process renewal. Most importantly I have been educated in the area of understanding impact statements and what should be included.

Unfortunately I have discovered a number of pertinent issues that have not been addressed or discussed in full. In the GEIS under NUREG-1437 Supplement 38 2-50 it states, "The angled screen system did not significantly reduce impingement mortality" … Con Edison and the New York Power authority elected to install Ristroph screen system. "No further studies were conducted after the installation of the modified Ristroph system at IP2 and IP3 to determine actual mortality of key species, and no additional impingement monitoring was conducted." So the screens were replaced to reduce impingement, but when they were replaced no study was conducted to see if it is a change for better or for worse. Impingement rates were obviously a large enough issue initially to change the screens so it is extremely important to follow up after replacing them. Thus, a study must be conducted to see the impacts of impingement on the Ristroph screens.

149-a-AE

The second issue I feel needs to be addressed concerns the subsistence fishermen. This is an environmental justice issue that cannot be ignored. It was stated in the DEIS on page 2-109 that, "Contaminated ground water is moving into the Hudson River…Public exposure can occur from the ground water entering the Hudson River through consumption of fish". Continuing on page 2-108 the DEIS states, "The principal exposure pathway to humans is from the assumed consumption of aquatic foods taken from the Hudson River in the vicinity of Indian Point that has the potential to be affected by radiological effluent releases." Are there signs warning the public of where these releases are located, and which spots should not be fished? How might radioactivity released from Indian Point affect the fishery and the safety of fish consumption?

149-b-EJ/HH

Also it is stated in the Draft NUREG-1437, Supplement 38 2-104 that Strontium-90 were potentially plant-related radionuclide detected in some environmental samples. Strontium-90 is being released, but the direct health effects of the releases are not specified. Since it is being released and a potential health hazard all the impacts should be stated. The EPA recognizes the source of Strontium-90 coming from a by-product of the fission of uranium and plutonium in nuclear reactors. Strontium 90 can be absorbed into the body through inhalation, and ingesting along with food and water. When it is ingested 70-80% passes through the body, the remaining 20-30% is deposited in the bones, and 1% is distributed among the blood. Strontium-90 is similar to calcium, which is why it is known as the "bone seeker" and deposited in bone. Internal exposure is linked to bone cancer, cancer of the soft tissue near the bone, and leukemia. New information should be

149-c-HH/LE

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taken into consideration and studied further, for example The Mothers Milk Project. Some members of the public have become concerned with the affects of Strontium-90 and the effect on lactating mothers of humans and animals. The DSEIS stated in Suppiement 38 on page 2-106 from a report done by the New York State Department of Health Monitoring (NYSDOH) in 1993, "No milk sample was collected, as the remaining nearby dairy farm had closed." In 1994 the (NYSDOH) again reported, "No milk samples were collected in 1994, as the last dairy farm closed in 1992." Now it has come to the public's attention that human breast milk, along with other lactating animals may have been exposed to Strontium-90. Particularly given the Mothers Milk Study, it is clear that it is both possible to get milk samples for testing and that the results are such tests are required for the final SEIS. In the DSEIS on page 2-105 states that the low levels f Stronium-90 found are due to atmospheric testing. A study is required to confirm this assumption and to assure that biomagnification does not lead to unexpected concentrations. Such a study will serve as the basis for establishing public trust and peace of mind if done well and contamination is undetected. 149-c-HH/LE contd.

The FGEIS should also attend to the issues of spent fuel rod storage and the viability of evacuation plans. Not having a concrete place to store spent fuel rods or having a viable evacuation plan is completely irresponsible. These are major issues that need an immense amount of attention that are receiving much too little. 149-d-EP/HH/RI

Given the higher vulnerability of women and children, the DGEIS errors in using the 30-year-old white male as the basis of effects modeling. Risk analysis should be based upon impacts to those with greatest vulnerability not the least. This seems to be a way to hide the fact that women and children have a much higher risk to exposure, and gives people a false reassurance.

It is stated in 2-85 Supplement 38 three federally listed species, may or may not be on location. The potential presence of federally listed species must be studied and confirmed or disconfirmed in the FGEIS. 149-e-TS

Thank you for your time,
Julianne Scarola

References

EPA. http://www.epa.gov/rpdweb00/radionuclides/strontium.html. Date accessed 3-4-09

http://www.mothersmilkproject.org/

MR. SEGER: Good evening. My name is Bob Seger. I'm the business manager of Millwright Local-740. For those of you who don't know what a millwright does, we pretty much do the turbines and the generators inside, not only Indian Point but every other powerhouse in the area. I'd like to thank the NRC for the opportunity to speak. I have worked in those plants since 1972, and I can tell you from first-hand knowledge that out of the three owners that I've worked for in those plants, Entergy is by far the best one yet. They've invested millions of dollars in the plant for safety and I can tell you that based on work that I've had to do in there and that my members have to do. I can't tell you how frustrating it is to know the job that you want to do and have somebody come along and stop you because they tell you that you're not doing it safe enough. Entergy's been that way since they took over the plants. From an economical standpoint, I can just tell you that a lot of the people that I think will get up here tonight and have gotten up here prior to this, are probably not people that have or are going to be directly impacted by the plant closing. When some of the gas stations and the delicatessen's start closing because there's no money around here, those are the people that are going to be affected, not the people that live in another area. Over the last 10-years I've had the opportunity to meet with some of the management of Indian Point. And all I keep getting

150-a-SA/SE

150-b-SA/SO

told is safety, safety, safety. I guess there's things I really can't mention that they've told me as far as the things that have been done for safety and security because from what I'm told, they won't let me back in the plant if I do. But, I just can't stress the difference that Entergy has made in these plants. I had to write some things down, which I don't think I've ever done before. 150-b-SA/SO contd.

Entergy is probably under more scrutiny than any nuclear facility that I've ever worked in. I've worked in For Creek, I've worked in Three-Mile Island. Very rarely do you hear anything about either. I think out of all the scrutiny that they've gone through, they have always come out with excellent ratings as to the improvements that they make and the response time to the problems that they've had. I would only suggest to some of people here that if you had trouble with a car or if you had trouble with your house, you wouldn't throw the car in the junkyard or burn it down to the ground. You'd fix it. I believe that that's what Entergy's intentions are and have been and I believe that they'll continue to do it. I'd just like to say on behalf of my members and the rest of the tradesmen that are in this room, thanks for the opportunity to speak. I'll get it out away now. Yes, I'm interested in the jobs that they provide for all of my members and the rest of the organized labor as well as their own employees. But I've said 150-c-SA/SE

it here before, I would not send anybody from my Local into a place that I did not believe safe. I have no problems sending all of them into that facility. Thank you.

150-c-SA/SE contd.

1

Millwright and Machinery Erectors
Local Union No. 740
U.B. of C. and J. of A. — A.F. of L. - C.I.O.
99-07 ATLANTIC AVENUE
WOODHAVEN, NEW YORK 11421
718-849-3636 - FAX 718-849-0070

BOB SEEGER
BUSINESS MANAGER

MEETS 1ST THURSDAY MONTH
FRANK IPPOLITO
RECORDING SECRETARY

March 11, 2009

10/21/08
73 FR 60440
(28)

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Mr. Samuel J. Collins
Regional Administrator
U.S. Nuclear Regulatory Commission, Region 1
475 Allendale Road
King of Prussia, PA 19406-1415

Dear Mr. Collins:

I am writing to you today in support of Indian Point's relicensing.

At a time of great alarm over the real impact of skyrocketing energy costs, Entergy has consistently managed and invested in Indian Point for the long term. This includes making sizable capital expenditures to improve the quality and efficiency of this important facility. — 150-d-EC/SR

Indian Point has consistently been one of, if not the most, scrutinized nuclear facility in the nation and continues to earn high grades for safety and security. It has also earned the respect of its community for its commitment to our growth and prosperity.

Indian Point's commitment to organized, highly skilled labor and to its employees has been well documented over the years with the salaries for employees on par or better in comparison with many other comparable positions within the Hudson Valley. — 150-e-AQ/OP/SO

Indian Point's benefits to the environment are also well documented, with emissions free energy generation as a key reason why New York has some of the lowest per capita carbon emissions in the nation.

Indian Point has worked with the community to make it a better place to live, work and raise a family. It is critical to our energy future and an important economic engine for New York. — 150-f-SO/SR

I urge you to expedite the final timeline for application review and to support the relicensing of Indian Point.

Sincerely yours,

Bob Seeger

Bob Seeger
Business Manager
Millwright Local 740

MS. SEEMAN: Hello, my name is Laurie Seeman. Thank you for this opportunity to speak. I am a resident that lives within 10 miles of the Indian Point Power Plant. I am also a mother of two children. I am an environmental educator that works with children, outdoor education and I teach them about sustainability. I ask you that you do not re-license Indian Point Power Plant. I asked that and the same time I ask that you do that, I'm doing something on my end. I'm teaching children about conservation of energy. When I talk to the children about the power plant, there's absolutely no way I can explain to them why that power plant exists in this Hudson Valley region. There's absolutely not one explanation that makes sense to the heart of a child. 151-a-OR

I also would like address you and tell you that three years after the Three-Mile Island nuclear incident I was there in that vicinity for 11 days making a short independent film. We were in the farmland within view of the towers and when people saw us filming, the residents pulled over and spoke with us. I could not believe the stories that I heard. I was hearing that there is sickness as a result of that power plant. I was aware that there was a complete devastation of community. Spiritual devastation. Financial devastation. I wish the people here that work in these facilities could hear me speak right now because the people in that town were abandoned by 151-b-OS

their government. These people that work in these facilities now do need to know that if there is an incident, the people that are supporting them now will be gone. It's very interesting to know that if that was a mishap at Three-Mile Island those years ago, which was conveniently a term that our media used, then why are those people still 30-plus years later having open mic night once a year for people to stand up and speak about what happened to them at that incident. It's a very significant parallel situation, the people in that town, if they were to hear about the savings that they benefited from would hardly disagree and say they would give up every penny that they have ever made in their lifetime to go back to the day before that that incident occurred. 151-b-OS contd.

I have been to many town hearings about Indian Point. It is my one passionate issue that I have stayed with since the 1980s. I've heard Entergy speak before our Rockland County legislature and explain the benefit of the savings that we enjoy from this power plant. I can't believe that we are gambling on this type of a concept of safety. We are talking about numbers that nobody can agree upon. As a matter of fact, we can't agree on the numbers because so many of them are not factual. I have been to these hearings. I heard very informed people speak about how reports are made on the wrong dates, so that incidents are not pulled in under a certain timeframe which would make 151-c-SA

them red-flagged. So many of these things that we're gambling our future on are based on non-truths. I've been following it along and I'm old enough now to see the longer picture and it's very frightening. 151-c-SA contd.

I would like to address the comment that the doctor made from the hospital. I also heard Dr. Eric Larson speak before our Rockland County Legislature. He has been for twenty-some years head of the emergency department at Westchester Medical. Dr. Larson was also trained in triage for Indian Point Power Plant. He has had an incident there. It's one of the most striking stories I've heard in all of the testimony. They had one member calm there who had his leg caught in a doorway and his protection suit was gashed. Nuclear contamination got into his wound. He was brought to Westchester Medical. OK, now I'm talking one person. They had to close down the emergency room, triage all of the 40 other people to other locations. Their entire medical staff that was available, I think he said 30 people were brought to work on this one person. Eric, Dr. Larson kept saying this was one person. The only treatment they had was to flush him down with water. And where did that water go? It went into the drain and it's a fact. That is a fact. If you want to base your decisions on facts, I would really hardly like you to focus on that particular fact because that one really speaks to my heart and tells me what's true. Thank 151-d-EP

you for this opportunity to speak. 151-d-EP contd.

Oh, one more thing. I'm so sorry. I have this newspaper that I have had in my office since 2006. The headline is RADIOACTIVE WATER MAY BE FOLLOWING CRACKS TO THE HUDSON. I went to the hearing on this. This nuclear power plant is based on water technology. If there's one thing I know as an environmentalist, water is the most ungovernable of all of the elements. This nuclear power plant is not safe simply for the fact that it's run on water. When I heard your panel of people address this issue, you had two different hydrologists that spoke that night, they were in such contrary opinion about what water does and where this was going and who's safe and who's not safe. One of them said those of us on the other side of the river don't have to worry about it. It's out of control. I really hope that this power plant will be closed down and we can begin a future of conservation and living in a very healthy way where we all can get together and have a future. Thank you. 151-e-OR

MS. SHAPIRO: Yes, hi. I represent the Sierra Club and before I get into my comments on the draft EIS, which I believe this meeting was for, I want to congratulate Entergy on there really great PR campaign for giving lots of money to not-for-profits that came here today to call for their support, which is not what this meeting was really about and I think there was a lot of misinformation that was told to these groups and I think that's a sad comment on Entergy though. I hope the NRC understands that, you know, if you use money to pay for people to come and support you that doesn't mean that is a public safety evaluation. I also wanted to say I'm sorry these people left from the City, but the reality is no one who is calling for the closure of Indian Point for safety reasons believes that we should be putting coal- fired plants that would increase asthma in their communities or any community. That's never been a replacement factor. Going to the GEIS, which I believe is an incomplete and inadequate document because, there are a few reasons, which I'll go through. 152-a-GE/PA

The first one is that it doesn't consider the long-term impacts of this new superseding license that Entergy is planning to grant with regard to seismology evacuation possibility and the increased population density in this area. Because it is a new license as acknowledged by Entergy, these factors must be considered. The EIS and the re-licensing

document does not consider those and therefore it's fully inadequate and incomplete. This environmental report also does not include the fact that Entergy nor the NRC actually knows the current licensing basis of the plant at the moment. They don't actually have that knowledge because over of the time, the last 40 years the plant has been operating, they've been granting exemption on top of exemption on top of exemption on top of exemption on safety standards at the plant. So, it's running not at design basis. Those issues will be carried over into the new superseding license period. That must be included in the EIS because those are large impacts when you have a degraded system. 152-a-GE/PA contd.

152-b-AM/SA

For example, currently, the fire safety standards at Indian Point are highly degraded. They exempted, NRC granted an exemption from a one-hour fire rating because the rack that was used was inadequate and they allow them now to operate with a 24-minute fire rating. Which means, if there's a fire in this crucial part of the planet that's needed for safe shutdown, you have to detect and put out the fire within 24-minutes or there'll be a melt down. That's what we in this area and all of the New York City people are living under that danger. The other things that have been recently exempted in the last year are that the spent-fuel pool, which we know is leaking, which has been acknowledged to be leaking, they cannot inspect 60% of

152-c-LE/OP

it. They could inspect it, but the cost to Entergy, the cost analysis to Entergy is too much. So the NRC has granted an exemption. That makes this report highly incomplete and inaccurate. Without a full inspection of the spent-fuel pool that is known to be leaking, this report is not complete.

Further, they called it a relaxation of the standards, to inspect a design basis required inspection, which is the rust in the dome. They know there's rust in the dome. Five years ago they got an extension for this inspection. Now, they decided this year it's too difficult, it's too expensive, to actually inspect this. So, they've given them a permanent, permanent, which means they will never inspect this part of the plant, which is known to have rust in the dome. Which is truly an aging management problem. They've granted that as an exemption. These have great, large environmental impacts which are not included in this. Additionally, 60% of the underground piping at Indian Point and the cables are not being inspected. Further, the last two things I'd to mention is that recently at Indian Point a small camera, a digital camera, actually shut down the plant because when Indian Point was built there were no RF signals. Therefore, in the aging management of Indian Point, it is required, it's new information, that they must include how they're going to deal with new technologies. Like cell phones and cameras and various RF signals that are going

152-d-AM/ OP

to be used by outside contractors and visitors to the plant. Finally, the overall problem with this report is that it is done on a cost-benefit analysis basis, which is a violation of NEPA. They actually evaluate how much the cost to the benefit to the public, to the safety of the public. That's not the way you do an environmental impact statement. So, this reliance on the cost to the industry versus the safety to the public makes this report incomplete and inadequate. So, basically, I would request that -- there'll be one more pass at this report? I don't think you're ready to do the final pass. I think you need another step. I think there's got to be another draft because you're far from there. Thank you.

152-d-AM/OP contd.

152-e-NE

MR. SHAW: My name is Gary Shaw. I live about 5 1/2 miles from the plant. I've lived in this area for 16 years. My understanding of the charge of the NRC Relicensing Board is too ensure that the operators of these nuclear plants have a sufficient set of safety and maintenance systems in place to prevent environmental contamination from radioactive materials for the next 25 years. 20 years beyond the expiration of the current licenses. As we all know, Indian Point is the first nuclear plant in the country known to have leached Strontium-90 into groundwater and one of several known to be leaking Tritium. Just today, a study of lactating mothers showed that the closer to Indian Point the nursing mother resides, the higher the Strontium-90 levels in their milk. On the face of this, these results are consistent with the Radiation and Public Health Projects Tooth Fairy Project, which found Strontium-90 in the baby teeth of children residing in proximity to nuclear plants that showed higher levels when residing in closer proximity. I would hope that these findings factor into NRC deliberations. 153-a-LE

The issue here is whether the primary responsibility of the NRC is to safeguard the public health to the best of its ability or if their job is to try and figure out how much public contamination is allowable, so a for-profit publicly traded multibillion-dollar company can maximize profits. I will remind this panel that the NRC's office of Inspector General has 153-b-LE

previously criticized the agency for giving undue consideration to operator profits that resulted in the near breach of containment at the Davis Bessie Plant in Ohio in 2002. From newspaper reports, we know that the severe corrosion of the Davis Bessie reactor head was discovered when a worker leaned on a control rod and it was lose. The corrosion was not discovered by design, just by luck. We also know that the entire issue of radioactive leaks at Indian Point came to light not because of any effort of the NRC inspectors or plant management oversight. The leaks were discovered during excavation in preparation for moving the overflowing nuclear waste from the spent-fuel pools so they could be placed in casks and stacked like nuclear bowling pins on a concrete slab near the banks of the Hudson River. The NRC has seemed very willing to waive regulations when the operators have asked for it. A noteworthy recent example is the waiver of the one-hour fire protection requirements for HEMC insulation. Lowering the requirement to 24 minutes. To me, there is a real credibility issue about your responsibilities and your standards. Toward that end, I would like to bring up an issue I have raised at a range of NRC meetings.

153-b-LE contd.

153-c-OM

Indian Point has extensive underground piping that is more than three decades old. With the pipes sheathing tables circulating billions of gallons of Hudson River salt water

153-d-AM/ LE/OM

daily. We have had a tritiated steam leak from pipes that were supposed to be carry only non-radioactive water. I have asked the NRC multiple times to make public how the operators will judge the viability of buried piping now and for the life of the new license being considered. The important issue is to prevent leaks, not to find ways to fix leaks once they have happened. For credibility sake, this panel should make public the specific metrics being used to evaluate the effectiveness of monitoring. Specifically, I would like to know the number of linear feet there are of buried pipes with no aboveground visual access. I would like to know by what methods and what percentage of underground piping would be accessible and inspected on an ongoing basis. I would also like to know to what degree welds will be tested for integrity. If your standards are valid, they should be offered for public and peer review. I will finish by reminding the panel that Indian Point could not get siting approval today because of population density around the plant. What you are considering is a new license, not a an extension. I will also remind everyone that in 1979, Robert Ryan, the former NRC director of the Office of State Programs labeled Indian Point one of the most inappropriate locations in existence for a nuclear plant. 30 years of population growth and aging infrastructure has not made this location any more suitable.

153-d-AM/ LE/OM contd.

153-e-AM/ DE

MS. SHEPARD: I'm with Westchester Citizens Awareness Network. I've been involved in some of the health studies that have been conducted in our area to measure radionuclides in baby teeth and also in milk. There are studies going on all over the world that show a correlation between occurrences of various cancers and proximity to nuclear plants. The human health studies that have been conducted in our area have been scorned and marginalize and deemed invalid by the NRC and Entergy because the samples are small. Because that's what happens when there's not enough money to collect larger samples because when grassroots organizations do testing. They don't have the money to collect samples on a widespread basis the way the government does. The way the government has in the past. The way the government collected baby teeth in the 60s and the early 70s. However, you heard today that mother's milk and goat's milk has been tested and with a very small sample, preliminary results are showing the presence of Strontium-90 in many of the samples. The really significant thing is, two of the samples contained detectable levels of Strontium-89, which means since Strontium-89 has a short half-life that this is not attributable to background radiation from aboveground testing from the 60s. It's not attributable to anything left over from Chernobyl.

154-a-HH/
LE/MP

It's recent and it cannot be discounted.

I obviously do not share the love of nuclear power that the NRC and Entergy feel. The NRC and Entergy have an unconditional love for nuclear power. I don't have that. But if they do not agree with the laboratory measurements that have been taken by our grassroots studies that show the presence of man-made nuclides, radionuclides in the teeth and milk of area residents. And I'm talking about the wives and mothers of the children of the man who spoke tonight. The wives and the mothers of the children of the men who spoke tonight, who talked about their wives, their healthy children, living right here within this proximity probably had or currently have or will have man-made radionuclieds in their breast no. It's not nice to think about, but it's something we need to know about. If the NRC and Entergy don't like the results of the studies and have poured a lot of money into their PR machine to generate literature that refutes the studies that have been done by our hungry for money volunteer people, who are doing these studies, then please throw some money towards some studies and let's make it mandatory that human milk testing is part of any kind of environmental impact statement having to do with a nuclear plant. This is something that the government used to do support in the past and needs to be supported now. So, this is not going to go away. Any kind of man-made radionuclides that are

154-a-HH/ LE/MP contd.

in teeth and milk are going to stay there until those regular and routine emissions are no longer going into the air in our area. Please, every single person here in this room who's concerned about air quality and asthma and your children's health, when you go home, look around your house and see how much energy you're wasting. Unplug your phantom electricity. Pull out your transformers. Look and see what is using up energy in your house that doesn't need to be. Turn off your computers at night and be aware and be mindful because it's everybody's responsibility to conserve energy. Thank you.

154-b-AL

MS. SHERMAN: Good afternoon. My name is Andrea Sherman and I'm a resident of the city of White Plains, Westchester County, New York. Since moving to the county in 2001, I have kept a watchful eye on news stories of the Indian Point nuclear power plant and I'm here today to lend my comments as a citizen to the discussion of its re-licensing. To be brief, the issue at hand seems to be one of risks, benefits and alternatives. Undeniably, Indian Point brings benefits of the region. It provides a source of energy to fuel our consumption, which is a precious commodity, as we know. It also brings economic benefits to its parent company Entergy. To the employees who depend on it for their livelihood and to the surrounding local towns and other communities who enjoy lower taxes and other economic benefits from having the plant in their midst. These benefits are all positive and no one is disputing that.

155-a-EC/SO

However, when one looks at the risk column, suddenly these economic benefits begin to pale in comparison to the overwhelming risks to health and safety imposed on an entire region of millions by the close proximity of such a potentially toxic entity as the Indian Point nuclear plant. Whether through unfortunate technical accident, all too common human error, unforeseeable natural disaster, terrifying attack or the aftermath of the parent company's decision someday to divest

155-b-PA

itself of this asset, the devastation to both life and habitat in our region would be catastrophic and largely irreversible, certainly for this generation and possibly for generations to come.

155-b-PA contd.

Since the long-term risks to health and safety outweigh the shorter-term and mutable economic considerations, I urge, no, I plead with Entergy and our government officials to seek similar economic benefits by means of reasonable alternatives to the operation of a hazardous nuclear power plant in New York. Speaking as a citizen, my vote will follow those who recognize and act on this imperative. To address the concerns raised by so many of today's speakers, there are other ways to keep energy affordable and to improve air quality without exposing our region to the dangers of nuclear production. It would be morally bankrupt for our government to permit primarily economic interests to co-opt those of public health, safety and environmental integrity. Safer alternatives can be sought if there is the public and political will to do so. Thank you for allowing me to speak today.

155-c-AL/ SA

155-d-OR

MR. SKANES: Good afternoon. I'm not going to sing to you although I did notice the grannies got about seven or eight minutes. I guess that's the trick, if you sing, you get a longer time. I'm Brian Skanes and like John Yanofsky, I wear a number of hats. Number one, I'm a 10 year resident of Mount Kisco. I'm the executive director to the Boys and Girls Club of Northern Westchester. I'm also a member of the local Rotary Club, the Business Council, the Westchester Community Association, member of the President's Council of Northern Westchester Hospital Center, but more importantly, I'm a really concerned citizen.

I have to say, I'm very encouraged about what I've heard today on the positive side. I think it's been mentioned many times and all the reasons why I too believe that we have re-license Indian Point. Especially because of, in my role as executive director of the Boys and Girls Club's, 3500 kids who come from better than the best circumstances, they really need the corporate partner that Entergy really offers our organization. It's been mentioned before, not only the Boys and Girls Club, but non-profit after non-profit after non-profit benefit from the employees who help us on our boards and come to our events. The financial support we get, and by the way, in 35 years of working in Boys and Girls Club's and

156-a-SE/SR

working with all kinds of corporations, I can say without hesitation, that Entergy is the best corporation working with non-profits that I have ever seen. The non-profit summit they run every year. The opportunity to go to Yankee Stadium and be part of some marketing and public relations training and also the opportunity to receive some pro bono advertising. All these things add into a lot of good things for kids in this community and that's why I stand for and support re-licensing Indian Point. Again. Thank you.

156-a-SE/SR contd.

MR. SLEVIN: Good afternoon. My name is Jimmy Slevin. I'm a senior business agent for the Utility Workers Local 1-2. Thank you for letting me appear before you today. Local 1-2 of the UWA, which the union represents most of the workers at Indian Point, is therefore on the frontline of the debate before you today.

We are in the best position to contribute the information on the subject of most relevance to the commission. Indian Point is safe. If we had any reason to believe not, we would not let our members work there. Our members cannot only attest to the fact that the commitment to safety operations, but are an intricate part of the team that makes the facility safe. The unparalleled record of plant safety is something we are proud of. 157-a-OP

As residents of this area and as involved citizens, we are very much concerned with the physical and economic health of the community. Indian Point produces 2000 Mw of electricity, and that represents about 20 to 40% of the needs of this region. Cutting off this substantial and vital supply of power would be a body-blow to the economic health and personal well-being of every citizen. This amount of energy could not be replaced. New construction of fossil power is not feasible in the views of the prevailing environmental concerns and other time-consuming 157-b-AL/EC/SO

obstacles in their construction. Green energy sources have not reached the levels of viability that allows us to rely on them in immediate or foreseeable future. Nuclear power is here and it is environmentally clean. Unlike fossil power, it does not contribute to the greenhouse effects or global warming. It does not release harmful carbon emissions into the atmosphere as fossil plants do. What it does is provide us with an inexpensive and safe electrical power. We were told in the recent past that with one of these onsets of deregulation and the unleashing of market forces in the power generation industry, there would be a glut of low-cost energy capacity for all classes of consumers. Deregulation has passed, but the promise results never followed.

157-b-AL/EC/SO contd.

157-c-AL/EC

How could anyone with the best interest of the community in mind, now demand the elimination of 2000 Mw of vital need power without the remote practical expectation that it will be replaced in our lifetime. Even if it could be, the cost would be unimaginable. We refuse to play either the blame game or engage in scare tactics, but let's be realistic, Indian Point has been a mass of this community and region. Those who would not merely tamper with its function should think long and hard about what it would do to them because it would be extremely unwisely counterproductive and blatant destruction to deny the re-licensing of Indian Point. I thank you again for

157-d-EC/SR

the opportunity to share my views. Indian Point is a good neighbor. Indian Point is good for the environment and Indian Point deserves to be re-licensed.

157-d-EC/SR contd.

ML090711019

UTILITY WORKERS UNION OF AMERICA

Local 1-2, Affiliated with AFL-CIO
5 West 37th Street, 7th Floor, New York, NY 10018
(212) 575-4400 Fax:(212) 575-3852

HARRY J. FARRELL, PRESIDENT — ANDREW O'CONNELL, VICE PRESIDENT — LUCIA E. PAGANO, SECRETARY-TREASURER

SENIOR BUSINESS AGENTS: JOHN CAPRA, ROBERT FARRELL, JAMES SLEVIN

10/31/08
73FR 64740
(5)

Mr. Andrew Stuyvenberg
Environmental Project Manager
Division of License Renewal, Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Mail Stop: O-11F1
Washington, DC 20555-0001

Re: Local 1-2's Submission to the Nuclear Regulatory Commission

Local 1-2, UWUA is the Union that represents most of the workers at Indian Point and is therefore on the front lines of the debate before you today. We are in the best position to contribute information on the subjects of most relevance to the Commission.

Indian Pt. is a safe facility. If we had any reason to believe it was not, we would not let our members work there. Our members not only can attest to the facility's commitment to safe operation but are an integral part of the team that makes the facility safe. The unparalleled record of plant safety is something we are proud of. Prudent policymaking and planning must avoid leaping to conclusions or being stampeded into rash decisions on the basis of projected and unprecedented catastrophes. One could project any number of possible worst case scenarios - such as a Level 5 hurricane - that would make any evacuation of certain communities in this State unimaginable. Coming up with constructive proposals to meet challenges such as these is one thing. Taking an axe to the ability of a community and a region to function is not the way to meet that challenge, but that is what denying relicensing to this facility will accomplish, and that is all it will accomplish. **157-e-OP**

As residents of the area and as involved citizens, we are very much concerned with the physical and economic health of the community. Indian Point produces 2000 megawatts of electricity. This represents 20% to 40% of the needs of this region. Cutting off this substantial and vital supply of power would be a body blow to the economic health and personal well-being of every single resident. This amount of electricity could not be replaced. New construction of fossil plants is not feasible in view of prevailing environmental concerns and other time consuming obstacles to their construction, and green energy sources have not reached the level of viability that allows us to rely on them in the immediate or realistically foreseeable future. Nuclear power is here and it is environmentally clean. Unlike fossil plants, it does not contribute to the greenhouse effect or global warming. It does not release harmful carbon emissions into the atmosphere as fossil plants do. What it does is provide us with inexpensive, safe electric power. We were told in the recent past that with the onset of deregulation and the unleashing of market forces in the power generation industry there would be a glut of low-cost electric capacity for all classes of consumers. Deregulation passed, but the promised results never followed. How could anyone **157-f-AL/EC/SO**

UTILITY WORKERS UNION OF AMERICA
Local 1-2, Affiliated with AFL-CIO

with the best interests of the community in mind now declare that we eliminate 2000 megawatts of vitally needed power without the remotest practical expectation that it will be replaced in our lifetimes? Even if it could be, the cost would be unimaginable. We refuse to play either the Blame game or engage in scare tactics, but let's get realistic. Indian Point has long been a mainstay of this community and region, and those who would not actively tamper with its functioning but would contemplate it should think long and hard about what they would have you do. Be cause it would be extremely unwise, overly reproductive and blatantly destructive to deny relicensure to Indian Point.

157-f-AL/EC/SO contd.

This concludes my statement.

Sincerely,

James T Slevin

James T Slevin

DR. SMITH: Good afternoon. My name is Dr. Gregory Robeson Smith and I am the senior pastor of the Mother AME Mount Zion Church in Harlem. New York State's oldest church. Organized in 1796, we will celebrate our 213th year. Mother Zion, also known as the freedom church throughout its long history. Mother Zion has many of its illustrious members who were leaders in our historic fight for freedom. They included Harriet Tubman, Frederick Douglass, Sternon Tooth [sp], Paul Robeson, Madame C.J. Walker and many others who fought so valiantly to free African-Americans socially, politically and spiritually.

Today, Mother Zion is the Mother Church of the AME Zion denomination, which is located on five continents and has a membership of 1.5 million members. Public forums like this have historically granted citizens a unique opportunity to have their concerns heard by decision-makers and power brokers. From ancient Rome to Birmingham, Alabama, the people who rise to address these forums have helped shape public opinion and policy. One such policy I would like to speak to this afternoon is the re-licensing of Indian Point Energy Center and how it continues operation in the best interests of the children and the families of Harlem, who make up my congregation. Regrettably, the debate over re-licensing has taken place without input from communities like Harlem which are under siege

158-a-EJ/SR

by the dirty air, not to mention the health aspects that come along with poor air quality. The debate over re-licensing has raged on without input from those who can ill afford to pay electricity bills. This debate over re-licensing has taken place without the reassurance that the dirty air power plants built to replace Indian Point will not once again end up in our neighborhoods. It's only through conversations in communities most benefited by Indian Point like Harlem, Bronx, and Brooklyn, we can begin to fully appreciate the need for clean and reliable energy Indian Point provides. 158-a-EJ/SR contd.

Last year we sponsored such a dialogue with my fellow members of the Harlem clergy. It is through this dialogue that we learned the full scope of the crisis situation facing Harlem families if Indian Point is closed. We learned that the closing of Indian Point comes with additional threats to our air quality and drastic increases in electricity bills. There are too many cases of seniors in our neighborhoods and to many families forced to choose between heating their home and buying groceries just to justify closing Indian Point. An open Indian Point means continued clean emissions-free energy that will help improve air quality. An open Indian Point means continued affordable energy that helps keep electricity bills stable. An open Indian Point means continued reliable energy which would provide for our homes, schools, mass transit, hospitals and 158-b-AL/AQ/EC

religious

institutions. I am not only here to support Indian Point Energy Center, but I'm also here today in the spirit of corporation and unity. Thank you for allowing the to add my concerns and that of my congregation to this debate and we're hopeful that any decision reached will be one that ensures continued supply of reliable, clean and affordable electricity for all New Yorkers.

158-b-AL/ AQ/EC contd.

MS. SMITH: Good afternoon. I'm Carol Smith and I'm vice-president for the Orange County Chamber of Commerce. Our chamber represents more than 2000 businesses in Orange County and the surrounding areas. It is an indisputable fact that Indian Point generates more than 2000 Mw of electricity, which has been said is enough to provide between 18 and 38% of the lower Hudson Valley's and New York City's electricity needs on any given day. More important though, is that this is clean and affordable power whose generation produces none of the greenhouse gases or other pollutants that contaminate our environment and contribute to global warming.

159-a-EC/GL

Of course, alternative sources of energy such as wind and solar power should be actively pursued, but in the meantime, it would be economically and environmentally irresponsible to close Indian Point. The Orange County Chamber of Commerce believes that Entergy should be granted the renewal of its license to operate Indian Point. Assuming that safety of our residents and security of this facility are always its paramount concerns. Since purchasing Indian Point in 2001, Entergy has invested hundreds of millions of dollars in enhanced security and safety features for the facility. We are sure they will continue to do so.

159-b-AL/SA/SR

The Indian Point Energy Center is vitally important to the economic and environmental health of the entire region. Electricity demands are rapidly increasing and no new power plants are being built or even planned. These are two additional reasons why the re-licensing of Indian Point is so important. To answer those who call for Indian Point to be shutdown, a recent national Academy of Science study said that although a shutdown would be technically feasible, it would lead to significantly higher electricity bills and would worsen the volatile price swings within the natural gas market. For an environmental point of view, loss of Indian Point's 2000 Mw of energy would result in higher levels of environmentally harmful greenhouse gas emissions because of the bulk of the replacement power would require burning the dirtier fossil fuels. We know the Nuclear Regulatory Commission will be carefully evaluating Entergy's request for the license renewal of Indian Point and this process will include a comprehensive review and evaluation of the facility. We support this license renewal and we know that Entergy will continue to operate Indian Point with impeccable high standards of quality and excellence. Thank you for the opportunity to speak.

159-c-EC/ SR

159-d-EC

159-e-AL/ AQ/SR

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IPRenewalCEmails ML090790372 3

From: dino sorbello [tripwave@earthlink.net] 4
Sent: Friday, February 27, 2009 8:05 PM
To: IndianPointEIS Resource
Subject: relicensing/NOI

Con Edison has been finding so many ways and places just right here in NYC for business, residences, public spaces etc, to curtail their electricity use that they have saved the amount of electricity equal to several coal-fired or nuclear power plants.

We NO LONGER NEED Indian Point facility. Neither does upstate New York.

In the interests of setting a good example for todays' children, and the rest of the world, in the interests of PUBLIC SAFETY, we must close and dismantle the facility. Show them we can do it. Show the world we are strong instead of weak.

The time for Indian Point's existence has come and gone. The hazards are far too great to tolerate. It is nearly equal to an act of terrorism just to have it exist, we're NOT going for it.

Thank You Dino Sorbello

} 160-a-AL/OR/SA

MS. STARKE: Good evening and thank you to the NRC. My name is Alexis Starke and I am a resident of the Hudson Valley. I am here tonight to represent myself. There is no conflict of interest in my being here tonight. I understand that people have spoken out in favor of Entergy tonight because they are scared for their jobs. I understand and I respect that. But we have a moral obligation here tonight to look at the bigger picture. I grew up in New York state and I care deeply about our environment and our majestic river, the Hudson. 161-a-GI

I am here tonight to ask the NRC not to re-license Indian Point and to begin the process of closing it. Indian Point has carelessly and incompetently damaged our environment and our river for long enough. There is nothing clean or green about Entergy or about Indian Point. I am outraged about the continual leak of radioactive water from Indian Point into our groundwater, i.e. our drinking water. And into the Hudson River, which is also our drinking water. United Water New York Suez is planning on building a Hudson River water desalination filtration plant directly across the river from Indian Point. I am outraged about residual contamination caused by plumes of contaminated groundwater that slowly leach toxic Strontium-90 and Cesium-137 into the river. I am greatly concerned about the inefficient and shamefully shoddy storage of thousands of tons of highly toxic nuclear waste on the banks of the Hudson 161-b-GI/ LE/WA 161-c-RW/ ST

River. This is unacceptable. Indian Point's dry casks are vulnerable to terrorist attacks. Again, this is unacceptable. Indian Point is and always has been an environmental disaster for the Hudson Valley. It is a constant source of fear of unspeakable destruction should it be the target of terrorist attacks. Our tax dollars should not be spent in providing military protection for Indian Point, so that Entergy can continue to make huge profits. This is ridiculous. NRC, I trust you will close down Indian Point. It has been a source of fear and shame for our region for long enough. The law has been flagrantly violated by Entergy for long enough. It is time for us to start conserving energy.

161-c-RW/ ST contd.

ML 090771338

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IPRenewalCEmails

From: Alexis L. Starke 99 [Alexis.L.Starke.99@Alum.Dartmouth.ORG]
Sent: Tuesday, March 17, 2009 5:43 PM
Subject: Indian Point

Alexis L. Starke
153 Hudson Terrace
Piermont, NY 10968
845-359-3327
alexis.starke@alum.dartmouth.org

Dear NRC,

I am writing to you to as a resident of the Hudson Valley to comment on the relicensing of Entergy's Indian Point. I am not a member of an interested union, nor am I financially dependent on Entergy in any way. Thus, there is no conflict of interest in my writing to you. I am writing to you because I am concerned about the health and safety of my community and of our fragile environment.

I understand that many have spoken out in favor of continuing to operate this old and decaying power plant because they are afraid of losing their jobs. I understand that and I respect that. But you are under a moral obligation to look at the bigger picture.

I ask the NRC NOT to relicense Indian Point and to begin the much-anticipated process of closing it down immediately. Indian Point has damaged our environment and the Hudson River for long enough. There is nothing clean or green about this power plant. Entergy is interested in making as much money as cheaply as possible while the rest of us pay the price in damage to our health and environment. Entergy has launched huge glossy misleading advertisement campaigns to brainwash the public. They blackmail our communities with threats of no power and/or coal-fired powerplants. This is absurd.

161-d-GI/OR

Indian Point is guilty of the slaughter of billions of fish, eggs, and larvae as a result of their outdated cooling water intake system which uses billions of gallons of OUR Hudson River water daily.

161-e-AE

Indian Point is responsible for the killing of shortnose and Atlantic sturgeon. Shortnose sturgeon are endangered species.

I am outraged at the continual leak of radioactive water from Indian Point into our ground water (ie our drinking water) and into the Hudson River (which incidentally, United Water New York is planning on treating as our drinking water directly downstream from Indian Point).

161-f-LE/WA

I am outraged about residual contamination caused by plumes of contaminated ground water that slowly leach toxic strontium 90 and cesium 137 into the river.

I am greatly concerned about the inefficient, unsustainable, and shamefully shoddy sorage of thousands of tons of highly toxic nuclear waste on the banks of the Hudson River. This is unacceptable.

161-g-ST/UF

I am highly concerned about the environmental costs of the whole life of a nuclear power plant- from the mining of materials to their ongoing disposal.

Finally, Indian Point is in a most densely populated residential area, a stone's throw from New York City. It is vulnerable to terrorist attacks and poses a threat of unimaginable disaster.

161-h-DE/ST

Indian Point is an environmental disaster for the Hudson Valley. NRC, I trust that you will close it down. It is time for us to start conserving energy.

161-i-AL/OR

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Thank you for your time and interest and I trust that you will do the right thing.

Yours sincerely,
Alexis L. Starke

MR. SULLIVAN: Hi, I'm John Sullivan. I live probably about 2 miles from the plant. I have been here before. I've been on the list serve for IPSEC, but I'm really here for my own self. I just want to add my voice to the fact that I believe that the license should not be extended. I think the most egregious error of the report is that it does not look into the future. The reality is we are going to have nuclear waste on this site for the next hundred years and unless that is addressed in the report, it's incomplete.

162-a-OR/ RW

I'd also like to extend the challenge to the folks that do get money from IPSEC, that are supported, that feel that -- I'm sorry, not IPSEC, from Entergy, that feel that Entergy is a good corporate citizen. People in the environmental movement, IPSEC, Riverkeeper, have proposed many things that would make the plants safer. God forbid from my point of view, if in fact the plant is re-licensed, these things should be put into place. A closed-water cooling tower. Hardened onsite storage of nuclear waste and with deterrents for terrorist attacks. Please speak to your corporate sponsor and urge them to do the right thing and not just buy good publicity. Thank you.

162-b-AL/ SF/ST

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IPRenewalCEmails ML090771343

From: Marie Inserra [minsjsu@yahoo.com]
Sent: Monday, March 16, 2009 8:13 AM
To: IndianPointEIS Resource
Subject: critically inadequate IP environmental report, second transmission with corrections

I am writing to urge that Entergy not be granted a renewal of the license for the Indian Point Nuclear Power Plant.

I am urging this based on the grounds that the environmental report is critically inadequate. } 162-c-OR

The report which does a wonderful job of describing the topology and the surrounding flora and fauna of the plant does not at all describe the geology of the underlying rock in the area. There is no mention as as far as I can tell that the plant sits on a major fault line.

In addition no where in the report is there an analysis of the type of rock and its ability to fracture and conduct surface water to ground water. This is vitally important given the fact the Indian Point continues to leak water that contains cesium, strontium and tritium. } 162-d-GW/ LE/PA

It is ironic that it is not mentioned given that at several NRC sponsored meetings that I have attended Entergy officials have been allowed to portray the underlying rock as if it was a stainless steel bowl with the radioactive water merely running off to be diluted in the Hudson.

Finally it is clear with the court decisions about Yucca Mountain that any sort of solution to the nuclear waste generated by these power plants is decades off. This is especially true since Yucca mountain is already contractually full and it will not be able to take any waste generated by the Indian Point renewal.

What is becoming more apparent is that any waste generated by the renewal of the license will sit on this property for decades if not hundreds of years and will be the problem of the surrounding communities as the infrastructure of the plant further decays. To limit the scope of the report to the renewal period is to overlook the probable and real damage that these plants will do to the surrounding environment. } 162-e-AM/RW

For these reasons I find the NRC environmental report critically inadequate and urge the NRC to reject the environmental report until these issues are fully explored. } 162-f-OR

John Sullivan,
735 Requa Street.
Peekskill, New York

sent second time with corrections. js.

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Diane Swertfager, Varsity Volleyball Coach
Hendrick Hudson High School

Hello. My name is Diane Swertfager, and I am the Varsity Volleyball Coach for the Hendrick Hudson High School Sailors, New York State Volleyball Champions for the third straight year.

I make that statement with great pride in the achievements of my team, but also with an acknowledgement that as a coach you are dependent upon the hard work and dedication of many individuals – your players, assistant coaches and support staff, parents, school leadership, fellow students, sponsors, residents and even the people cutting the field grass. If anyone in the group lacks focus or is not dedicated to winning, you cannot maintain a quality athletic program. It's impossible.

That is why I truly understand the dedication and hard work you need to run a safe, secure and successful operation as massive as Indian Point. You cannot remain on line for so many days in a row, month-after-month, providing so much power without the laser-like focus of all those employees moving in the same direction towards the same goal.

163-a-SE/SO/SR

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I have had the pleasure of working with Entergy through their sponsorship of the team, and take great pride in the work they do, as I'm sure they take great pride in knowing they, too, support a winning team.

School systems – Like Hen Hud – want nothing more than the best for their students – academically, physically and emotionally. We want to ensure our students maintain healthy minds and bodies, so we offer programs that challenge them both in the classroom and on the field.

However, accomplishing this feat means one, we have the financial support and tax base for sustaining a quality education and sports programs. And, two, the students are not distracted by disruptive events in the community; events which will move a student's focus away from their studies.

At a minimum, closing Indian Point will significantly impact the Hen Hud School District's ability to maintain a high-quality education experience for all of our students. Further out, we will lose the hard-working families that are the underpinning of this community, and witness the same deterioration other

163-a-SE/SO/SR contd.

neighborhoods have endured when losing a large part of their economic and energy infrastructure.

At a time when school districts are clinging to their tax base, and wondering when the next wave of State educational cuts will hit, we can ill afford the loss of Indian Point.

We should be looking for ways to further ensure their success, so that by extension, we will successfully navigate through this deepening recession.

On behalf of my team, and all of the people who continue supporting our winning efforts, I want to say in closing that we support keeping Indian Point open for 20 more years, for the good of our schools, and the good of our community.

Thank you.

163-a-SE/SO/SR contd.

MS. TAORMINO: Good evening. My name is Michelle Taormino and I'm part of an environmental assessment class at Ramapo College in Mahwah, New Jersey. I'm also a citizen within a 30 mile radius of Indian Point and I would be affected by any major incident that would occur at the power plant. Which when reading the EIS, I found that the EIS does not include certain information. These points I'm going to go over. There's no protocol if there's a meltdown. There's no, how they would deal with a fire if a fire breaks out. There's no security included about the plant, if there's a terrorist attack or if there's a natural disaster, the fault line near the plant is not addressed either. 164-a-PA/ST

After reading the EIS, I was startled at how little information was given and what little weight the evacuation plan at Indian Point carried. Regardless of new updates, the sirens give no regard to the hearing-impaired or to those in the area who don't know what the sirens are, what they mean or know about the plan. The plan is also loosely put together with inadequate evacuation roads to handle the evacuating population. Also, certain people can opt out of the evacuation plan like EMTs and police and there's no substitution for those that will help in the evacuation plan. In addition, the EIS mentioned that the leaks occurring at the plant have minimal impact on the soil in 164-b-EP

164-c-LE/TE

the area. However, studies on turtles who live in that soil were found to have Strontium-90. This suggests that more thorough studies about the soil contamination need to be conducted. Also, certain aspects of Indian Point have been not inspected and these areas like plumbing underground have not been included in the EIS regardless of why or why not, it has not been inspected. It has not been listed in the EIS. Issues like the evacuation plan are not considered in the renewal license process nor is the leakage that occurs. Certain studies prove that more analysis needs to be done before any decisions can be made.

164-c-LE/TE contd.

164-d-LR/OM

An EIS was developed to accurately review the plant and determine whether or not re-licensing should be granted. The lack of the information given in the EIS, as well as the NRC allowing the re-licensing without holding the Indian Point power plant to fix its faults prior to re-licensing and not including that they're doing this in the EIS, makes the EIS, in turn, inadequate. Making a decision to re-license Indian Point should not be considered unless studies are thorough and are followed through with and a solid evacuation plan and incident plan is determined. You can't make a decision about the next 20 years without seriously looking at all the information and accurate information now in the present. It's not a time to overlook or look away from any present issues. You need to make a concise,

164-e-EP

clear and confident decision. More information needs to be looked at and considered. Thank you.

164-e-EP contd.

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To: NRC representative: Andrew

The NRC, being one of the regulatory organizations, was developed to help make sure that nuclear power plants are obedient towards the nuclear regulations. This being said, the DSEIS, Supplement 38, for Indian Point in Buchanan, NY does not have the information needed to be able to make a confident decision to relicense Indian Point's operating permits for another 20 years. The following is a list of information the DSEIS either did not include or does not weigh as important.

First, evacuation plans are an ongoing development and thus are not considered in the permit renewal process. However, with inadequate plans for evacuation, the unlikely event that something will happen to the plant will leave thousands, millions trapped out of an effective evacuation route.
There are not enough
- •roads
- •routes or
- •strategies

to evacuate people of different areas and effective plans to evacuate
- •children
- •the elderly, and
- •those without transportation

are not considered in the official Indian Point Evacuation Plan.

The NRC is not giving enough heavy weight to this matter and is willing to consider permit renewal without a concrete effective, workable and viable evacuation plan. Without a solid evacuation plan, millions will suffer and perish when something goes wrong to the plant. The safety of those around Indian Point and even in the 50 mile radius should be taken into consideration when renewing Indian Point's operating permits.

This matter should be included in the DSEIS and a plan should be constructed so that Indian Point's Evacuation Plan should be developed prior to the decision of having Indian Point stay running for another 20 years.

164-f-EJ/EP

Next, the leak occurring at Indian Point has seeped into the soil and water. There is a lack of studies on the effect the leakage had to the soil.
The DSEIS mentions that the leak is not a harmful amount but other studies show that life, like that of turtles living in the soil is contaminated with Stronium-90.
This is proof that more studies need to be conducted about the effects of the leak and that something needs to be done to monitor all equipment and measure if any leakage occurs. This standard should be met prior to permit renewal so that there is motive for the plant to follow through with any leak developments. In doing so, this will help develop a well rounded system of monitoring pipes and pinpointing leaks so that any

164-g-LE/MP

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future problem can be dealt with and fixed. This is especially important now that Rockland County has a plan for a desalination plant, enabling them to use the Hudson River as a drinking water source for the county.

164-g-LE/MP contd.

Lastly, the DSEIS does not extend to every area where environmental impact can occur. Secondary environmental impacts can occur outside the site-specific area. The DSEIS does not mention the environmental impact of mining for uranium, the energy source of the nuclear plant.
Mining for uranium pollutes the air and adds:

- conventional
- toxic and
- radioactive pollutants to the air.

Mining for uranium also creates:

- stockpiles of radioactive and toxic rock waste,
- pollutes surface water
- pollutes ground water, and
- harms the life, like that of people and animals who are close to or downwind of the mining sight.

The environmental impacts of mining for uranium should be weighed alongside the nuclear power plant that will be using the uranium product derived from mining.

164-h-UF

In conclusion, by right, the NRC has the power to make sure the impacts of Indian Point do not harmfully threaten the life of people, wild life, vegetation and the Earth. The DEIS should not be constructed using tunnel vision, it should include ALL information relative to Indian Point and the environment so that a decision of renewal for Indian Point to operate for the next 20 years can be comprehensively made.

164-i-GL

Sincerely,
Michelle Taormino
Citizen of Oradell, NJ
Citizen within the 50 mile radius of Indian Point

IPRenewalCEmails ML 090640357

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From: Green Infrastructure LLC [tompkinsdana@aol.com]
Sent: Friday, February 27, 2009 9:01 AM
To: IndianPointEIS Resource
Subject: License Renewals

To Whom it may concern,

It is quite obvious that the Indian Point Reactor has lived out it's life. The threat of future contamination will grow over time, and the cost of that contamination is far more reaching than the benefit of having the reactor remain in existence. I urge you to decline the license renewal for the plant before a major disaster occurs. For then it will be too late, and the cost will be too high. I will be following this closely.

165-a-OR/PA

Thank you,
Dana J. Tompkins

Dana J Tompkins
President
Green Infrastructure LLC
73 College Lane
Millbrook, NY 12545 USA
Office: (845)677-4664
Cell:(845)702-4822
http://www.greeninfrastructurellc.com/

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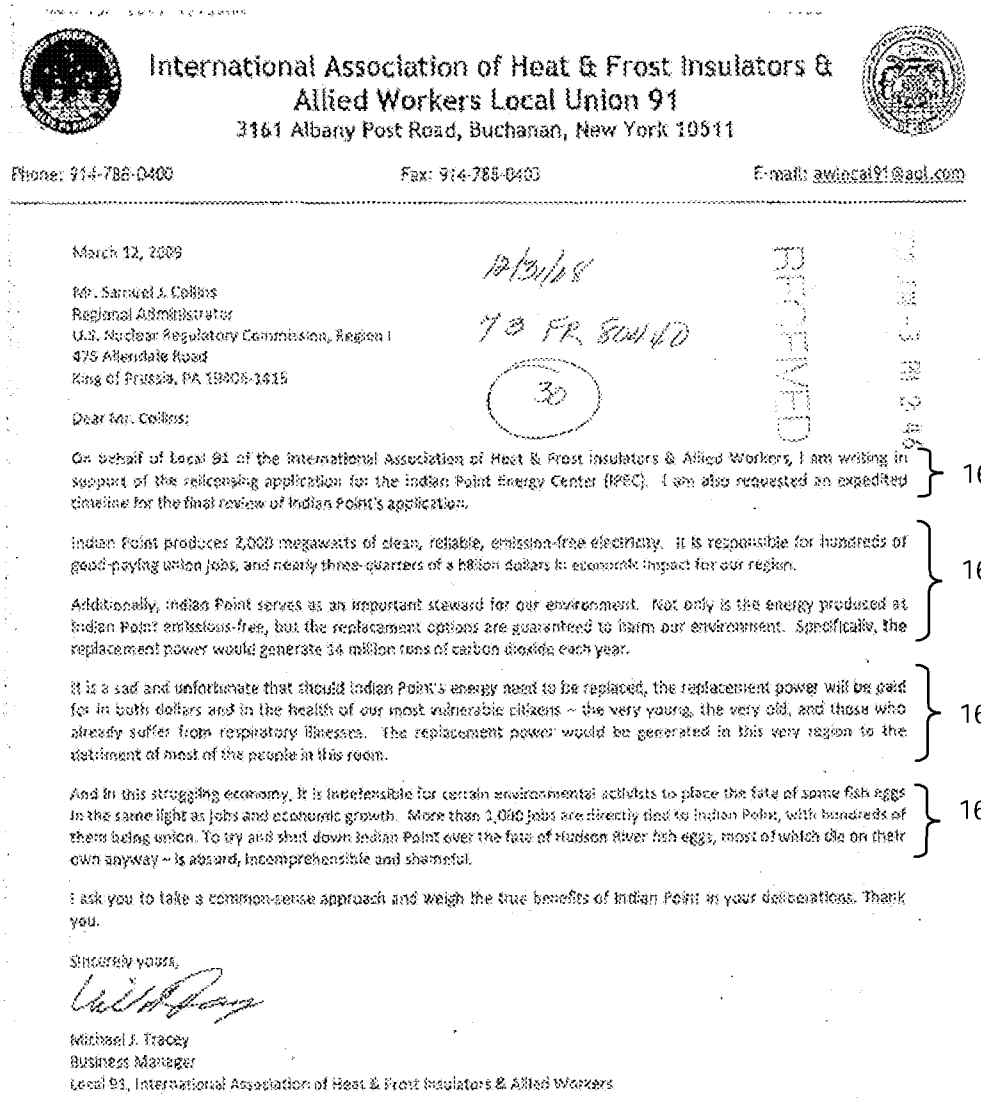

International Association of Heat & Frost Insulators & Allied Workers Local Union 91
3161 Albany Post Road, Buchanan, New York 10511

Phone: 914-788-0400 Fax: 914-788-0403 E-mail: awlocal91@aol.com

March 12, 2009

Mr. Samuel J. Collins
Regional Administrator
U.S. Nuclear Regulatory Commission, Region I
475 Allendale Road
King of Prussia, PA 19406-1415

Dear Mr. Collins:

On behalf of Local 91 of the International Association of Heat & Frost Insulators & Allied Workers, I am writing in support of the relicensing application for the Indian Point Energy Center (IPEC). I am also requested an expedited timeline for the final review of Indian Point's application. 166-a-LR/SR

Indian Point produces 2,000 megawatts of clean, reliable, emission-free electricity. It is responsible for hundreds of good-paying union jobs, and nearly three-quarters of a billion dollars in economic impact for our region.

Additionally, Indian Point serves as an important steward for our environment. Not only is the energy produced at Indian Point emissions-free, but the replacement options are guaranteed to harm our environment. Specifically, the replacement power would generate 34 million tons of carbon dioxide each year. 166-b-AL/EC/SO

It is a sad and unfortunate that should Indian Point's energy need to be replaced, the replacement power will be paid for in both dollars and in the health of our most vulnerable citizens – the very young, the very old, and those who already suffer from respiratory illnesses. The replacement power would be generated in this very region to the detriment of most of the people in this room. 166-c-AL/HH

And in this struggling economy, it is indefensible for certain environmental activists to place the fate of some fish eggs in the same light as jobs and economic growth. More than 1,000 jobs are directly tied to Indian Point, with hundreds of them being union. To try and shut down Indian Point over the fate of Hudson River fish eggs, most of which die on their own anyway – is absurd, incomprehensible and shameful. 166-d-SO/SR

I ask you to take a common-sense approach and weigh the true benefits of Indian Point in your deliberations. Thank you.

Sincerely yours,

Michael J. Tracey
Business Manager
Local 91, International Association of Heat & Frost Insulators & Allied Workers

My name is Mike Tracey and I represent Local 91 of the Asbestos Workers and Insulators. I am pleased to join you today and urge all of you to support the relicensing of Indian Point.

Indian Point produces 2,000 megawatts of clean, reliable, emission-free electricity. It is responsible for hundreds of good-paying union jobs, and nearly three-quarters of a billion dollars in economic impact for our region.

166-e-SO/SR

Additionally, Indian Point serves as an important steward for our environment. Not only is the energy produced at Indian Point emissions-free, but the replacement options are guaranteed to harm our environment. Specifically, the replacement power would generate 14 million tons of carbon dioxide each year.

It is sad and unfortunate that should Indian Point's energy need to be replaced, the replacement power will be paid for in both dollars and in the health of our most vulnerable citizens – the very young, the very

166-f-AL/EC

old, and those who already suffer from respiratory illnesses. The replacement power would be generated in this very region to the detriment of most of the people in this room.

166-f-AL/EC contd.

And in this struggling economy, it is indefensible for certain environmental activists to place the fate of some fish eggs in the same light as jobs and economic growth. More than 1,000 jobs are directly tied to Indian Point, with hundreds of them being union. To try and shut down Indian Point over the fate of Hudson River fish eggs, is absurd, incomprehensible and shameful.

I ask you to take a common-sense approach and weigh the true benefits of Indian Point in your deliberations. It's a fact that Indian Point is a true economic engine for our community.

166-g-AE/SO

Thank you for your time.

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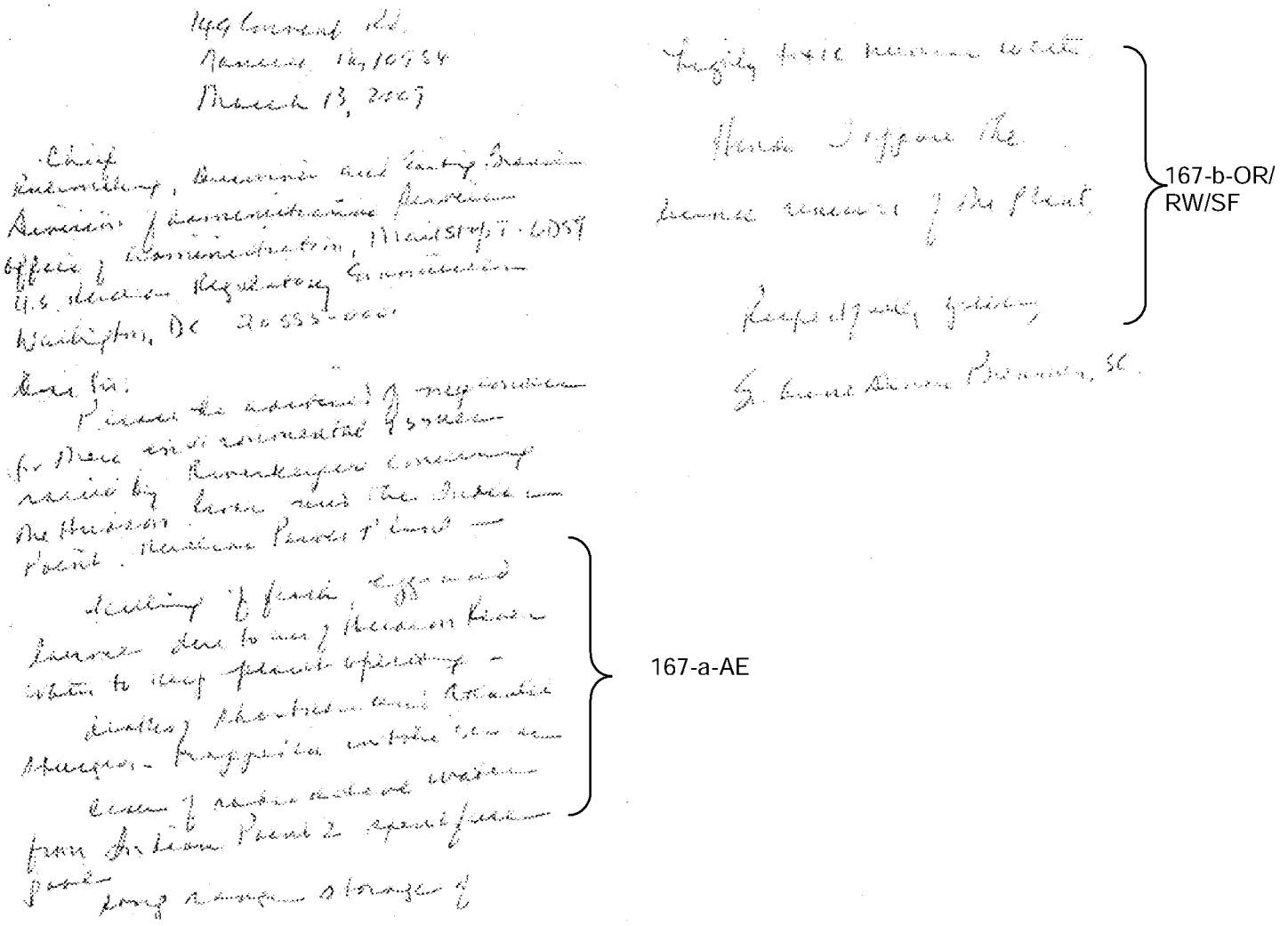
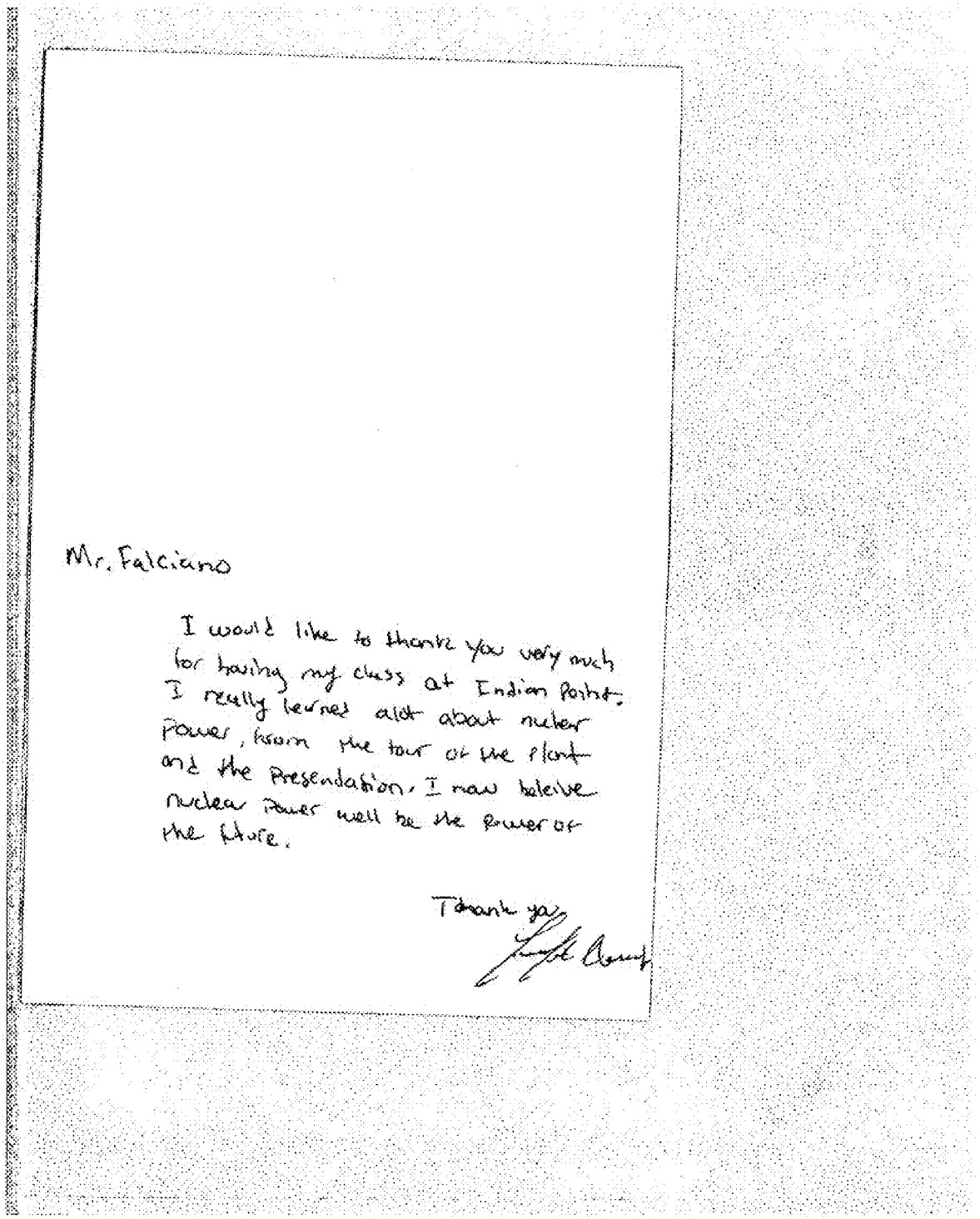


167-a-AE

167-b-OR/
RW/SF

The following pages contain the written comments submitted by Various Authors during the scoping period for the Indian Point Nuclear Generating Unit Numbers 2 and 3 license renewal

Comment ID
168-a-OS



Mr. Falciano

I would like to thank you very much for having my class at Indian Point. I really learned alot about nuclear power, from the tour of the plant and the Presentation. I now believe nuclear power will be the power of the future.

Thank ya

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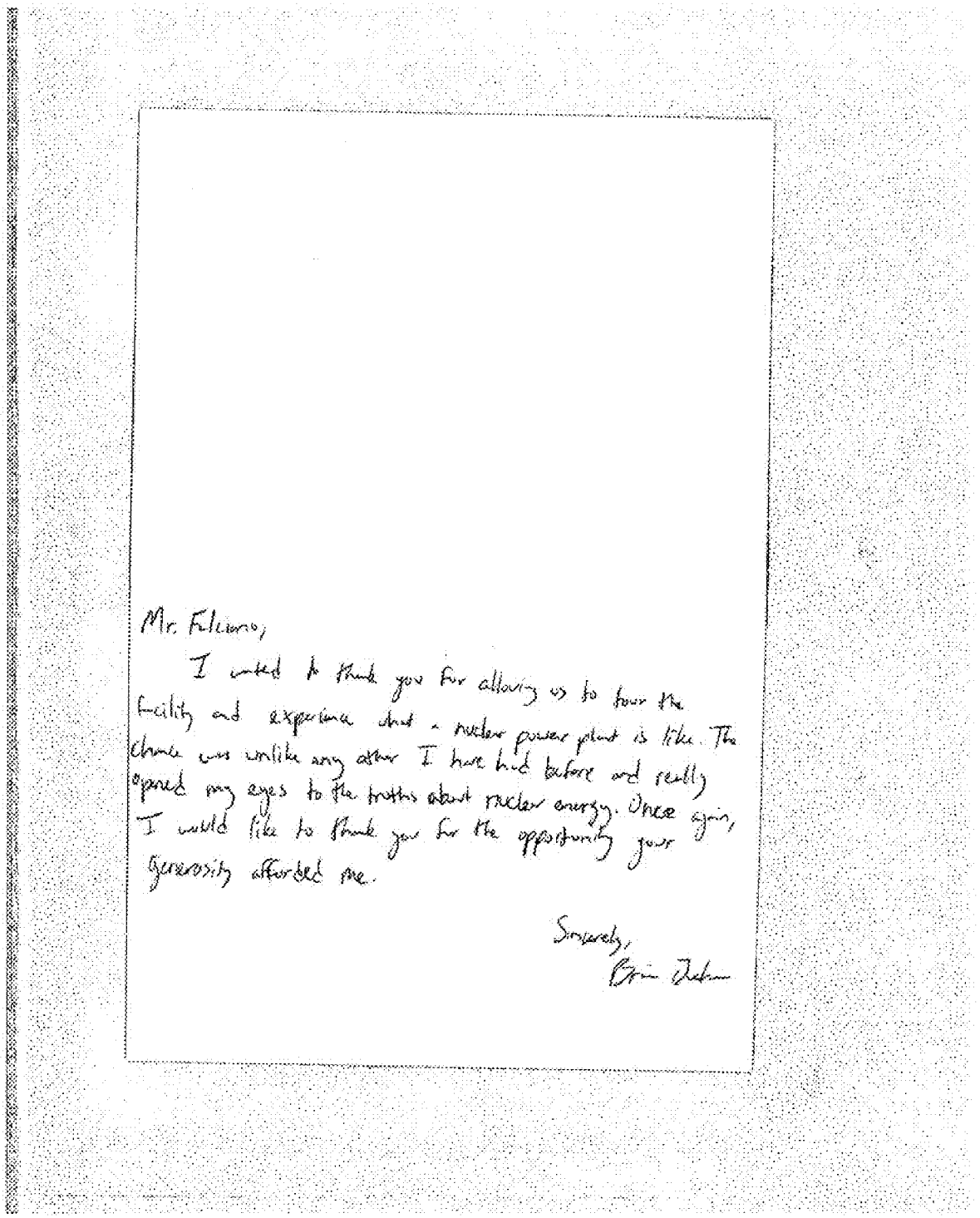

Mr. Filsinger,

I wanted to thank you for allowing us to tour the facility and experience what a nuclear power plant is like. The chance was unlike any other I have had before and really opened my eyes to the truths about nuclear energy. Once again, I would like to thank you for the opportunity your generosity afforded me.

Sincerely,
Brian Jackson

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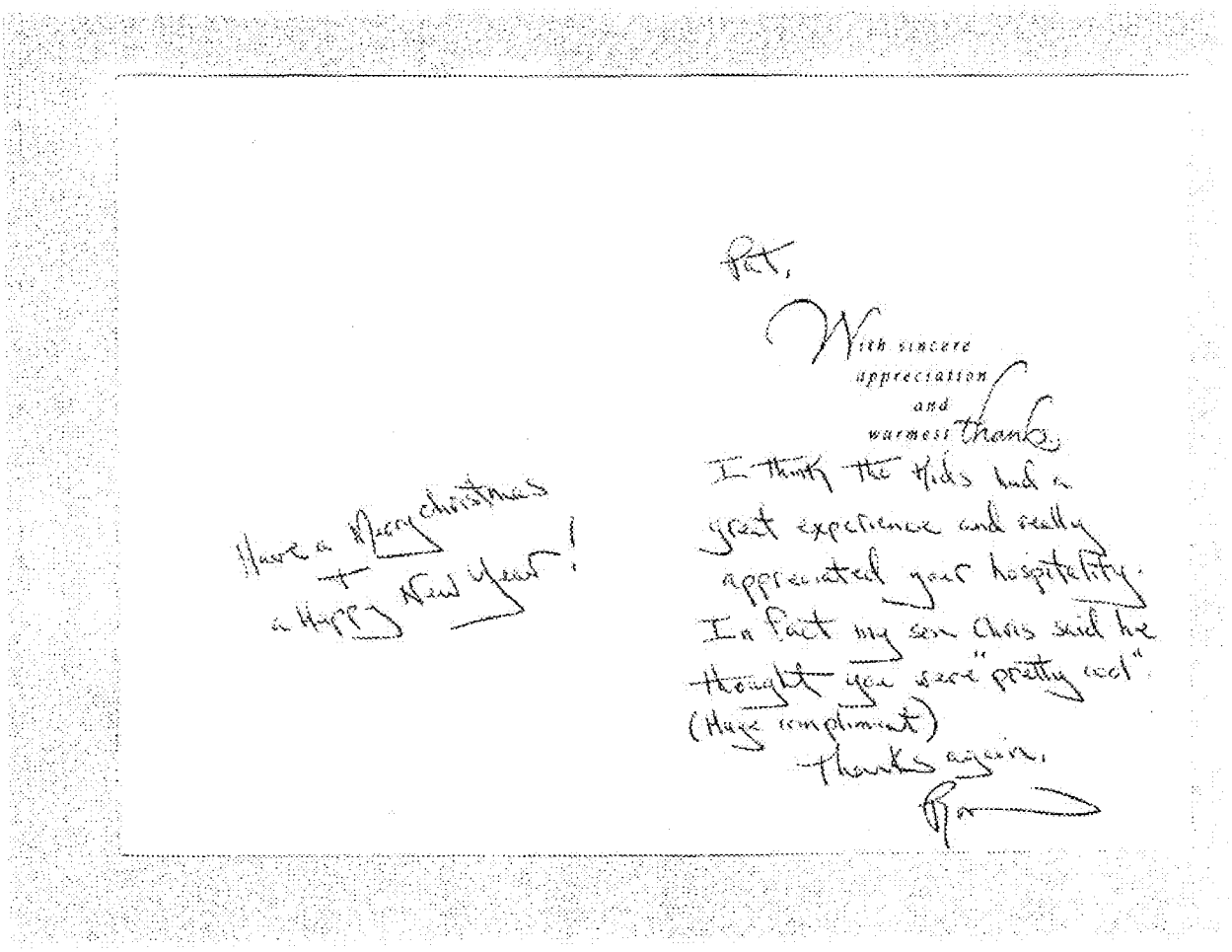
Pat,
With sincere
appreciation
and
warmest thanks,
I think the kids had a
great experience and really
appreciated your hospitality.
In fact my son Chris said he
thought you were "pretty cool"
(Huge compliment)
thanks again.
Have a Merry Christmas
+
a Happy New Year!

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You're always doing something nice.

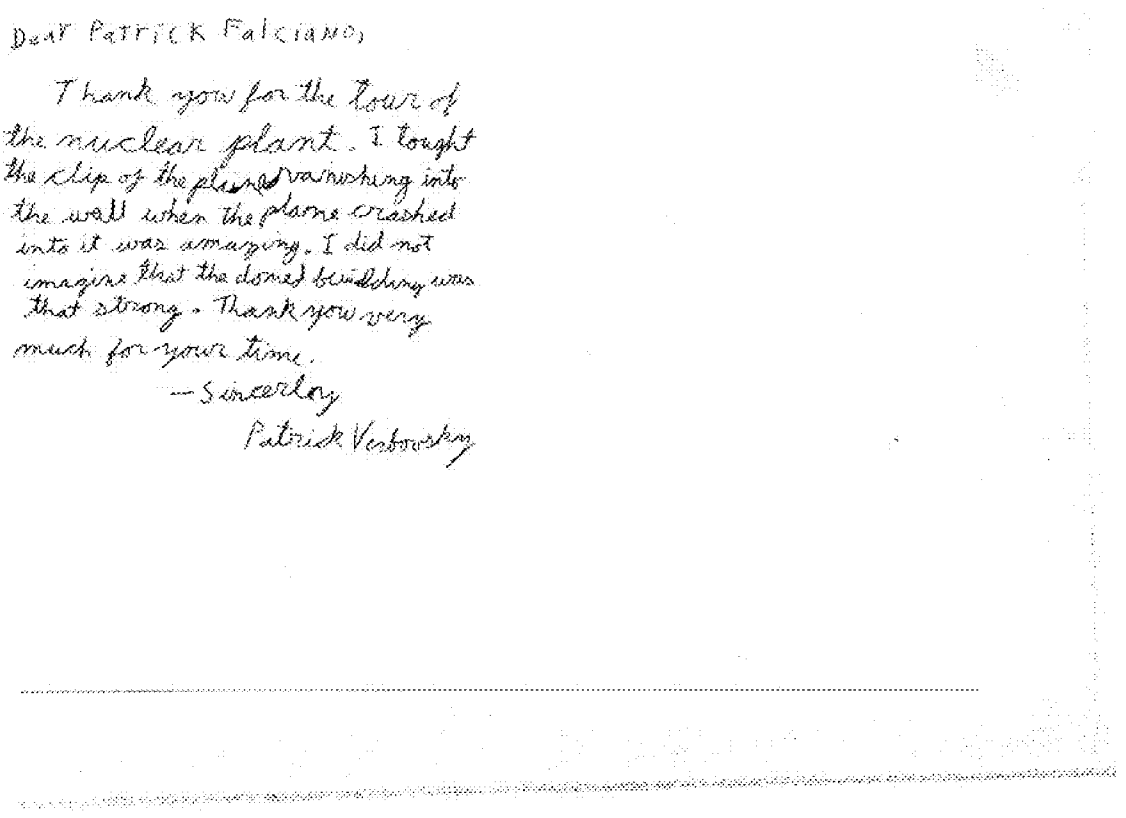
Dear Mr. Falciero,

Thanks for showing me how your facility operates. It is a very interesting process to produce electricity. Once again thanks for everything it was a very enjoyable trip.

Sincerely,

A. Mostofi

Areen Mostofi



Dear Patrick Falciano,

Thank you for the tour of the nuclear plant. I tought the clip of the plane vanishing into the wall when the plane crashed into it was amazing. I did not imagine that the domed buildings was that strong. Thank you very much for your time.

—Sincerley

Patrick Verbowsky

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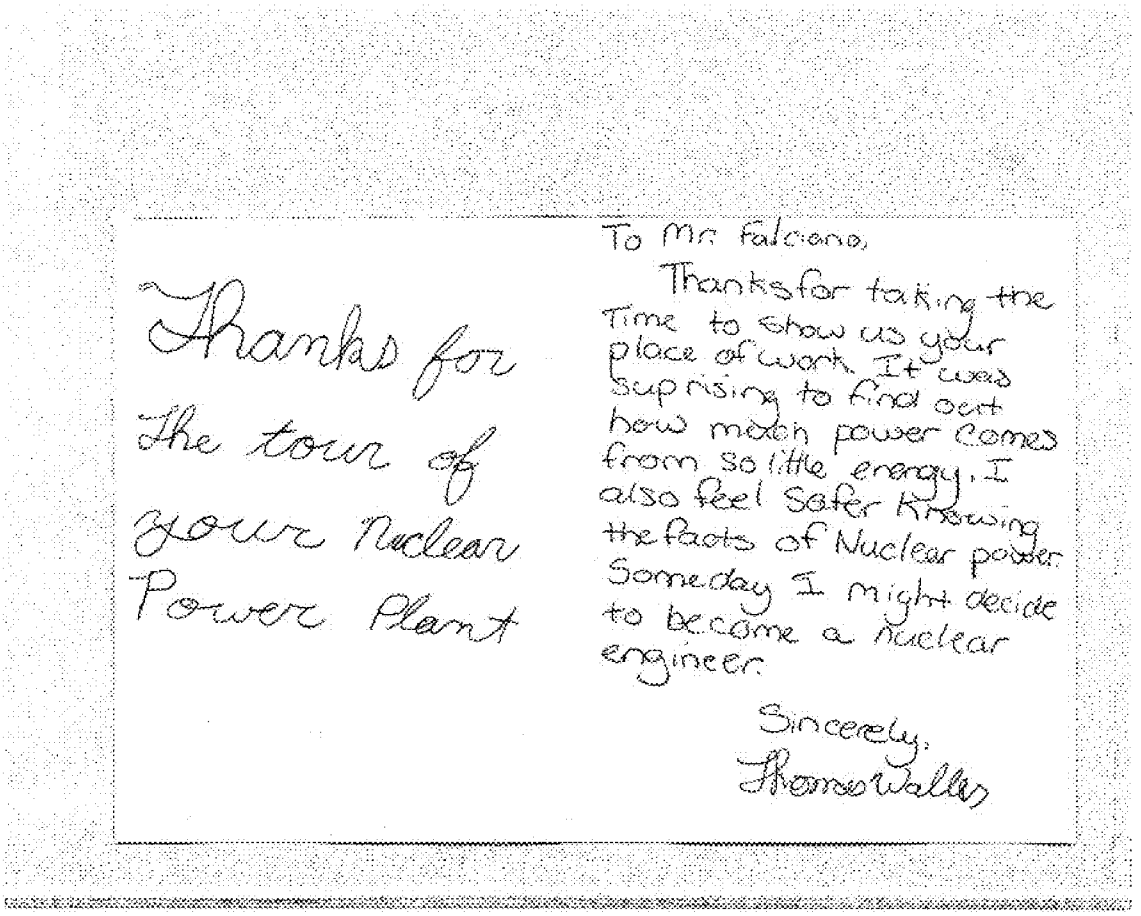

Thanks for
the tour of
your Nuclear
Power Plant

To Mr. Falciano,

Thanks for taking the Time to show us your place of work. It was suprising to find out how much power comes from so little energy. I also feel safer Knowing the facts of Nuclear power. Someday I might decide to become a nuclear engineer.

Sincerely,
Thomas Walker

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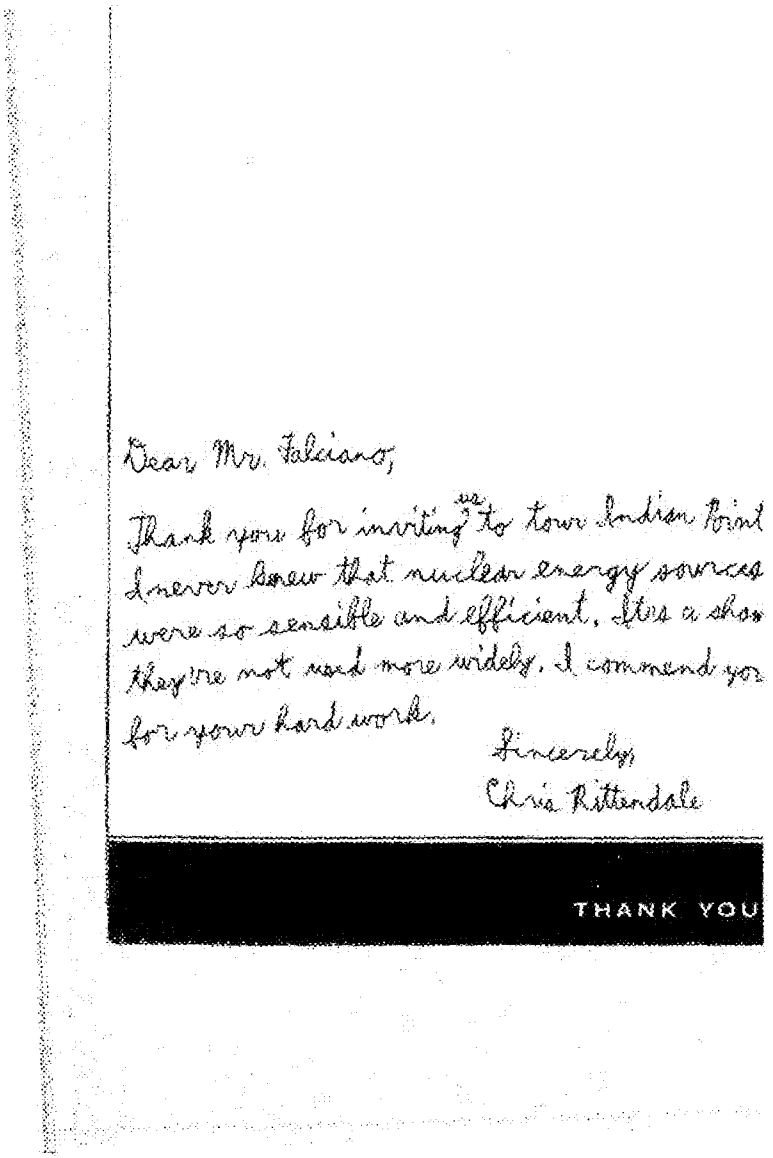

Dear Mr. Falciano,

Thank you for inviting us to tour Indian Point. I never knew that nuclear energy sources were so sensible and efficient. It's a shame they're not used more widely. I commend you for your hard work.

Sincerely,
Chris Rittendale

THANK YOU

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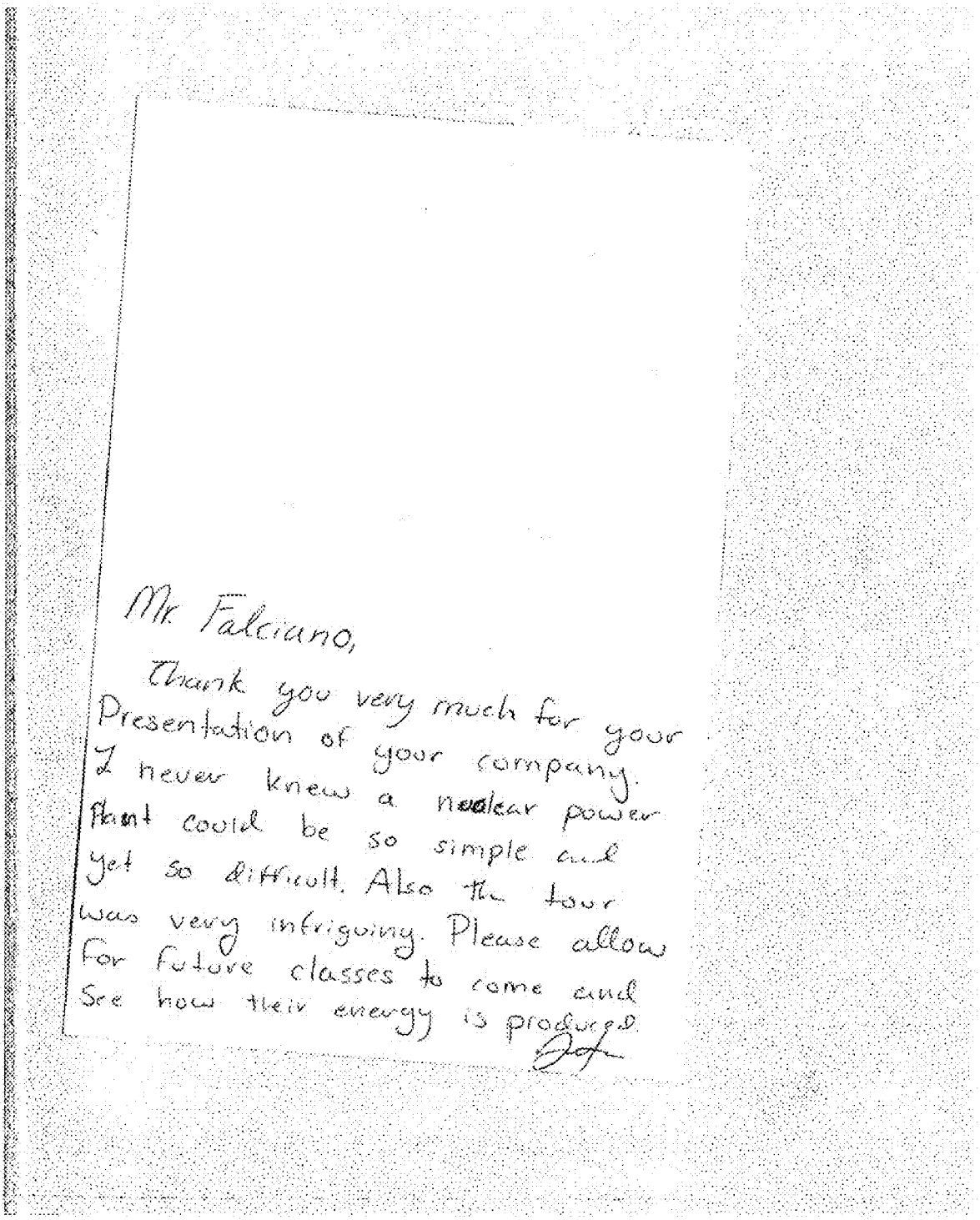

Mr. Falciano,

Thank you very much for your Presentation of your company. I never knew a nuclear power Plant could be so simple and yet so difficult. Also the tour was very intriguing. Please allow For future classes to come and See how their energy is produced.

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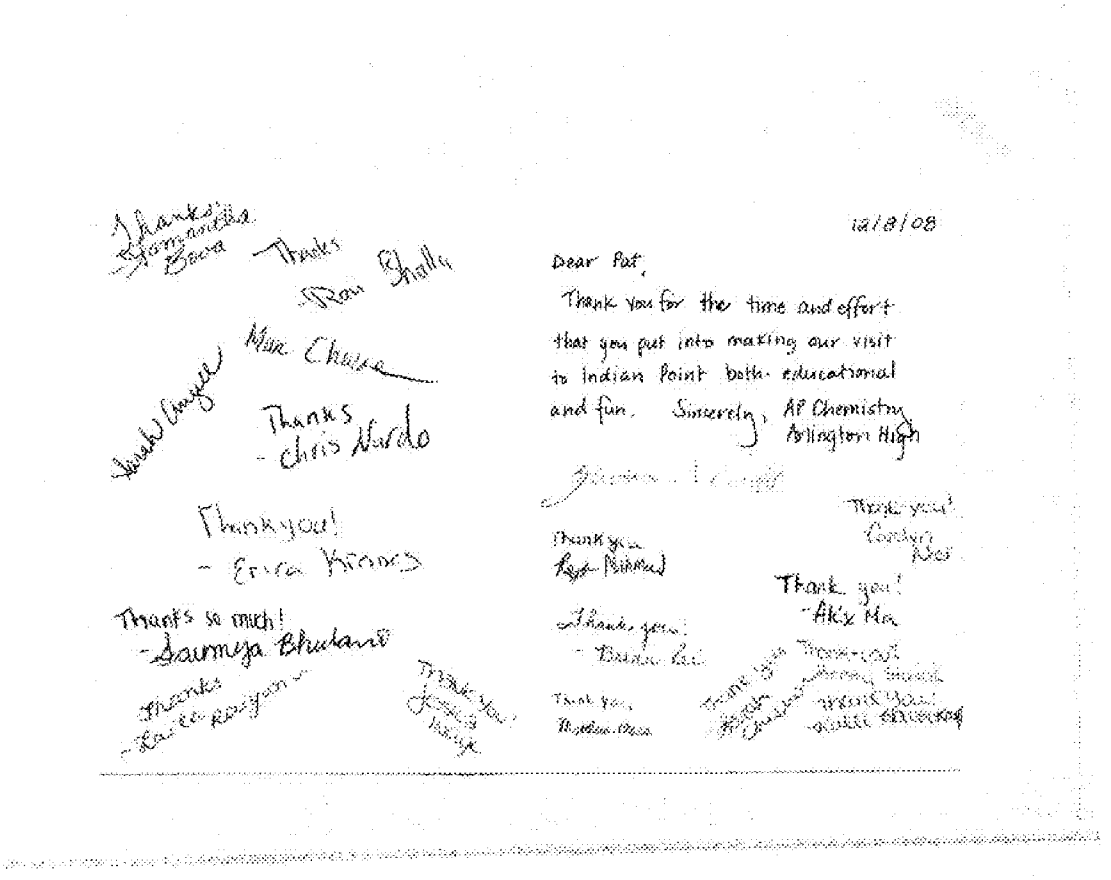

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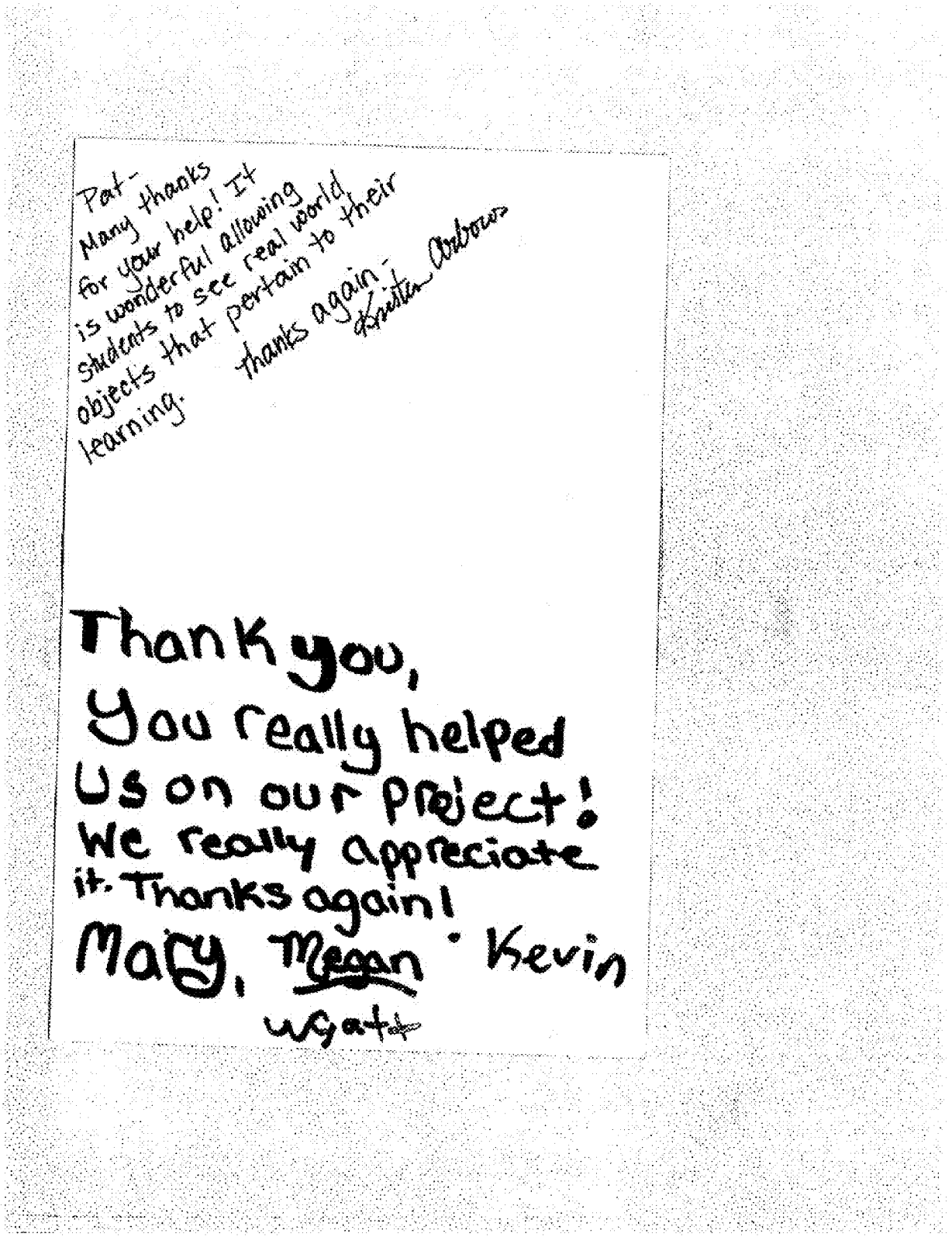

Pat-
Many thanks
for your help! It
is wonderful allowing
students to see real world
objects that pertain to their
learning.
thanks again-
Kristin Ambrose

Thank you,
You really helped
us on our project!
We really appreciate
it. Thanks again!
Mary, Megan, Kevin
Wyatt

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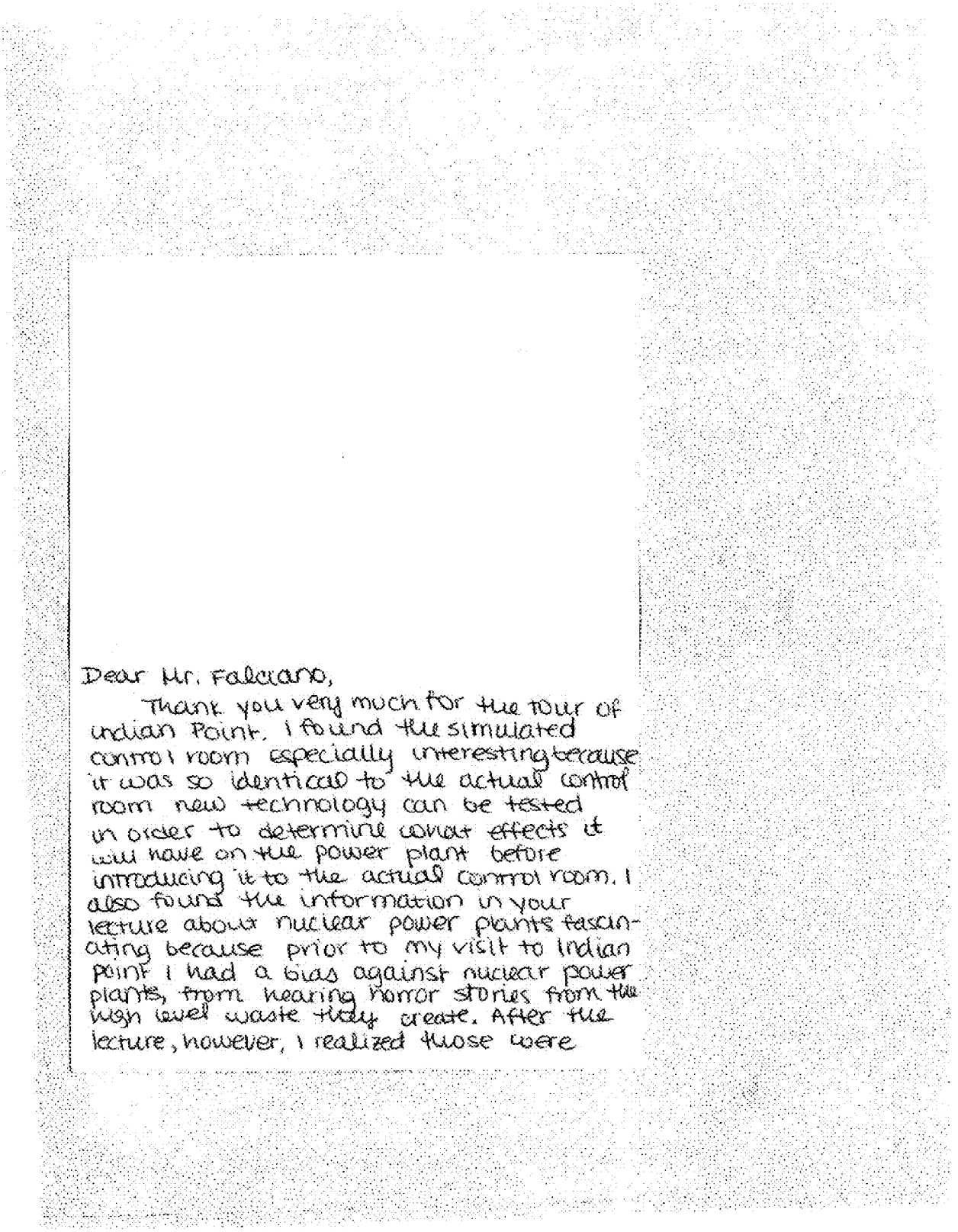

Dear Mr. Falciano,

Thank you very much for the tour of Indian Point. I found the simulated control room especially interesting because it was so identical to the actual control room new technology can be tested in order to determine what effects it will have on the power plant before introducing it to the actual control room. I also found the information in your lecture about nuclear power plants fascinating because prior to my visit to Indian point I had a bias against nuclear power plants, from hearing horror stories from the high level waste they create. After the lecture, however, I realized those were

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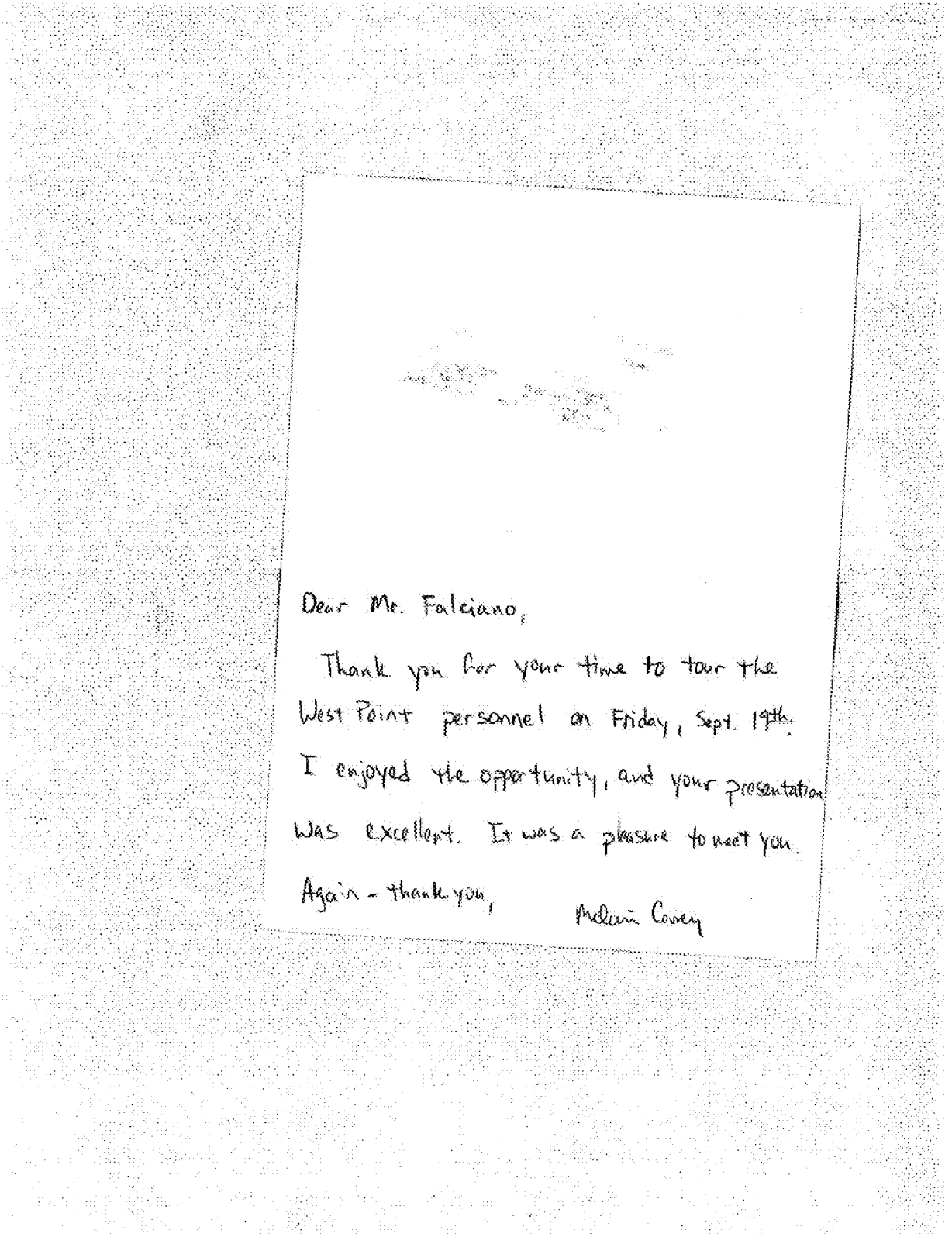

Dear Mr. Falciano,

Thank you for your time to tour the West Point personnel on Friday, Sept. 19th. I enjoyed the opportunity, and your presentation was excellent. It was a pleasure to meet you.

Again - thank you,

Melanie Covey

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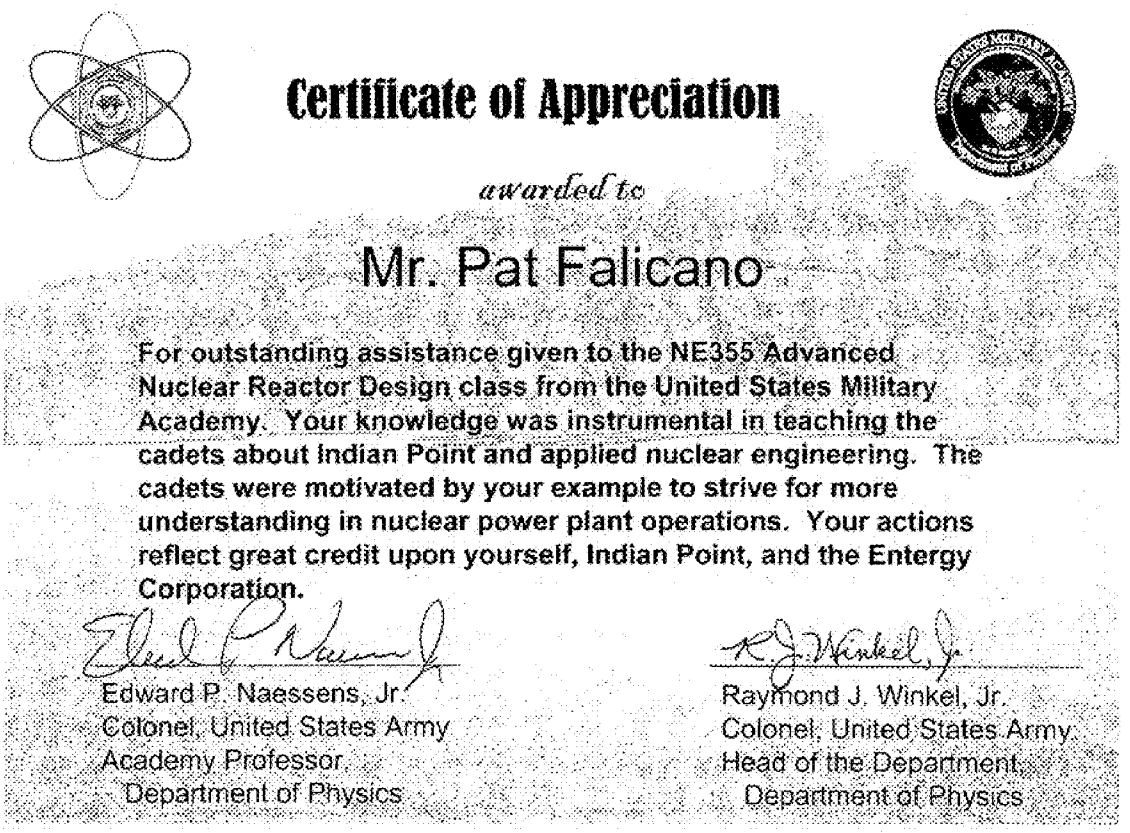

Certificate of Appreciation

awarded to

Mr. Pat Falicano

For outstanding assistance given to the NE355 Advanced Nuclear Reactor Design class from the United States Military Academy. Your knowledge was instrumental in teaching the cadets about Indian Point and applied nuclear engineering. The cadets were motivated by your example to strive for more understanding in nuclear power plant operations. Your actions reflect great credit upon yourself, Indian Point, and the Entergy Corporation.

Edward P. Naessens, Jr.
Colonel, United States Army
Academy Professor
Department of Physics

Raymond J. Winkel, Jr.
Colonel, United States Army
Head of the Department
Department of Physics

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Falciano, Patrick

From: Dooley, P COL C&LS [Patricia.Dooley@usma.edu]
Sent: Friday, July 16, 2004 9:20 AM
To: Falciano, Patrick
Cc: Appleton, A. MAJ C&LS; Meyer, J. LTC CHEM
Subject: Presentation to Cadets

Mr. Falciano,

Your presentation aboard the USMA ferryboat last Sunday to the Mid-Hudson Section of the American Chemical Society was most interesting. I commend you on your ability to compete with the gorgeous scenery of the river----and win----in an enthralling talk about the Indian Point nuclear reactor.

I am including the course director and assistant course director of our Advanced General Chemistry course at USMA in the CC: by way of introduction, MAJ Appleton is responsible for arranging for and inviting speakers to give lunchtime brown-bag presentations to the freshman cadets, and I will encourage him to make contact with you about the feasibility of having you up some time this semester.

Again, thank you for a riveting and rewarding talk.

Patricia A. Dooley, Ph.D., Colonel, U. S. Army, Academy Professor

Airborne & "Old Ironsides" Signaleer

Department of Chemistry and Life Science

United States Military Academy, West Point NY 10996

845/938-3909 DSN 688-3909 Fax -2235

The ultimate weapon is an educated mind.

GO ARMY TRACK!

1/13/2005

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Dobbs Ferry Union Free School District

DOBBS FERRY HIGH SCHOOL
Dr. Michael Kuchar, Principal

December 8, 2004

Dear Mr. Pat Falciano,

I am writing this letter of behalf of myself, my colleagues and our students as a thank you for a fantastic presentation. We are all very impressed with your knowledge and are appreciative of your time.

Your PowerPoint presentation was excellent and our students thoroughly enjoyed it. Often times our students are misinformed about nuclear energy and safety issues. I applaud you for addressing those concerns as you handled criticism with diplomacy and grace. Many of our students remarked that after your lecture, they felt more at ease about the safety of Indian Point.

Also, thanks for the "goodie bags". The students loved their gifts and we all appreciate you putting them together and bringing them along. Thanks again for you time and attention.

Kind Regards,

Justine Henry
Teacher of Science

505 Broadway, Dobbs Ferry, New York 10522 914-693-7645 . . . . Fax 914-693-1115

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Falciano, Patrick

From: Libby, Earl
Sent: Monday, May 10, 2004 9:18 AM
To: McMullin, Kathy; Falciano, Patrick
Subject: John Jay High School - Chemistry Class Presentation

Kathy,
I had the opportunity to attend the presentations to the Chemistry Classes at John Jay High School by Mr. Pat Falciano on Friday 05/07/2004. Mr. Falciano is a talented presenter who well represented Indian Point Energy Center and Entergy Nuclear to that high school population. It was my pleasure to assist Pat with this outreach program.

Tx: Earl R. Libby, Ops Tech Support Supervisor
Phone: (914) 736-8514 Pager: (888) 437-5785

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Falciano, Patrick

From: Terri Campbell [tcampbell@vcmail.ouboces.org]
Sent: Friday, April 02, 2004 12:34 PM
To: Falciano, Patrick
Subject: Nuclear Presentation

Thank you so much for visiting our school and sharing your presentation with us. All of the students were impressed with the material and it generated a fantastic discussion the following day. I will not forget you for next year.

Terri Campbell

Terri Lee Campbell
Science Department

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Mr. Patrick Falciano
IPEC Communications GSB
450 Broadway
Buchanan, NY 10511

January 10, 2006

Dear Mr. Falciano,

Thank you for visiting Harmony Christian School on December 6, 2005. The staff and students enjoyed the excellent, informative presentation on the workings of a nuclear power plant. The subject matter presented was a benefit to our middle and high school students and also the staff that were able to attend.

We look forward to scheduling another visit with you next year. We also will be looking into scheduling a field trip to the Indian Point Energy Center for some of our high school students next year.

Respectfully,

Mrs. Vivian K. Brooks
Middle School Science Dept.

Mr. Kevin Barry
High School Science Dept.

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WESTPORT, CONNECTICUT

DIANE GOSS FARRELL
First Selectwoman

April 11, 2005

Ms. Kathleen McMullin
Communications Manager
Indian Point Energy Center
450 Broadway, Suite 1
Buchanan, New York 10511

Dear Kathy:

Thank you very much for your highly competent assistance relative to my tour of the Indian Point Energy Center on April 4th.

The tour was extremely interesting and impressive. Seeing the operations and facilities first hand makes for a better understanding of the safety procedures.

Thank you again for your help. Best wishes.

Sincerely,

Diane Goss Farrell
First Selectwoman

DGF:ps

Town Hall • 110 Myrtle Avenue • Westport, CT 06880 • (203) 341-1111 • Fax (203) 341-1038
E-mail: selectman@ci.westport.ct.us • Website: www.ci.westport.ct.us

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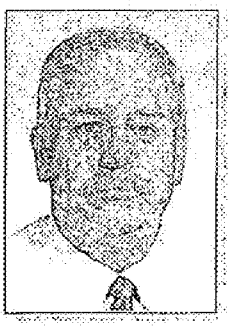
William John Rock

Somers Middle School



MR. PAT FALCIANO
Entergy Nuclear Northeast
Entergy Nuclear Operations, Inc.
Entergy Nuclear IP2, LLC
P.O. Box 249
Buchanan, NY 10511

July 26, 2005

Dear Pat,

Enclosed are copies of the pictures that you kindly took for me while on the tour of the Indian Point Nuclear Power Plant on July 19, 2005.

I also received your wonderful power point presentation as well.

I will put all of this great information to use in my classroom to help better educate our Middle School students about Nuclear Energy.

I feel that Nuclear Energy is a very important part of the solution for both our current and future energy needs.

Thank you very much,

William Rock

B. W. Rock

Technology Education
Teacher
Somers Middle School
Route 202
Somers, NY 10589
914-277-3399 x 650

Home
30 Frances Drive
Katonah, NY 10536
914-277-5966
e-mail wjrvc@aol.com

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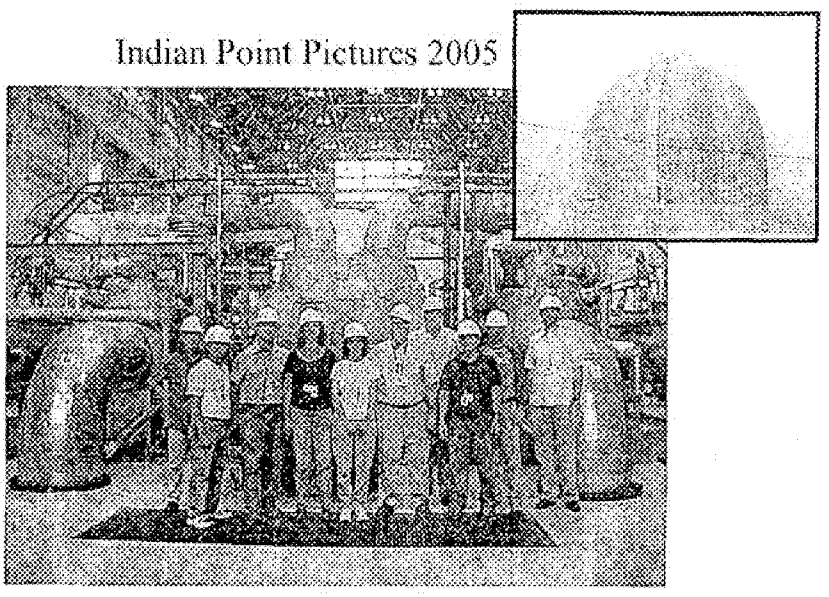
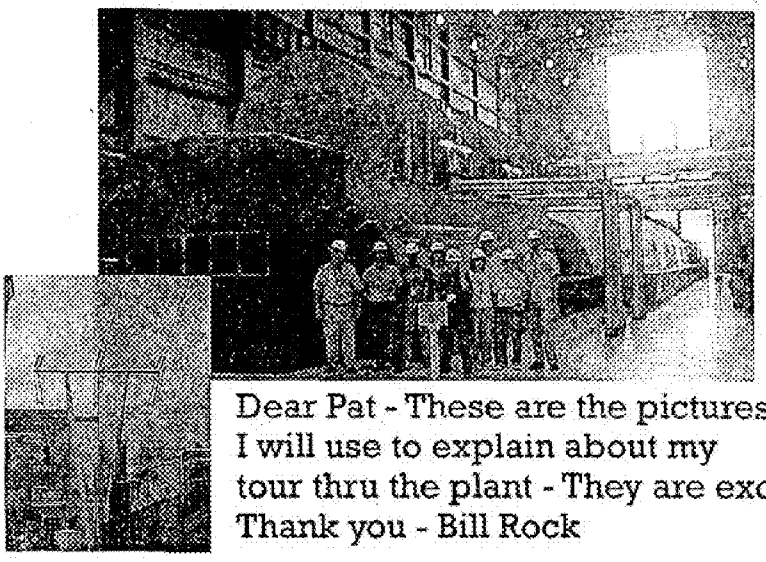
Indian Point Pictures 2005





Dear Pat - These are the pictures
I will use to explain about my
tour thru the plant - They are excellent!
Thank you - Bill Rock

PS- COMBINED WITH YOUR VERY
WELL DONE POWER POINT PRESENTATION
I WILL BE READY AND ABLE TO
TEACH MY STUDENTS ABOUT NUCLEAR
POWER - AGAIN, THANK YOU

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Falciano, Patrick

From: Dick Willstatter [RWillstatter@msn.com]
Sent: Friday, April 30, 2004 5:14 PM
To: Falciano, Patrick
Subject: Re: photos

Pat,
Thanks for sending copies of the photos of the R.M.A. men visiting Indian Point. I will certainly make copies for their enjoyment.
By the way, (wish I could have been there, really do) every single report of their visit was complementary not only of the visit but most especially of how well you (yes, you) were able to handle the job of presentation. Well done,,,, and thanks !! They way they put it is, "You are a real professional".
Dick Willstatter

----- Original Message -----
From: Falciano, Patrick
Sent: Thursday, April 15, 2004 12:49 PM
To: 'RWillstatter@msn.com'
Subject: photos

Dick,

Attached are the photos we took during the Association's visit to Indian Point. I was asked tosend them to you. One of your guys wanted to forward them to a local newspaper.

<<DSCN1201.JPG>> <<DSCN1202.JPG>> <<DSCN1203.JPG>>
Pat

1/13/2005

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Falciano, Patrick

From: Biaglow, A. DR C&LS [Andrew.Biaglow@usma.edu]
Sent: Monday, November 15, 2004 7:59 AM
To: Falciano, Patrick
Subject: Thank You

Patrick,

Thank you for your visit on Friday. I enjoyed your talk tremendously. Indian Point seems like a fascinating place, and I am sure the cadets really enjoyed your talk as well. If possible, I would greatly appreciate a field trip to Indian Point. We would like to bring faculty and/or cadets. I do not know what has to be done on your end, but if there is a PR office that I could contact, please let me know.

I am also interested in arranging summer internships with our cadets who are studying chemical engineering. I am sure there is a world of fascinating projects for them to work on. If you are interested, I would greatly appreciate it if you could forward this message to anyone who might be interested.

I am also interested in faculty internships during summer months. If this is something you would like to discuss further, please let me know.

Thanks again, and best regards,

Andrew Biaglow
Associate Professor
Program Director for Chemical Engineering
Department of Chemistry and Life Science
United States Military Academy
West Point, NY 10996
845-938-5814
ma7196@usma.edu

1/13/2005

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Falciano, Patrick

From: Rachel Van Der Stuyf [rvanderstuyf@bedford.k12.ny.us]
Sent: Tuesday, December 21, 2004 2:36 PM
To: Falciano, Patrick; kmcmullin@entergy.com
Subject: Re: Indian Point visit

Kathy and Pat,
Thank you for setting up the visit for us today and for being flexible regarding our time constraint. We obviously would have liked a tour of the facility and appreciate the fact that you had one set up for us.
I will contact you in the next day or two about either a follow up visit to Indian Point or a having one of you come to our school for a discussion.

Thanks again,
Rachel Van Der Stuyf
Academic Community for Educational Success

At 08:57 AM 12/20/2004, Falciano, Patrick wrote:
>Rachel,
>
>Please give me a call ASAP @ 914-271-7441.
>
>Pat Falciano

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Norwalk Community College
188 Richards Avenue Norwalk CT 06854-1655

May 11, 2004

Jim Knubel
Vice President- Operations
Executive office
Indian Point Energy Center
295 Broadway, Suite 1
P. O. Box 249
Buchanan, New York 10511-0249

Dear Mr. Knubel:

On Behalf of NCC, my students and myself, I would like to let you know how much we appreciated your staffs professional attitude and effort in handling our "Nuclear Power Plant Field Trip."

From the very beginning, you accorded the curious students waiting to see for themselves what a Nuclear Power Plant is all about sincerity and respect. They have learned a great deal just on that. There was Pat Falciano who came to NCC on May 4 to give a talk on the Nuclear Fuel Cycle. By the way, it was very favorably televised on the local news channel 12. After clearing security on May 5 we had our visit which included a guided tour by Tom McKee, Pat Falciano and Joan Etzweiler culminating with a power point slide show by Al Genadry. All by the way were excellent hosts and made our visit very memorable from the beginning to the end. Our students were excited to learn, I could almost see them "bragging" to whoever was willing to listen and wherever they went.

It was a very successful educational trip. Thank you very much for all you did for our students and the college.

Sincerely yours,

John J. Dolhun
Associate Professor Chemistry

Cc: Pat Falciano

January 21, 2005

Pat Falciano
450 Broadway
Suite 1
Buchanan, NY 10511

Dear Pat,

Thank you for coming to our school and sharing information with us regarding Indian Point and the nuclear power industry. It was very helpful to our class because we were able to use the information in our research papers. We really appreciate your visit to our community, you are always welcome.

Sincerely,

Academic Community for Educational Success

STEPHANIE RUIZ
Jillian Kawicki
Andrea
JULIANNA CAMPOS
Camille

ACADEMIC COMMUNITY FOR EDUCATIONAL SUCCESS
FOX LANE HIGH SCHOOL
175 Railroad Avenue • Bedford Hills • NY • 10507
914 - 666 - 5983

February 28, 2006

Dear Mr. Falciano,

I would like to thank you for taking the time to show my class around Indian Point last Wednesday. I learned a lot from your PowerPoint presentation and you showed me a new point of view on nuclear power. It was nice to here a different perspective and learn things that the textbooks leave out such as actual radiation exposure, actual threat of meltdown, and actual waste the reactors produce. You must be very busy and I and my classmates truly appreciate you taking an entire day to teach us about the process of nuclear energy and its production.

Sincerely,

Alex Scaros, Senior at Hackley School

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February 27, 2006

Dear Mr. Falciano,

I would like to thank you again for giving me and my classmates the opportunity to visit Indian Point. Your PowerPoint presentation was very informative and my tour, led by Joe Carlick, was incredibly interesting. Prior to the visit, I was very skeptical about nuclear energy but I have to admit you have eased many of my concerns. I now obtain a greater sense of knowledge of the power plant, as well as a greater sense of security. I am very grateful for the services that you put into the power plant which enables my house to receive electricity. Once again I would like to thank you for your time, patience, and willingness to educate me and my classmates about nuclear energy.

Sincerely,

Kristen Vecchio

Kristen Vecchio

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Dear Mr. Falciano, 2/23

Thank you so much for giving us such an educational tour of Indian Point. Before our trip, I was not sure of my opinions about nuclear power, but now I feel more informed. I think that the information was well presented, but I feel that facts should be presented in a more balanced manner. I think that nuclear power is a great source of energy, and I do not agree with the ideas that all nuclear power plants should be phased out. It is safe, efficient and lessens are dependency on oil and other sources that are nonrenewable.

Thanks again,

Komal Garewal.

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Jonathan Lampert

Dear Mr. Falcione,

Thank you very much for the tour and information about Nuclear Point. I appreciate the time you spent and as a result of the information I recieved, I have changed my view on Nuclear power. I particularly found interesting the discussion on how nuclear pwer works, how power is generated in nuclear point. I also found interesting the discussion of safety and security at Nuclear Point. This discussion effectively cleared up the myths I had heard essentially that a disaster at Nuclear Point is virtually impossible. I liked the fact especially, specifically the tour of the simulator. It's amazing how much training you have to go through in order to work at Nuclear Point.

Sincerely,
Jonathan Lampert

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