



# LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION  
P. O. BOX 618, NORTH COUNTRY ROAD • WADING RIVER, N.Y. 11792

JOHN D. LEONARD, JR.  
VICE PRESIDENT - OFFICE OF CORPORATE SERVICES  
AND  
VICE PRESIDENT - OFFICE OF NUCLEAR

SNRC-1789

FEB 14 1991

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D.C. 20555

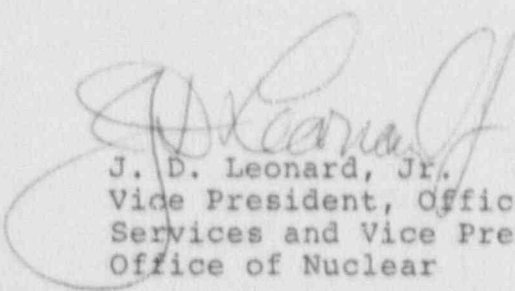
SPDES Permit Modification Request  
Shoreham Nuclear Power Station - Unit 1  
Docket No. 50-322

Gentlemen:

Enclosed is a copy of LILCO's request to modify the Shoreham Nuclear Power Station SPDES Permit #0026344. This request is submitted to the NRC for information in accordance with Section 3.2 of the SNPS Environmental Protection Plan (Appendix B, NPF-82).

Should you have any questions concerning this request or need additional information, please do not hesitate to call my office.

Very truly yours,



J. D. Leonard, Jr.  
Vice President, Office of Corporate  
Services and Vice President,  
Office of Nuclear

GJG/ab  
Enclosure

cc: S. Brown  
T. T. Martin  
B. Norris

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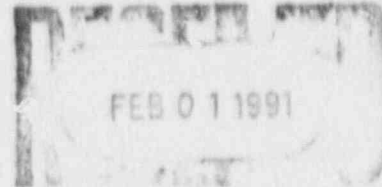
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**LONG ISLAND LIGHTING COMPANY**

January 21, 1991

Mr. Robert Greene  
Regional Permit Administrator  
New York State Department  
of Environmental Conservation  
Building 40, SUNY  
Stony Brook, New York 11794



NUCLEAR OP. SUP. DEPT.

Re: Shoreham Nuclear Power Station  
SPDES Permit #0026344  
SPDES Permit Modification Request

Dear Mr. Greene:

The Long Island Lighting Company is seeking several modifications of the SPDES permit for the above referenced facility. In light of the sale and impending transfer of the Shoreham Nuclear facility, several of the modifications requested are based on the economical savings involved and the fact that this facility has been defueled and will never exceed 5% power operation, of which several current permit requirements are based. Since the plant is being prepared for decommissioning, several operating conditions have changed resulting in decreased discharges at some outfalls. The requested modifications will not have any adverse impact on the environment.

Enclosed please find five copies of a request to modify the SPDES permit for the above referenced facility.

If you should have any questions or require additional information, please contact Mr. Christopher Nikitopoulos of my staff at (516) 420-6341.

Sincerely,

*Madison N. Milhous*

Madison N. Milhous, PE  
Manager  
Environmental Engineering Department

CNN/cs

Enclosure

cc: Messrs. Paul Kolakowski, NYSDEC, Albany  
Andrew Yerman, NYSDEC, SUNY at Stony Brook  
James Maloney, SCDHS

bcc: Messrs. T. Gillete  
M. P. Tucker  
P. Biancone  
G. Gisona  
S. V. Dalton  
C. N. Nikitopoulos  
Ms. L. J. Bergeron  
R. K. Amoroso

ENVED File #31000B07

## Outfall 001- Circulating Cooling Water/Service Water

### Total Residual Chlorine

The cooling system for condensing steam and for cooling heat exchangers is a once-through system. Water for cooling is obtained from Long Island Sound.

Cooling water for the Circulating Water (CW) system is supplied by four circulating water pumps, each having a capacity of approximately 145,000 gpm.

Cooling water for the Service Water (SW) system, which is used in indirect cooling cycles for plant heat exchanges, is supplied by four SW pumps. Each pump has a capacity of 8,600 gpm. Normally, three pumps are in service.

The SW and CW flows combine in the discharge tunnel from which the water is discharged to Long Island Sound through a submerged multiport diffuser.

The CW and SW systems are chlorinated to control biofouling. The current SPDES permit allows for 0.2 mg/l detectable Total Residual Chlorine (TRC) at the monitor for a total of two hours in a 24 hour period while chlorinating CW. Service water is chlorinated continuously while maintaining no detectable TRC at the monitor. Under the terms of the current permit, CW is needed to bring the chlorine residual below LOD (Limit of Detection) at the monitor while chlorinating the SW system.

Each circulating water pump utilizes approximately one megawatt of electricity per hour. As stated earlier, the primary purpose of the CW pumps is to provide cooling water for condenser cooling. Without the need for condenser cooling, there is no need to run the circulators other than for dilution of chlorine. Therefore, with the imminent decommissioning of this facility, it would be beneficial both environmentally and economically to discontinue the use of the Circulating Cooling water system. With the CW system taken out of service, we will be able to terminate the two hour per day chlorine injection required to maintain biofouling control. This translates to a savings of 96 gallons per day of 12% NaHOCl solution.

LILCO requested and was granted permission (see Attachment "A") to conduct a study to test the hypothesis that a 0.2 mg/l TRC reading at the monitor would result in a near zero TRC discharge by the time the treated water is discharged from the diffusers, when no CW is available to provide dilution.

The CW discharge is rapidly diluted and mixed with the offshore waters. In addition to the dilution effect, the offshore waters entrained by the discharge exert an additional chlorine demand. For this reason, it is expected that total residual chlorine in

the discharge will be reduced to zero in a very short period of time due to the combined effects of dilution and chlorine demand of the receiving waters entrained by the diffuser discharge, and that discharge of total residual chlorine will have no noticeable effect on offshore water quality.

The study began on March 7, 1990 and was concluded on April 9, 1990. All CW was secured throughout the study period. A 6.0% sodium hypochlorite solution was injected at a rate of 0.067 gpm for 24 hours per day; this maintained a near 0.2 mg/l TRC reading at the monitor. One SW pump was in operation pumping between 4600 and 4800 gpm. The chlorine monitor continuously recorded the TRC concentration. DR-100 TRC test kit readings were obtained at various times throughout the study at a location 855 feet downstream of the monitor through a 48 inch access way.

The location of the intake canal, screenwell, circulating water system, and discharge conduit are shown in Figure 1. The diffuser is shown in Figure 2.

The resulting data is presented in Table 1 and in graphic form in Figures 3-1 through 3-17.

As illustrated by the data, a 50% reduction in Total Residual Chlorine was obtained between the chlorine monitor and the access way, 855 feet downstream. These measurements do not account for the additional dilution and chlorine demand present in the remaining 5,599 feet of discharge conduit and diffuser.

Based upon this study, LILCO is seeking a permit modification to continuously chlorinate the service water system while maintaining a 0.2 ppm Total Residual Chlorine reading at the monitor.

#### Boron

The source of boron for discharge through Outfall 001 was from the Standby Liquid Control Tank (SBLC). In the event of an emergency, boron solution would have been injected into the reactor vessel to shut down the reactor. The SBLC tank has been drained and taken out-of-service. Since the tank will not be utilized again, the source of boron has been removed and we request that the monitoring requirement for boron be removed from the SPDES permit.

#### Outfall 001b - Radwaste System Demineralizer Regeneration Wastes

Discharge from Outfall 001b occur on a batch basis. Original estimates placed flow at approximately 20,000 gallons per day. Due to current operating conditions, actual flow is more accurately estimated at approximately 5,000 gallons per day (75 batches per year @ 25,000 gallon per batch). A summary of the

number of batch discharges for the time period of August 1987 to October 1990 is found in Table 2-2.

For the time period noted above, there was only one exceedence of the maximum oil and grease limitation of 15 mg/l during July of 1990, with a value of 28.6 mg/l (see Table 2-1).

Adequate administrative procedures are in place to ensure compliance with SPDES permit limitations. Based upon past DMR data, and a decrease in the discharge frequency from this outfall, we respectfully request that the measurement frequency for all parameters be changed from "Weekly" to "Monthly."

Outfall 003, 003a and 003b

Outfall 003 receives effluent from Outfall 003a (Auxiliary boiler blowdown, Emergency Diesel Generator Room floor drains and Control Building drains), Outfall 003b (Colt Emergency Diesel Generator Building floor drains), and stormwater runoff from roof and yard drains. The point of discharge is to the circulating cooling water intake canal.

A summary of the exceedences for Outfalls 003, 003a and 003b, for the time period of August 1987 to October 1990, is presented in Table 2-1. A summary of the number of samples obtained for each parameter is found in Tables 2-3, 2-4 and 2-5.

A review of the non-compliance reports submitted with the Discharge Monitoring Reports attribute the total suspended solids exceedences to increased solids in the blowdown of the auxiliary boilers. The oil/water separator at Outfall 003a was drained and cleaned in October of 1989. No TSS exceedences have occurred at this outfall since. Administrative procedures have been established to periodically (at least annually) inspect and clean the oil/water separator.

Additionally, the majority of the TSS exceedences at Outfall 003 were also attributed to increased solids in the blowdown of the auxiliary boilers. There have been no TSS exceedences at this outfall since the oil/water separator was cleaned.

Since Outfall 003 is the common discharge point, we request that a modification be made so that all sampling be conducted at 003. Sampling of Outfalls 003a and 003b would be discontinued. The modification should include an increase in the sampling frequency at this outfall (from monthly to twice per month) and also incorporate all the parameters of the other two outfalls (003a and 003b).

The flow from Outfall 003 should be based upon the design flow of both oil/water separators PLUS stormwater runoff. Both Outfall 003a and 003b are oil/water separators with maximum design flows of approximately 100 gallons per minute. Footnote

"h" of the SPDES permit states that flow from these outfalls are limited to the design capacity of the separators (i.e. 144,000 gallons per day). However, the SPDES permit limits flow to a daily average of 100 gallons per day. During the development and review of the current permit, an administrative error apparently changed GPM to GPD. We therefore request that the SPDES permit be modified to correct the flow limitation.

#### References to Exceedence of 5% Power Operation

Attachment B is marked up copy of the current SPDES permit outlining the requested modifications. All references to limitations and sampling required after the exceedence of 5% power operation have been deleted, and should be incorporated into the permit modification.

New York State Department of Environmental Conservation  
Region 1 Headquarters  
SUNY, Building 40, Stony Brook, NY 11794



Thomas C. Jorling  
Commissioner

"ATTACHMENT A"

February 2, 1990

Mr. Christopher Gross  
Manager, Environmental Monitoring and  
Compliance Division  
Long Island Lighting Company  
1660 Walt Whitman Road  
Melville, NY 11747

Dear Mr. Gross:

We are in receipt of your letter of 12/6/89 requesting permission to perform a series of experiments on the chlorine residual discharged via outfall 001 (010) of your SPDES permit #0026344.

You may proceed with these experiments provided that:

1. The test period shall not exceed thirty (30) days.
2. This Department shall be notified in writing prior to initiation of the experiment.
3. The permittee must continue to monitor your chlorine residual as mandated by your SPDES permit. Any exceedances of the chlorine residual limitation of 0.2ppm must be reported on the DMR and be accompanied by a non-compliance report stating the experimental nature of the discharge.
4. Upon successful completion of these tests, you may then apply for modification of your SPDES permit to allow the chlorine residual to be calculated (to include a credit for chlorine residual decay in the outfall rather than recorded).

If you have any questions please continue to contact Mr. James Gilmore at 751-7900 or Ms. Diana Morcerf at 751-7725.

Sincerely,

*Theodore M. Sanford*

Theodore M. Sanford  
Senior Sanitary Engineer

cc: D. Morcerf  
J. Gilmore  
D. DeKiddler



FORM  
**2C**  
 NPDES



U.S. ENVIRONMENTAL PROTECTION AGENCY  
 APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER  
 EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURAL OPERATIONS  
 Consolidated Permits Program

**I. OUTFALL LOCATION**

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. OUTFALL NUMBER (list)	B. LATITUDE			C. LONGITUDE			D. RECEIVING WATER (name)
	1. DEG.	1. MIN.	1. SEC.	1. DEG.	1. MIN.	1. SEC.	
001	40	58	27.7	72	52	03.2	All Outfalls discharge to the Long Island Sound.
002	40	57	45	72	51	51	
003	40	57	44	72	52	01	
004	40	57	57.2	72	52	07.3	

**II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES**

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

1. OUTFALL NO. (list)	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT		
	A. OPERATION (list)	D. AVERAGE FLOW (include units)	B. DESCRIPTION	C. LIST CODES FROM TABLE 2C-1	
001	Non-Contact Cooling Water	4,500 gpm	Chlorination to Control Biofouling	4-B	2F
	Outfalls 001a and 001b	Intermittent			
001a	Make-up Demineralizer	7,000 gpd	Filter Beds, Multimedia	2-J	1-P
	Regeneration Wastes	(Batch Process)	Filter, Ion exchange	4-B	1-Q
			pH neutralization	2-K	
001b	Radwaste System	5,000 gpd	Filter beds, multimedia	1-P	1-Q
	Demineralizer	(Batch Process)	Filter, Ion Exchange	2-K	2-J
	Regeneration Wastes		pH neutralization, recycle of treated effluent	4-B	4-C 1-C
002	Floor Drains: Fire Pump House and Chlorine Monitor	5 gpm	No Treatment-Discharge to Surface Water	4-A	
	Stormwater	20,000 GPD			
	Auxiliary Boiler Blowdown (110 GPD)				
	Floor Drains and Control				
003	Building Drains	10,000 GPD	Discharge to Oil/Water	4-A	1-U
	Emergency Diesel Generator		Separator (Design Flow 100GPM)		
	Building Drains	2,000 GPD	Discharge to Oil/Water		1-H
			Separator (Design Flow 100GPM)		
	Stormwater	16,000 GPD	Final Discharge Point for all of the above is to		

OFFICIAL USE ONLY (effluent guidelines sub-categories)

Surface Waters)

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?  
 YES (complete the following table)  NO (go to Section III)

I. OUTFALL NUMBER (list)	II. OPERATION(S) CONTRIBUTING FLOW (list)	III. FREQUENCY		IV. FLOW				V. DURATION (in days)
		A. DAYS PER WEEK (specify average)	B. MONTHS PER YEAR (specify average)	C. FLOW RATE (in mgd)		D. TOTAL VOLUME (specify with units)		
				1. LONG TERM AVERAGE	2. MAXIMUM DAILY	1. LONG TERM AVERAGE	2. MAXIMUM DAILY	
001a	Demineralizer Regen Waste	7	12	20GPM	150GPM	25000 GPD	50000 GPD	8hr/wk
001b	Radwaste Demineralizer Regeneration Wastes	7	12	20GPM	150GPM	25000 GPD	50000 GPD	8hr/wk
002	Chlorine Monitor	7	9	5GPM	5GPM	7200 GPD	7200 GPD	24hr/day
003	Auxiliary Boiler Blowdown, Floor Drains and Control Bldg Drains; Emergency Diesel Generator Bldg Drains	7	12	8GPM	10GPM	11500 GPD	14400 GPD	24hr/day

III. PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?  
 YES (complete Item III-B)  NO (go to Section IV)

B. Are the limitations in the applicable effluent guideline expressed in terms of production (or other measure of operation)?  
 YES (complete Item III-C)  NO (go to Section IV)

C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

I. AVERAGE DAILY PRODUCTION			II. AFFECTED OUTFALLS (list outfall numbers)
A. QUANTITY PER DAY	B. UNITS OF MEASURE	C. OPERATION, PRODUCT, MATERIAL, ETC. (specify)	

IV. IMPROVEMENTS

A. Are you now required by any Federal, State or local authority to meet any implementation schedule for the construction, upgrading or operation of waste-water treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.  
 YES (complete the following table)  NO (go to Item IV-B)

I. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	II. AFFECTED OUTFALLS		III. BRIEF DESCRIPTION OF PROJECT	IV. FINAL COMPLIANCE DATE	
	A. NO.	B. SOURCE OF DISCHARGE		A. REQUIRED	B. PROJECTED

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs (or other environmental projects which may affect your discharges) you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction.  MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAMS IS ATTACHED



C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?  
 YES (complete the following table)  NO (go to Section III)

1. OUTFALL NUMBER (list)	2. OPERATION(S) CONTRIBUTING FLOW (list)	3. FREQUENCY		4. FLOW				5. DUR- ATION (in days)
		6. DAYS PER WEEK (specify average)	7. MONTHS PER YEAR (specify average)	8. FLOW RATE (in mgd)		9. TOTAL VOLUME (specify with units)		
				10. LONG TERM AVERAGE	11. MAXIMUM DAILY	12. LONG TERM AVERAGE	13. MAXIMUM DAILY	
004	Emergency Generator Cooling Water	1/month	12	816GPM	816GPN	1.175 MGD	1.175 MGD	7 hrs/ month

**III. PRODUCTION**

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?  
 YES (complete Item III-B)  NO (go to Section IV)

B. Are the limitations in the applicable effluent guideline expressed in terms of production for other measure of operation?  
 YES (complete Item III-C)  NO (go to Section IV)

C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

**1. AVERAGE DAILY PRODUCTION**

6. QUANTITY PER DAY	7. UNITS OF MEASURE	8. OPERATION, PRODUCT, MATERIAL, ETC. (specify)	9. AFFECTED OUTFALLS (list outfall numbers)

**IV. IMPROVEMENTS**

A. Are you now required by any Federal, State or local authority to meet any implementation schedule for the construction, upgrading or operation of waste-water treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.  
 YES (complete the following table)  NO (go to Item IV-B)

1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS		3. BRIEF DESCRIPTION OF PROJECT	4. FINANCIAL DATA	
	5. DATE	6. SOURCE OF DISCHARGE		7. EST.	8. ACTUAL

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs for other environmental projects which may affect your discharges/ you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedule for construction.  MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAMS IS ATTACHED

CONTINUED FROM PAGE 2

**V. INTAKE AND EFFLUENT CHARACTERISTICS**

A, B, & C: See instructions before proceeding - Complete one set of tables for each outfall - Annotate the outfall number in the space provided.

NOTE: Tables V-A, V-B, and V-C are included on separate sheets numbered V-1 through V-9. SEE NOTE BELOW

D: Use the space below to list any of the pollutants listed in Table 2c-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your production.

1. POLLUTANT	2. SOURCE	1. POLLUTANT	2. SOURCE
NONE			

**VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS**

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

YES (list all such pollutants below)

NO (go to Item VI-E)

Items V Parts A, B and C.

Pursuant to an agreement previously made with the NYSDEC (current permit Additional Requirement #15) no form 2C Parts V-1 through V-9 data is being submitted at this time.

## VII. BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

YES (Identify the test(s) and describe their purposes below)

NO (go to Section VIII)

## VIII. CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item V performed by a contract laboratory or consulting firm?

YES (list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)

NO (go to Section IX)

A. NAME	B. ADDRESS	C. TELEPHONE (area code & no.)	D. POLLUTANTS ANALYZED (list)
Not Applicable			

## IX. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. NAME & OFFICIAL TITLE (type or print)

William E. Steiger, Vice President, Engineering

B. PHONE NO. (area code & no.)

(516) 420-6140

C. SIGNATURE

*W. Steiger*

D. DATE SIGNED

1-30-91