Entergy Nuclear Northeast
Indian Point Energy Center
450 Broadway, GSB
P.O. Box 249
Buchanan, NY 10511-0249
Tel 914 734 6700

Joseph Pollock
Site Vice President
Administration

April 1, 2011
NL-11-029

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Response to Request for Additional Information Regarding the Review of the Spent Fuel Management Program and the Preliminary Decommissioning Cost Estimate (TAC No. ME5257)
Indian Point Unit Number 3
Docket No. 50-286
License No. DPR-64

REFERENCE:
1. Entergy Letter to NRC Regarding the Indian Point 3 Program for Maintenance of Irradiated Fuel and the Preliminary Decommissioning Cost Analysis (NL-10-123), dated December 10, 2010 (ML103550612).
2. NRC Letter to Entergy Request for Additional Information Regarding the Review of the Spent Fuel Management Program and the Preliminary Decommissioning Cost Estimate (TAC No. ME5257), dated February 17, 2011.

Dear Sir or Madam:

Entergy Nuclear Operations, Inc. (Entergy) submitted, Reference 1, information on the Program for Maintenance of Irradiated Fuel and the Preliminary Decommissioning Cost Estimate in accordance with 10 CFR 50.54(bb) and 10 CFR 50.75(f)(3) for Indian Point 3 (IP3). The NRC requested additional information in Reference 2. This letter provides a response to the NRC request in Attachment 1.

A001
NRR

If you desire additional information, please contact Mr. Robert Walpole, Licensing Manager at 914-734-6710.

Very truly yours,

JP/sp

Attachment: 1. Response to NRC Request for Information Regarding Irradiated Fuel Management and Decommissioning Cost Estimate

cc: Mr. John P. Boska, Senior Project Manager, NRC NRR DORL
Mr. William M. Dean, Regional Administrator, NRC Region I
NRC Resident Inspector's Office Indian Point
Mr. Paul Eddy, New York State Department of Public Service
Mr. Francis J. Murray Jr., President and CEO NYSERDA

ATTACHMENT 1 TO NL-11-029

RESPONSE TO NRC REQUEST FOR INFORMATION REGARDING

IRRADIATED FUEL MANAGEMENT AND DECOMMISSIONING COST ESTIMATE

ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NO. 3
DOCKET NO. 50-286

REQUEST FOR ADDITIONAL INFORMATION

Regulatory Background/Basis

In reviewing Entergy's submittal dated December 10, 2010 (NL-10-123) (Agencywide Documents Access and Management System (ADAMS) Accession No. ML103550612), which addressed Entergy's Preliminary Decommissioning Cost Estimate and Irradiated Fuel Management Program in accordance with Title 10 of the *Code of Federal* Regulations (CFR) Part 50, Sections 50.75(f)(3) and 50.54(bb) for Indian Point Nuclear Generating Unit No. 3 (IP3), the Nuclear Regulatory Commission (NRC) staff determined additional information was needed in order to complete its review. The requested information and the Entergy responses follow:

RAIs Related to Addressing the 10 CFR 50.54(bb) Requirements

RAI No. 1: Attachment 2, Table 2

Based on the references identified below, what is basis for the difference in annual costs for spent fuel management for IP3 compared to IP2? The IP3 December 10, 2010, submittal in Table 2, "Schedule of Annual Expenditures Spent Fuel Management Allocation" (2010 dollars) identified an annual cost for the period 2024 – 2047 at $2.3 million. In the previous submittal for IP2 dated October 23, 2008, ADAMS Accession No. ML083040378, Entergy referenced Table 4, "Indian Point Energy Center, Unit 2, Schedule of Annual Expenditures Spent Fuel Management Allocation" (2007 dollars) identified an annual cost for the period 2022 - 2044 at $2.7 million. Recognizing that the IP2 cost was in 2007 dollars while the IP3 cost is in 2010 dollars, the difference is even greater when comparing the annual costs in current dollars. In addition, for IP3 provide a detailed break out of the major components designated "Other" at $1.4 million annual cost.

Response:

As shown below for a typical year (2027), the major differences are in the annual cost of "Labor" and "Other." The estimate for "Labor" in the IP3 estimate is $835 thousand less as the primary staff during this time period was allocated to IP2. The estimate for "Other" in the IP3 estimate is $471 thousand higher as a result of an increase in the emergency planning fees budgeted for the unit. Details are provided in the following tables.

Typical Year (2027)

	Year's Dollars	Labor	Equipment & Materials	Energy	Burial	Other	Yearly Totals
IP-2	2007	1,577	201	0	0	933	2,711
IP-3	2010	742	203	0	0	1,404	2,349

Labor

The estimates for IP1, IP2 and IP3 assumed that decommissioning would be a coordinated site activity. The decommissioning cost model designated a lead unit for the site work based upon the type of activities scheduled at each unit and the respective resource requirements. In the early phase of decommissioning the IPEC site (preparations for SAFSTOR, fuel transfer and storage, etc.), IP2 was the designated lead unit based upon its earlier shutdown date and the need to keep its spent fuel pool operational to support the off-loading of the IP3 spent fuel storage pool. Accordingly, the decommissioning estimate for IP2 carried a full complement of staff, with IP3 adding supplemental personnel, as required. This division of resources (primarily labor-related) carried over into the dormancy period.

During the time period (years 2022 through 2047), a staff of 16 full-time equivalents (FTEs) (excluding security) was assigned to IP2. It was assumed that this organization would be responsible for site caretaking activities, as well as overseeing the operation of the ISFSI(s) and the spent fuel off-loading campaigns (to the DOE). As such, a portion of the Utility Staff Cost for IP2 (the lead unit) was allocated to Spent Fuel Management (approximately 50%). By comparison, a staff of 4 FTEs (excluding security) was assigned to IP3 to supplement the IP2 organization. The cost of the supplemental staff, to support IP3 caretaking activities, was considered a License Termination cost. This was a significant contributor to the higher cost reported for IP2, even in 2007 dollars. The difference in the labor cost components reported as Spent Fuel Management during this period is illustrated below.

Annual Spent Fuel Management Expenditures	IP2		IP3	
Labor Cost Component	Total FTEs	Thousands, $2007	Total FTEs	Thousands, $2010
Spent Fuel Capital and Transfer (labor only)		67.15		67.57
Security Staff Cost	13.5	508.47 [1]	13.5	674.95 [1]
Utility Staff Cost	16.0	1,002.21 [1]	4.0	0.00 [2]
Total		1,577.82		742.51

Notes [1] Spent Fuel Management cost allocation
[2] Entire costs assigned to License Termination or Radiological

Other

The significant contributor to the difference in "Other" costs was a 68% increase in emergency planning fees budgeted for IP3 in 2010, as compared to IP2 in 2007. The comparable IP2 budgeted cost in 2007 for emergency planning fees was approximately $800 thousand.

Breakdown of the IP3 "Other" Cost Component	Annual Cost ($Thousands)
Insurance	14.54
Emergency Planning Fees	1,339.75
ISFSI Operating Costs	51.06
Total (thousand 2010 dollars)	1,405.35

RAI No. 2: Attachment 2, Table 2

The staff requests that Entergy address the difference in annual labor costs in Table 2 between IP3 at $0.74 million in 2010 dollars, and IP2 at $1.6 million in 2007 dollars.

Response:

Please see the response to RAI No. 1 regarding the assignment of staffing resources between units and the allocation of License Termination and Spent Fuel Management costs.

RAI No. 3: Attachment 2, Table 3

What caused the difference, almost double, in spent fuel management significant cost contributors when comparing the 2010 IP3 submittal to the 2008 IP2 submittal? In the IP3 submittal, Table 3, lists the total for spent fuel management significant cost contributors, in 2010 dollars, as $121.0 million while Table 5 in the IP2 submittal (October 23, 2008) estimated the total cost significant cost contributors at $59.1 million.

Response:

Four items contributed to the majority (93% or $57.5 million) of the $62.0 million increase in the spent fuel management costs reported for IP3, as shown below. The existing ISFSI can accommodate the IP2 fuel at shutdown, but not all of the IP3 fuel, so a second ISFSI was assumed to be constructed for IP3 (Item 1). The IP3 spent fuel was assumed (for purposes of the estimate) to be transferred to the IP2 pool where it would be loaded into MPCs for storage at the ISFSI. The transfer was accomplished via a special cask in batches of 12 or less. It was estimated that this could require up to 170 shipments between the fuel buildings (Item 2).

IP2 off-loads a greater number of spent fuel assemblies to the ISFSI than IP3 during plant operations. Conversely, IP3 off-loads a greater number of spent fuel assemblies to the ISFSI (7 additional casks) than IP2 during decommissioning. Item 3 accounts for the cost of the additional MPCs and storage casks). Item 4 reflects the general increase in the cost of the dry storage system components (from 2007 to 2010) acquired by IP3 during decommissioning. The remaining cost increase was related to higher cask loading and transfer costs.

	Spent Fuel Management Activity	Total Cost ($ Millions)
1	Construction of a second ISFSI for IP3 fuel	13.340
2	Transfer of IP3 spent fuel to IP2 pool (170 shipments)	29.180
3	Additional dry storage system casks (7 casks)	8.654
4	Additional cost of dry storage system components	6.321
	Total	57.495

RAI No. 4: Table 4

Is the $121.1 million costs identified in Table 4, "Estimated Expenditures for Spent Fuel Packaging, Storage, and Canister Transfer" included in the Table 2, "Schedule of Annual Expenditures Spent Fuel Management Allocation?" If not, explain why these costs were not included as part spent fuel management costs as required by 10 CFR 50.54(bb).

Response:

Yes, the direct cost of $121.110 million is a subset of the $227.954 million, as delineated in Section 3, paragraph 3, in Attachment 2 to IP3 December 10, 2010 filing.

RAIs Related to Addressing the 10 CFR 50.75(f)(3) Requirements

RAI No. 5: TLG Preliminary Decommissioning Cost Estimate, Section 1.7.9

Identify if the demolition of any of the IP3 buildings is required to access the contaminated soil, as Table 1 did not list the costs associated with the demolition of the buildings or the associated waste volumes. If these costs are provided in the supporting documents, provide the reference that addresses the total cost of the contaminated soil removal and disposal, including the building demolition, transportation, and demolition sequence.

Response:

The costs to remediate or remove portions of the discharge canal, fuel storage building, reactor containment and part of the primary auxiliary building (as identified in Section 1.7.9 on page 18 of 40) in support of the soil remediation are provided in Table A of Enclosure 1 to Entergy's December 10, 2010 filing. The costs are shown below:

Activity Index	Activity Description	Total Cost ($ Millions)
4a.1.4.1	Reactor Containment (clean portion)	15.182
4a.1.4.2	Fuel Storage Building (clean portion)	0.391
4a.1.4.3	Primary Auxiliary Building (clean portion)	0.513
4a.1.4.4	Waste Holdup Tank Pit (clean portion)	0.020
4b.1.4.1	Reactor Containment (contaminated portion)	19.294
4b.1.4.2	Discharge Canal (contaminated portion)	1.559
4b.1.4.3	Fuel Storage Building (contaminated portion)	14.845
4b.1.4.5	Primary Auxiliary Building (contaminated portion)	2.347
4b.1.4.6	Waste Holdup Tank Pit (contaminated portion)	0.117
Total		54.270

The cost to remediate (dispose) of the approximately 2.4 million cubic feet of contaminated soil is provided in Table A of Enclosure 1 to Entergy's December 10, 2010 filing. The cost and volumes are shown below:

Activity Index	Activity Description	Total Cost ($ Millions)	Volume (cubic feet)
4b.2.3	Septic Soils Storage Area Remediation	4.361	81,000
4b.2.5	Outfall Remediation	9.897	183,240
4b.2.6	Main Transformer Yard Remediation	1.264	22,800
5b.2.3	Unit 1 Legacy Soil Remediation	116.730	2,135,394
Total		132.252	2,422,434

Remediation requirements were based upon the site radiological characterization information available from the IPEC Groundwater Investigation Project ["Hydrogeologic Site Investigation Report," GZA GeoEnvironmental, Inc., January 2008]. For purposes of the cost estimate, soil in the affected areas was completely removed (i.e., to bedrock).

The affected areas are identified in Figure 1 of Enclosure 1 to Entergy's December 10, 2010 filing. The estimates included the direct costs associated with excavation, packaging, transportation and disposal.

RAI No. 6: TLG Preliminary Decommissioning Cost Estimate, Table 1

What is the total estimated volume of contaminated soil for the site? Table 1 identified an estimated 2.4 million cubic feet of contaminated soil associated with IP3. Clarify if the 2.4 million cubic feet of potentially contaminated soil is in addition to the contaminated soil identified in the IP1 and IP2 cost estimate?

Response:

The total estimated volume of contaminated soil for the site is approximately 4 million cubic feet. This includes 1.26 million cubic feet from IP1 (Entergy Letter NL-08-144 to the NRC dated October 23, 2008, Enclosure 1, Section 1.7.8), 379 thousand cubic feet from IP2 (Entergy Letter NL-08-144 to the NRC dated October 23, 2008, Enclosure 2, Section 1.7.9) and 2.42 million cubic feet from IP3 (Enclosure 1 to Entergy's December 10, 2010 filing, Section 1.7.9).

Yes, the 2.4 million cubic feet of potentially contaminated soil in the IP3 estimate is in addition to the contaminated soil identified in the IP1 and IP2 cost estimate

RAI No. 7 : General Site Question

How are the IP site costs divided between IP1, IP2, and IP3? The IP3 cost estimate states that property taxes were not included. What are the estimated property taxes for all three units and why are the property taxes not considered part of SAFSTOR costs for IP3? For some sites, the property taxes are significant over the SAFSTOR period, $100 -120 million, and if not included as part of the SAFSTOR costs, what is the source of funds to address property taxes and similar costs?

Response:

Unit-specific costs (e.g., associated with the disposition of the physical inventory) were assigned to the respective nuclear unit. Allocation of common or shared costs (e.g., project management) considered the type and complexity of the decontamination and dismantling activities scheduled at each reactor, with additional resources assigned to the lead unit. Site-wide costs (e.g., the remediation of contaminated soil) were allotted on the basis of the property boundaries of each nuclear unit (i.e., geographical).

The Company does not consider property tax to be a decommissioning expense or the property to have any continuing value as a generating asset once operations cease.